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Contract management and public bidding in engineering: technique, compliance, and efficiency in the administration of works and services.

Management of contracts and public bids in engineering: technique, compliance, and efficiency in the administration of works and services

Management of contracts and public bidding in engineering: technique, compliance and efficiency in the administration of works and services

Esthela Avancini Gomes

Summary

Public procurement of works and engineering services requires more than the mere formal fulfillment of bidding stages. It demands planning, adequate object modeling, selection criteria compatible with the complexity of the undertaking, rational allocation of risks, and contract management capable of transforming the bidding process into an effective delivery of public value. This article analyzes, from a theoretical perspective, the relationship between bidding, contracting, and contract management in Brazilian public engineering, with an emphasis on technique, compliance, and efficiency. The research is qualitative in nature, exploratory in approach, and bibliographic-documentary in design. The corpus was composed of Brazilian normative and institutional sources, especially Law No. 14.133/2021, guidelines from the Federal Court of Accounts, and the official manual for the supervision of contracts for works and engineering services, articulated with national and international academic literature on the selection of contracting systems, proposal evaluation, value for money, bidding strategies, and contractual performance management. The results indicate that efficiency in engineering contracting depends on the integration between contract planning, the definition of the execution regime, the careful selection of judgment parameters, the robustness in the evaluation of proposals, and the performance- and risk-oriented oversight structure. It is concluded that bidding should not be understood as an autonomous and self-contained stage, but as part of a contractual governance cycle that begins with planning and is completed with execution, measurement, control, and the proper delivery of the contracted object.

Keywords: public procurement; administrative contracts; engineering works and services; compliance; efficiency.

Abstract

Public procurement of engineering works and services requires more than formal compliance with bidding stages. It requires planning, proper object definition, award criteria aligned with project complexity, rational risk allocation, and contract management capable of transforming procurement into the delivery of actual public value. This paper analyses, from a theoretical standpoint, the relationship between tendering, contracting, and contract management in Brazilian public engineering, with emphasis on technique, compliance, and efficiency. The study is qualitative, exploratory, and bibliographic-documentary in design. The analytical corpus includes Brazilian normative and institutional sources, especially Law No. 14,133/2021, guidance from the Federal Court of Accounts, and an official contract inspection manual for engineering works and services, articulated with national and international academic literature on procurement system selection, tender evaluation, value for money, bidding strategies, and contractual performance management.

The findings indicate that efficiency in engineering procurement depends on the integration of procurement planning, the definition of execution regimes, careful selection of award parameters, robust tender evaluation, and a supervisory structure oriented toward performance and risk. It is concluded that procurement should not be understood as an autonomous stage ending with the award, but as part of a contract governance cycle that begins with planning and is completed through execution, measurement, control, and the adequate delivery of the contracted object.
Keywords: public procurement; administrative contracts; engineering works and services; compliance; efficiency.

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1. Introduction

In public engineering, bidding is not limited to the procedure for selecting the contractor.
It constitutes a legal and managerial instrument through which the Administration shapes the future.
execution of the project, distribution of responsibilities, definition of remuneration mechanisms, structure the
oversight and efforts to reduce informational asymmetries that, in engineering works and services,
They often result in addendums, delays, controversies, and performance below expectations.
For this reason, the central problem is not limited to the formal validity of the competition, but also encompasses the quality.
of contracting as a technical-institutional arrangement.
In Brazil, Law No. 14.133/2021 reorganized the legal framework for public procurement and consolidated it.
The general rules for bidding and contracting in the Public Administration are mandatory.
The change was not merely systematic in nature. By reinforcing planning, governance, and
risk management, proper object modeling, and the connection between the bidding and contracting phases,
The new legislation shifted the focus of the discussion from the procedure itself to the state's ability to contract.
with technical consistency, legal certainty, and administrative rationality. In this scenario, the
Contracting for construction and engineering services is of particular importance, both because of the volume of
The resources they mobilize are hampered by the multitude of uncertainties inherent in their execution.
The unique aspects of engineering make any simplistic understanding based on this principle insufficient.
exclusively at the lowest price. Public works involve design, quantification, geotechnics,
Compatibility, productivity, schedule, interface risks, and market fluctuations. Services
Engineering, in turn, encompasses activities ranging from building maintenance and adaptation to...
services of high technical complexity. In both cases, the choice of the execution regime,
the estimated value of the contract, the definition of the evaluation criteria, and the method of oversight.
They directly influence the outcome of the adjustment.
International literature converges on this diagnosis. A systematic review of criteria for
Selection of contracting systems in construction identified 256 criteria and demonstrated that it does not
there is a universal, fixed and undifferentiated set applicable to all undertakings; to
Conversely, the criteria follow the evolution of procurement systems and tend to combine...
Generic dimensions with contextual elements. Specific study on proposal evaluation in
Public construction contracts have also demonstrated that traditional scoring formulas can
to present mathematical weaknesses and generate legal uncertainty, especially when seeking to reconcile.
Price based on non-monetary criteria, such as quality, sustainability, and performance. In parallel,
The literature on contractor bid strategy shows that recruitment markets
Public projects under construction remain heavily pressured by a low-cost logic.

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a circumstance that increases the risk of abnormally low bids and choices that are not very aligned with the effective contract value.

Given this scenario, the research problem of this article can be formulated in the following terms: How can the management of public contracts and tenders in engineering be understood, in From a theoretical perspective, how does it articulate technique, conformity, and efficiency? It starts from... hypothesis that the efficiency of public engineering procurement depends less on decisions isolated rather than based on the coherence between five structuring dimensions: hiring planning, Modeling the execution regime, defining the judgment criteria, managing the risks and Organization of contract oversight.

The overall objective of the study is to analyze, from a theoretical perspective, the relationship between bidding and selection. Contract management and contractual responsibility in engineering works and services. Specific objectives include... The aim is to discuss the place of planning in Law No. 14.133/2021; to examine the relevance of the criteria. selection criteria and the notion of best value; analyze the influence of the execution regime on allocation. of risks and the supervisory activity; and demonstrate that the contractual phase does not constitute an autonomous stage. not in relation to the bidding process itself, but rather its necessary unfolding. The relevance of the topic stems both from The need to improve the quality of public procurement, as well as the central role of engineering in... implementation of public policies for infrastructure, mobility, buildings and maintenance of state property.

2. Theoretical Framework

2.1 Bidding, engineering and contract governance

Law No. 14,133/2021 contributed to shifting the understanding of public procurement from a logic... predominantly procedural towards one driven by governance. In the field of engineering, This shift is particularly relevant because inadequately structured hiring tends to increase losses in terms of time, cost, and quality, converting initial modeling flaws into... Implementation problems that are difficult to correct. In this context, bidding ceases to be a simple step. formal selection of the contractor and becomes part of a broader institutional arrangement, aimed at rational organization of public enterprise.

The very normative distinction between engineering works and engineering services highlights the need for a Specific technical treatment of the object. While the artwork implies more intense material intervention, With substantial alteration of real estate and significant physical impact, the engineering service covers activities designed to produce a specific benefit for the Administration, not always associated

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at the same building density. This distinction directly impacts the design requirements, in
Estimated value, within the implementation regime, in the form of measurement and in the monitoring structure. In
In other words, the nature of the object conditions the legal and managerial architecture of the contract.
For this reason, planning takes center stage. Before choosing the procedure.
In a bidding process, the Administration needs to understand the technical details of the proposed solution.
the degree of definition of the object, the extent of the physical intervention, and the resulting control requirements
of future execution. Efficient contracting, especially in engineering, does not originate from judging the
proposals, but at the stage where the public authority precisely defines what it wants to contract, where
conditions and with what monitoring instruments.
This perspective is also reinforced by national studies on public works projects, which
They point to the fragmentation between the design, budgeting, and oversight sectors as a factor in
Contractual inefficiency. When these groups operate in a disjointed manner, the chances increase.
quantitative inconsistencies, scope deficiencies, inaccurate estimates, and failures of
monitoring. Thus, contractual governance does not begin with the signing of the agreement, but with the
prior construction of a technical and institutional base capable of supporting the execution of the project.

2.2 Selection criteria, best value and limits of the lowest isolated price

International literature on procurement in construction demonstrates that the choice of the system of
The hiring process and the evaluation criteria directly influence the performance of the project.
The evolution of selection models reveals that the former predominance of classic criteria, such as cost,
deadlines, flexibility and complexity, it was progressively expanded to encompass dimensions such as
value for money, collaboration between agents, institutional capacity, innovation and context
regulatory. This means that the contractual decision cannot be dissociated from the technical profile and
functional aspects of the project.
This finding is especially important in engineering projects, where the
The object's structure, the level of uncertainty, and the interdependence between phases and agents impose requirements.
Distinct from contracting. Simple and sufficiently defined projects allow for contractual solutions.
different from those required by complex, innovative projects or those subject to strong [risk/demand].
unpredictability. Efficient selection, therefore, requires alignment between the hiring process design and the
concrete characteristics of the object.
In the context of evaluating the proposals, the specialized literature highlights the limitations of the formulas.
Traditional approaches are used when seeking to reconcile price and non-monetary criteria. In public contracts of
construction, the attempt to integrate cost, quality, sustainability and performance in models

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Simplified approaches can lead to methodological weaknesses and compromise the consistency of the final ranking. The problem, in this case, is not only mathematical, but also institutional: when the criterion of The judgment does not adequately reflect the logic of the contract; the public decision tends to deviate from it. ideal of real advantage.

From this perspective, the concept of best value acquires increasing theoretical importance. It does not presuppose the abandonment of price, but rather its insertion into a more sophisticated decision-making structure, in which the Cost is considered in conjunction with the quality of the solution, the ability to execute, and performance. expected from the contract. Even so, the persistence of public markets heavily oriented by... The lower price reveals that the transition to more complex criteria depends not only on the standard, but also the institutional capacity to build objective, comparable and verifiable parameters.

In engineering, the challenge lies not in replacing price with qualitative abstractions, but in formulating... criteria compatible with the technical reality of the execution and with the means of control available to Administration.

2.3 Implementation regimes, risk allocation and contracting modeling

Contemporary engineering contracting practices recognize that the execution regime does not It is a neutral choice, but a decisive variable in the distribution of risks and responsibilities. regimes foreseen in Law No. 14.133/2021, such as unit price contracting, price contracting global, integrated contracting and semi-integrated contracting produce distinct effects on measurements, payments, responsibility for quantities, requirement for prior definition of the object and The intensity of administrative oversight. The choice of regime, therefore, directly affects... Contract stability and the ability to manage its execution.

This definition should be calibrated according to the project's maturity level and predictability. of the quantitative aspects, the technical complexity of the solution, and the expected behavior of the object during the execution. In situations marked by greater field variability, high dependence on local conditions or difficulty in stabilizing quantities beforehand, the adoption of regimes Incompatible with this uncertainty, it tends to generate controversial measurements, frequently requiring... rebalancing and increased potential for litigation. On the other hand, when the object has a broader scope. Defined, more developed project and good executive predictability, regimes that require greater Commitment to global pricing can promote more stable financial control.

This logic aligns with international literature on *procurement system selection.* If not There is no universally adequate criterion for all contracting, nor is there an execution regime that... it can be considered superior in the abstract. The contractual model should reflect the nature of

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undertaking, the desirable distribution of risks, the Administration's capacity for oversight and
the potential degree of innovation incorporated into the solution. Contractual efficiency, in this sense, results
Less about repeating standardized formulas and more about consistency between the chosen regime and the...
Specific engineering of the object.
Risk allocation plays a structuring role in this arrangement. Hiring well means, among other things...
Other aspects include identifying which events could compromise the deadline, cost, and performance.
assigning them to the party best suited to manage them. When the contract distributes risks in a way
Technically inconsistent or legally ambiguous, the tendency is for foreseeable uncertainties to arise.
convert into conflict, paralysis, or inefficiency. Good contract modeling therefore requires,
Simultaneous adherence to law and technique.

2.4 Contract management and oversight as a continuation of the bidding process

A mature understanding of public engineering procurement requires overcoming the idea that the phases
Internal oversight, bidding process, and execution are autonomous stages, separate from each other. Contractual oversight
It is neither a peripheral activity nor merely a subsequent control; it represents the practical continuity of
Bidding modeling. The parameters established in the tender notice and the contract — such as the regime of
execution, measurement criteria, responsibilities of the parties, performance milestones and matrix of
risks — directly condition how the Administration will monitor the subject and react to
occurrences verified during execution.
In this sense, efficient oversight depends less on improvised action and more on the existence of...
of a contractual design capable of producing verifiable information. Physical monitoring-
financial, document verification, project compliance, measurement verification and registration
A systematic approach to gathering relevant facts only becomes effective when the contract has been structured beforehand.
with sufficient technical clarity. The execution phase, therefore, does not by itself correct the deficiencies of
planning; tends to expose them.
Literature and manuals on administrative control converge in indicating that contract management
It must operate under a preventive logic. Instead of treating control as an episodic reaction to
In cases where irregularities have already occurred, good procurement governance seeks to identify risks and
Weaknesses even during the contracting cycle, guiding the Administration's actions in each case.
adjustment phase. In engineering works and services, this prevention is crucial to avoid payments.
improper, poorly justified contractual changes, loss of technical traceability and reduction of
Alignment between the contracted objective and the delivered result.
In theoretical terms, it can be stated that contract management embodies the usefulness of bidding.

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Technically sophisticated selection loses density when execution unfolds without measurement.
adequate, without compliance control and without a timely administrative response to deviations
relevant. Conversely, a well-structured oversight process preserves the link between the tender, the winning proposal,
the expected performance, and the actual delivery of the project. It is in this articulation that
Technical aspects, compliance, and efficiency cease to function as isolated categories and become part of a cohesive whole.
same functional core as public procurement in engineering.

3 Methodology

This is qualitative research, exploratory in nature, with a bibliographic design.
documentary. The choice of this method stems from the objective of the study, which is not to measure performance.
empirical analysis of a specific set of contracts, but also a theoretical understanding of how contracting works.
The public works and engineering services agency coordinates planning, contractor selection, and compliance.
and execution management.

The corpus of analysis was composed of two groups of sources. The first group included documents.
Brazilian normative and institutional frameworks: Law No. 14.133/2021; documents and guidelines from the Court.
Federal Court of Accounts regarding bidding processes, planning of works and engineering services, and regimes of
execution; official material for monitoring contracts for works and engineering services; and texts
national issues regarding the governance of public contracts and the development of projects.
public projects. The second group consisted of international academic literature.
recent, chosen for its direct relevance to the topic: systematic review on selection criteria for
Contracting systems in construction; a study on proposal evaluation through analysis of
Efficiency in public construction contracts; and an article on contractor bid strategy.
in public construction *procurement* .

The selection of sources followed three criteria: thematic relevance, source authority, and capacity.
to contribute to an integrated analysis between bidding and contract execution. In the case of sources
National sources prioritized official documents and scientific literature focusing on planning.
governance, public works, and administrative contracts. In the case of international sources,
Priority was given to papers that discuss *"procurement selection criteria" and "best value for money".*
Robustness in evaluating proposals and bidder behavior.

The interpretation of the material was organized into three analytical axes: a) contracting planning and
a) definition of the object; b) selection criteria, judgment and execution regime; c) management and supervision
contractual. Based on these axes, a comparative interpretative analysis was carried out, with the objective
to identify convergences between Brazilian normative discipline and the theoretical contributions of

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Literature on *procurement* and construction management. The intention was not to construct a model.
It's not about being a mathematician or exhaustively reviewing all the literature in the field, but rather about producing a...
A robust, clear, and applicable theoretical synthesis for academic discussion on public procurement.
engineering.

4. Results and discussion

4.1 Hiring planning as the first dimension of efficiency

The results of the analysis indicate, firstly, that efficiency in engineering tenders
It depends on shifting the focus from the competitive phase to the preparatory phase. The new discipline
Brazilian literature and specialized studies converge in showing that the quality of the competition depends on...
Internal phase. When the Administration defines the object with low precision, it estimates inadequately.
The cost of the contract, or choosing an execution method incompatible with the project, is the result.
It tends to be a formally valid bidding process, but weak from a management standpoint.
This finding is especially relevant in engineering works and services, since the object
Hiring a contractor is rarely simple. Projects may contain incompatibilities, quantities may...
Involving uncertainties, productivity can vary depending on field conditions and decisions.
These seemingly small aspects in the tender notice have repercussions on measurement, rebalancing, and oversight.
In this scenario, planning ceases to be a subordinate preparatory phase and becomes a condition for the...
Efficiency. The TCU, when addressing the planning of contracting for works and engineering services, reinforces
that the Administration must link the intended solution, the technical study, the implementation regime, the
Measurement criteria and value estimation within a coherent logic.
From a theoretical point of view, this means that efficient bidding does not stem from competition itself.
It arises from reducing ambiguity regarding what will be contracted. The greater the ambiguity of
The more difficult it becomes to compare proposals in a technically consistent way, the more likely it is that...
The problem is that the contract is executed with constant tensions between what is stipulated in the tender and reality.
executive. In this sense, planning, technique, and compliance are not opposed: planning
A well-executed technical approach is precisely what allows legal compliance to produce results.
nouns.

4.2 Selection of the contractor and rationality of the judgment

The second relevant piece of evidence is the inadequacy of the lowest price, in isolation, as a paradigm.
An explanation of good hiring practices in engineering. Law No. 14.133/2021 expanded the range of criteria.
and instruments available to the Administration, but the mere normative provision of alternatives does not

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ensures its proper use. International literature helps to clarify this point. The review of
Zhao, Ying, and Tookey demonstrate that *procurement* selection criteria have evolved in a way...
significant and that themes such as value for money, collaboration, contractor capability and
Contextual adaptation has come to occupy a central position. Niewerth, Vogt, and Thewes show that,
Once multiple criteria have been chosen, the aggregation technique used in the judgment becomes...
crucial for the robustness of the decision.

In the Brazilian context, the main lesson is that the debate should not be framed in opposition.
The simplistic approach is to compare price and quality. The real problem lies in defining which attributes matter to the...
The object, how it will be measured, and how it will be reconciled with subsequent control.
In engineering works and services, poorly defined criteria tend to generate excessive subjectivity;
Overly generic criteria may lose traction in enforcement; and relevant criteria,
However, if poorly weighed, they can be neutralized by the predominance of price. In all these cases,
The selection of the contractor becomes more difficult.

The technique of judgment, therefore, needs to be viewed as a matter of administrative engineering.
It requires a match between the complexity of the object, the information available, and the
measurability of the criterion and the capacity for oversight. Whenever the Administration does not have
With objective instruments to later verify what was valued in the tender, the tendency is to return
with price as the dominant variable. The theoretical gain from recent literature lies in demonstrating that
The best value is not an abstract notion, but rather the result of a careful design of...
judgment parameters.

4.3 Implementation regime and risk matrix as a structuring decision

The third finding of the research confirms that defining the implementation regime is not an aspect
It is not a peripheral aspect of the bidding process, but rather one of its structural decisions. The TCU (Brazilian Federal Court of Accounts) emphasizes that each regime
Law No. 14.133/2021 produces distinct effects regarding payment, installment payment of the object, and...
Allocation of risks arising from quantification failures. A comparative analysis with the literature.
International cooperation allows for a broader interpretation: the selection of the contractual arrangement needs to reflect not only
the regime available in the abstract, but also the pattern of uncertainty and control involved in
project.

In projects with greater variability in quantities or a need for executive flexibility, the
Insisting on overly rigid models can transfer a conflict that should be resolved to the execution phase.
This may have been resolved in the bidding process model. On the other hand, projects with a more comprehensive design...
Defined and predictable outcomes can be undermined by contractual choices that dilute...

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excessively burden the contractor's responsibilities or hinder the financial control of the
Administration. Efficiency, therefore, is not an intrinsic property of the regime, but rather of the...
suitability of this to the object.

This conclusion also reinforces the centrality of the risk matrix. Although the legislation and manuals
Although officials already recognize the importance of identifying, distributing, and addressing risks, administrative practice...
This issue is often underestimated. In public engineering, however, misallocated risk reappears.
such as an addendum, technical dispute, delay, or impasse in measurement. Efficient contracting modeling.
It therefore depends on recognizing in advance which events should be absorbed by
Administration, which responsibilities fall to the contractor and which require specific handling mechanisms.

4.4 Monitoring, measurement and performance in the contractual phase

The fourth piece of evidence obtained in the research is that contract management should be understood as a
Logical extension of planning and judgment. The DNOCS inspection manual and the
The guidelines from the TCU (Brazilian Federal Court of Accounts) converge in treating auditing as an organized, documented activity and
technically responsible, focused on monitoring the contractor's performance, of
compliance with the projects, the regularity of measurements, and the prevention of occurrences that
compromise the delivery of the object. From this perspective, contractual efficiency depends both on the selection
Regarding the Administration's capacity to technically support the execution.

This finding is particularly relevant to engineering, since the physical execution of the work or
The service's requirements are not fully covered in the winning proposal. The actual performance of
The contracted outcome results from the interaction between the project, field conditions, supplies, and...
coordination, productivity, and oversight. If the Administration lacks clear criteria for
Measurement, proper record-keeping, and responsiveness to deviations are the advantages gained in...
Bidding processes tend to dissipate during execution. In other words, a well-designed bidding process creates...
Potential for efficiency; competent oversight converts that potential into results.

In theory, this means recognizing measurement and control as governance practices.
Measuring is not just about quantifying services for payment; it's about verifying how well what was done adheres to the model.
contractual, preserve the causality between the generating event and the public expenditure, and prevent asymmetry
Informational data from the construction site captures the administrative decision. Therefore, contractual governance
In engineering, this requires inspectors who are capable of technically interpreting the object and the contractual documentation.
and to produce sufficient records to support legally sound and technically sound decisions.
justified.

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4.5 Persistent challenges: formalism, information and institutional capacity

The analysis also made it possible to identify persistent challenges. The first is defensive formalism.
In many administrative environments, compliance is understood as the multiplication of acts.
opinions and checklists, without a corresponding development of the technical capacity to
To model the object and manage the contract. The result is paradoxical: the documentary repertoire is expanded, but
Substantial weaknesses in design, estimation, and oversight remain. Compliance
It ceases to serve efficiency and begins to function as bureaucratic protection for the agents.
The second challenge is informational. The literature on *"procurement"* and official documents.
They point to the need for data, clear criteria, and comparison mechanisms. However,
The administration still faces difficulties in transforming scattered information into
Useful knowledge for decision-making. In engineering hiring, this affects everything from...
cost estimation, contract performance evaluation, and institutional learning among
similar ventures.
The third challenge is institutional capacity. Successful engineering recruitment depends on qualified personnel.
capable of interpreting the project, the budget, the risk, the execution plan, the measurement, and the performance.
Without this capability, the system tends to oscillate between two equally problematic extremes: rigidity.
Excessive formality or poorly structured discretion. The solution is not to abandon the
compliance, but in qualifying it technically. Ultimately, the efficiency of bidding processes and...
Public engineering contracts are less tied to the abstract sophistication of the legal text and more to...
The ability of public organizations to apply the law with technical intelligence and consistency.
managerial.

Final considerations

This article argued that the management of public contracts and tenders in engineering should be...
understood as an integrated process in which technique, compliance, and efficiency are not opposed,
but they operate in a complementary way. The analysis carried out made it possible to demonstrate that the bidding process for
Engineering works and services are not limited to the formal selection of the winner, as the consistency of
The contractual outcome depends on the quality of the planning, the adequacy of the execution regime, and...
rationality of judgment criteria, risk distribution, and oversight capacity
from the Administration throughout the execution.
In the Brazilian regulatory framework, Law No. 14.133/2021, in dialogue with official documents
Upon examination, it reinforces the centrality of planning, governance, and contract management in the new

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public procurement regime. From a theoretical standpoint, the international literature analyzed shows that
The selection of the hiring model and evaluation criteria should be sensitive to the characteristics of
The project depends on the complexity of the subject matter and the institutional conditions for control. The articulation
Between these two fronts, it can be stated that good public procurement in engineering does not stem from
The focus should not be on fragmented decisions, but rather on the coherence between the bidding process model and the management of its execution.
Two points deserve special mention. The first is that efficiency in public contracts...
Engineering cannot be reduced to simply obtaining the lowest-cost bid at any given time.
of the bidding process. It presupposes alignment between price, quality, feasibility, contractual terms and
The ability to deliver the item. The second is that legal compliance, by itself, does not guarantee...
a good administrative result. Without technical competence, without adequate planning, and without
within the institutional monitoring structure, the procedure may be formally valid and, furthermore,
thus leading to unstable contracts, insufficient oversight, and unsatisfactory performance.
As a limitation, the study did not conduct an empirical examination of specific contracts nor did it promote
A quantitative comparison between enforcement regimes or judgment models. Its nature was
deliberately theoretical and interpretative, aimed at the analytical reconstruction of the relationship between bidding,
Contracting and execution of engineering works and services. This delimitation, however, does not reduce the
usefulness of the central argument; on the contrary, it offers a conceptual basis for investigations.
later.
In this sense, relevant possibilities for future research on judgment models open up.
applicable to engineering works and services, effects of execution regimes on performance
contractual, oversight structure in different public bodies and impacts of risk management
Regarding addendums, delays, and controversies. Still, the fundamental conclusion remains: in
In public engineering, good bidding means structuring the contracting process properly, and contracting
Proper management requires technical expertise throughout the execution process, up to the final delivery of the project.

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