Main benefits of centralised government procurement: an AHP application with Brazilian experts

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Abstract: Public procurement has gained strategic importance within organisations, leading to a growth in centralisation models in contracting. However, the effects of these models are still discussed and evaluated to a limited extent by administrations. The objective of this study is to hierarchies the benefits of centralising public procurement, contributing to the design and implementation of this model in different contexts. Based on a literature review, the main benefits of centralised procurement were grouped into three thematic axes: 1) economy; 2) innovation; 3) sustainability. Afterwards, a group of 22 experts ranked the benefits using the analytic hierarchy process (AHP). The findings demonstrated a strong alignment between theoretical predictions and the insights provided by the consulted experts. Overall, the centralisation of procurement was identified as a key driver of enhanced governance, fostering an environment conducive to innovation. This, in turn, contributed to improved economic efficiency and sustainability outcomes.

Keywords: shared purchasing; public contracts; bids; Brazil.

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1 Introduction

Public procurement plays a strategic role in the implementation of public policies and in the organisation of the supply chain within governmental institutions. Currently, public administrations are exploring alternative approaches to achieve more efficient and expedited outcomes in delivering services to the population, based on data from the Institute of Applied Economic Research (IPEA, 2020).

The benefits related to centralised purchasing have been addressed from various thematic perspectives. The three most recurrent themes are:

1 innovation

2 sustainability

3 economy, which can be achieved through the implementation of centralised public procurement models.

In relation to the axes of innovation and economics, Costa and Terra (2019) argued that the effectiveness of centralised purchasing lies in the balance between collaborative practices and the utilisation of innovative or technological tools. The authors suggest that managers should assess the volume of purchases, aiming for the intelligent allocation of resources, and subsequently opt for centralising the procurement processes rather than managing them individually. Regarding to sustainability, Fenili (2016) highlights the relevance of centralised management decisions in inducing sustainable economic development.

According to Santos and Fernandes (2022), the degree of organisational maturity in Brazil is insufficient, as evidenced by the economy brought about by the advancement of centralisation in the country's public administration. Furthermore, Lopes and Santos (2022) highlighted the lack of investigations into the strategic use of centralised purchasing in Brazil. Therefore, the objective of this study is to analyse the main benefits achieved with purchasing centralisation in the Brazilian context, contributing information to the design and implementation of a more effective centralisation model.

2 Materials and methods

Based on a systematic literature review (SLR), the benefits of centralising purchases in public institutions were identified. These benefits informed the creation of a questionnaire, which enabled a group of Brazilian experts to assess their degree of importance. With the experts' responses, the benefits were prioritised using the analytic hierarchy process (AHP).

2.1 Systematic literature review

The SLR took place between September 24 and October 3, 2022, with only peer-reviewed articles available on the Journal Portal of the Coordination for the Improvement of Higher Education Personnel (CAPES) and on the Scopus database. The keywords for the search for articles were 'centralised public procurement', 'centralised public procurement', 'shared', 'advantages', 'sustainability', delimiting publications that occurred in the last ten years, in the period from January 2012 to October 2022.

Table 1 Benefits of centralised public purchasing for the application of AHP

Axis	*Id*	*Benefits*	*Id*	*Authors*
Economicity	Ec	The standardisation of procedures optimises processes and improves phase supervision.	Ec1	Petersen et al. (2022), Reis and Cabral (2018), Wang et al. (2019)
		Rationalising efforts reduces administrative costs and mitigates the risk of waste.	Ec2	Reis and Cabral (2018), Pappano (2019)
		Gains in scale and price reductions occur due to concentrated purchasing volumes.	Ec3	Doroshenko et al. (2019), Soares et al. (2019), Abrahim and Tarekegn (2020)
		Integrated demand planning promotes alignment of purchases with the budget process.	Ec4	Dlakuseni et al. (2018), Soares et al. (2019)
		Professionals specialised in the centralising unit promote gains in operational capacity.	Ec5	Paes et al. (2019), Holma et al. (2020).
Innovation	In	Efficiency increases with the use of electronic tools in processing centralised purchases.	In1	Pappano (2019), Soares et al. (2019)
		The ability of management to interact with the market leads to improvements in planning and negotiation.	In2	Dlakuseni et al. (2018), Sönnichsen and Clement (2020), Stritch et al. (2020)
		The sharing and coordination of knowledge, resources, and strategies is facilitated by innovative tools.	In3	Reis and Cabral (2018), Pappano (2019), Demircioglu and Vivona (2021), Sattari et al. (2022)
		The decision-making model is improved by the use of a large volume of data and management information.	In4	Soares et al. (2018), Sönnichsen and Clement (2020), Stritch et al. (2020)
		The use of integrated technologies increases transparency and prevents corruption.	In5	Stritch, et al. (2020), Demircioglu and Vivona (2021), Morley (2021)
Sustainability	St	The effectiveness of sustainable logistics plans (PLS) increases through standardisation and centralised studies.	St1	Lundberg and Marklund (2018), Soares et al. (2019), Stritch et al. (2020), Petersen et al. (2022)
		Centralised strategies can encourage the participation of ME and EPP even in concentrated purchasing volumes.	St2	Stritch et al. (2020), Petersen et al. (2022)
		Maturity in the governance of centralised procurement can result in more sustainable public purchases.	St3	Aboelazm and Afandy (2019), Demircioglu and Vivona (2021)
		Local business opportunities can be expanded through centralised interaction with suppliers.	St4	Soares et al. (2018), Wang et al. (2019), Morley (2021); Berg et al. (2022)
		Centralised studies can improve analyses of sustainability dimensions.	St5	Guarnieri and Gomes (2019), Stritch et al. (2020)

The initial bibliographic survey resulted in 531 articles, excluding repeated works and those with titles and abstracts not related to the topic. Articles that were not freely available were also excluded from the bibliographic portfolio, resulting in a total of 35 articles. Then, content analysis was applied to the articles through observation and understanding of their textual elements (Flick, 2009). This stage consisted of interpretative activity and enabled the synthesis of the benefits of shared purchases into three thematic axes:

1 economicity

2 innovation

3 sustainability (Table 1).

In the thematic axis of sustainability, the most cited benefits address the regional development of suppliers and sustainable government actions, supported by the triad: lower environmental impact, lower waste generation, and lower consumption of natural resources (Storbjörk and Stenius, 2019; Petersen et al., 2022). On the economic axis, strategies stand out to achieve economies of scale and, consequently, a series of benefits resulting from the greater volume traded (Petersen et al., 2022). In the innovation axis, Soares et al. (2019) highlight the relevance of technological instruments in carrying out public contracts, which can be perceived under different aspects and nuances, contributing to gains in economy and sustainability.

2.2 Specialist choice

The population of eligible specialists to participate in the study was 98 individuals. It is a heterogeneous group, formed through the initiative of the National School of Public Administration (ENAP), with the objective of exchanging experiences on centralised purchasing in Brazil. All the subjects have provided appropriate informed consent and details on how data was obtained.

Lopes and Santos (2022) and Saaty and Vargas (2001) emphasise the importance of decision-makers' experience and knowledge on the subject in research involving specialists. In this context, a minimum profile was determined for the composition of the sample. The respondent was required to have experience or studies focused on the centralisation of public procurement. In other words, participants who reported having little knowledge in the area, both theoretically and practically, were excluded.

Of the population of 98 specialists, 30 returned the answered questionnaire. Among those who responded, only 22 reported having experience or studying the area of centralised public procurement, which qualified them to be part of the judging group. In addition, the investigation verified the age group, level of education, experience, connection, and sphere of action within the public administration, locality, and role within the public procurement process. This information served to identify the profile of the consulted specialists.

2.3 Analytic hierarchy process

The analytical hierarchy process (AHP) is a multi-criteria decision-making tool that has been utilised in numerous applications across various fields, such as economics, politics,

and engineering. The AHP method enables experts to determine the priority level of a given criterion compared to each additional criterion.

Table 2 Questions for ordering the benefits and thematic axes in the questionnaire

A) In each thematic axis, order the BENEFITS of centralised purchasing according to the degree of importance, from lowest (1) to highest (5).
Axis: Economicity
The standardisation of procedures optimises processes and improves phase supervision (Ec1).
Rationalising efforts reduces administrative costs and mitigates risks of waste (Ec2).
Gains in scale and price reductions occur due to concentrated purchasing volumes (Ec3).
Integrated demand planning promotes alignment of purchases with the budget process (Ec4).
Professionals specialised in the centralising unit promote gains in operational capacity (Ec5).
Axis: Innovation
Efficiency increases with the use of electronic tools in processing centralised purchases (In1).
Management's ability to interact with the market leads to improvements in planning and negotiation (In2).
The sharing and coordination of knowledge, resources, and strategies are facilitated by innovative tools (In3).
The decision-making model is improved using a large volume of data and management information (In4).
The use of integrated technologies increases transparency and prevents corruption (In5).
Axis: Sustainability
The effectiveness of sustainable logistics plans (PLS) increases through standardisation and centralised studies (St1).
Centralised strategies can encourage the participation of ME and EPP even in concentrated purchasing volumes (St2).
Maturity in the governance of centralised procurement can result in more sustainable public purchases (St3).
Local business opportunities can be expanded through centralised interaction with suppliers (St4).
Centralised studies can improve analyses of sustainability dimensions (St5).
B) Order the axes according to their degree of importance, from the smallest (1) to the largest (5).
Innovation (In).
Economicity (Ec)
Sustainability (St)

Despite its wide applicability, the AHP method has some disadvantages, primarily occurring in cases where the number of criteria for expert judgement is large. In such instances, the decision relies on numerous comparisons, which makes it challenging for decision-makers to choose the option that accurately represents their preference. To minimise this disadvantage, the AHP method was applied to determine the weight of two

groups of criteria in different matrices. The first determined the weight of each thematic axis (economy, innovation, and sustainability), and the second determined the weight of each benefit in their respective thematic axes.

To facilitate the experts' judgement, this process occurred through two ranking questions (Table 2). The respondent ordered the criteria according to their importance, assigning a value of 1 to the least important alternative compared to the others, increasing the value by one unit as the alternative advanced in the ranking. As there are three thematic axes and five benefits per axis, the values ranged from 1 to 3 for the axes and from 1 to 5 for the benefits. The coded data can be found in Appendix Table A1.

The pairwise comparison between the axes and the benefits was based on the difference between the values assigned to each pair of criteria. The greater (smaller) this difference, the greater (smaller) the favourability of one criterion over the other. The difference values were framed on the numerical scale of Saaty (1994), according to the order of magnitude presented in Table 3, thus allowing the application of the AHP.

The application of the AHP begins with organising comparisons between the criteria in an evaluation matrix. According to Saaty's numerical scale (1994), if element Ci in the row is equally important to element Cj in the column, the value Cij assigned to this pair must be 1. Consequently, if Ci is more important than element Cj, a value from 3 to 9 must be chosen, and if it is less important than Cj, a number inverse to the values 3 to 9 must be chosen, such as 1/3, 1/5, 1/7, or 1/9 (Figure 1).

Table 3 Framing of data according to the Saaty (1994) scale

Difference for each pair of criteria	*Saaty scale (1994)*	*Explanation*
1	3	Experience and judgement slightly favour one criterion over the other.
2	5	Experience and judgement strongly favour one criterion over the other.
3	7	One criterion is strongly favoured over the other, and its dominance of importance is demonstrated in practice.
4	9	The evidence favours one criterion over the other with the highest degree of certainty.

Figure 1 Example matrix of pairwise comparisons between criteria (C)

	C1	C2
C1	1	Cij
C2	1 / Cji	1

In AHP, all elements are positive, and those positioned to the left of the main diagonal are inversely proportional when compared to elements on the right, a principle classified by Saaty (1994) as an axiom of reciprocity. To preserve this reciprocity, when the evaluation involves two or more decision makers, Saaty (1994) recommends that the responses be represented by the geometric mean of the Cij values. Therefore, using equation (1), the aggregated values of Cij were obtained for each comparison pair from the responses of the 22 experts consulted.

$$\left(\prod_{k=1}^{n} Cij\right)^{1/n} = \sqrt[n]{Cij1 * Cij2 * ... * Cijn} \quad (1)$$

What:

Cij expert judgement for each pair of criteria

n number of experts.

The weight (W) of each criterion is calculated using equation (2). The value of W determines the degree of importance of each criterion relative to the others. The weight of each thematic axis and each benefit was calculated. The importance of benefits was assessed by multiplying their weight by the weight of their respective thematic axis, thus obtaining the Priority (P) value. Ultimately, the P values were hierarchically arranged to facilitate the analysis of the results.

$$WC = \frac{\sum_{j=1}^{n} Cij}{\sum_{i=1}^{n}\sum_{j=1}^{n} Cij} \quad (2)$$

What:

WC criterion weight

n number of criteria at the same hierarchical level.

In AHP, the consistency of results can be assessed by calculating the Consistency Ratio (CR) of the responses. The CR calculation is based on the premise of transitivity between the criteria, meaning that if the first criterion is greater than the second, and the second is greater than a third, then the first criterion must be greater than the third, otherwise it indicates inconsistency in the decision.

Table 4 Random consistency index (RI)

Matrix sequence	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
RI	0	0	0.58	09	1.12	1.24	1.32	1.41	1.45	1.49

Source: Saaty and Vargas (2001)

Equation (3) represents the CR calculation. Saaty and Vargas (2001) indicated the division between the consistency index (CI) and the random consistency index (RI). The CI is given by the equation CI = (λmáx − m) / (m −1), where 'n' is the number of criteria and λmáx is the largest eigenvalue (weight) of the judgement matrix (Morita, 2023). The RI is available according to the order of the matrix, following the values suggested in Table 4. According to Saaty and Vargas (2001), the maximum tolerable value for the CR is up to 10%.

$$CR = \frac{CI}{RI} \quad (3)$$

What:

CR consistency ratio

CI consistency index

RI random consistency index.

3 Results and discussion

3.1 Sample profile

Among the respondents, it was observed that 59% were in the age group between 36 and 50 years old, with a majority having postgraduate education (81%). Most experts have experience in or have studied the topic of centralised purchasing for at least ten years (36%), with 32% of them reporting experience between five and ten years, and the remaining reporting experience of up to 5 years. Thus, the premise of the multi-criteria decision support method was fulfilled; that is, the selection of experts with a high degree of knowledge and practical experience in the addressed subject.

The experts in the sample work at the federal and state levels of government. Seventeen works in direct public administration (composed of bodies directly linked to the federation's entities), and five work in indirect public administration (composed of decentralised and autonomous bodies, but subject to state control), carrying out public servant activities, with or without a statutory contract. No outsourced workers or specialists from the municipal sphere were identified.

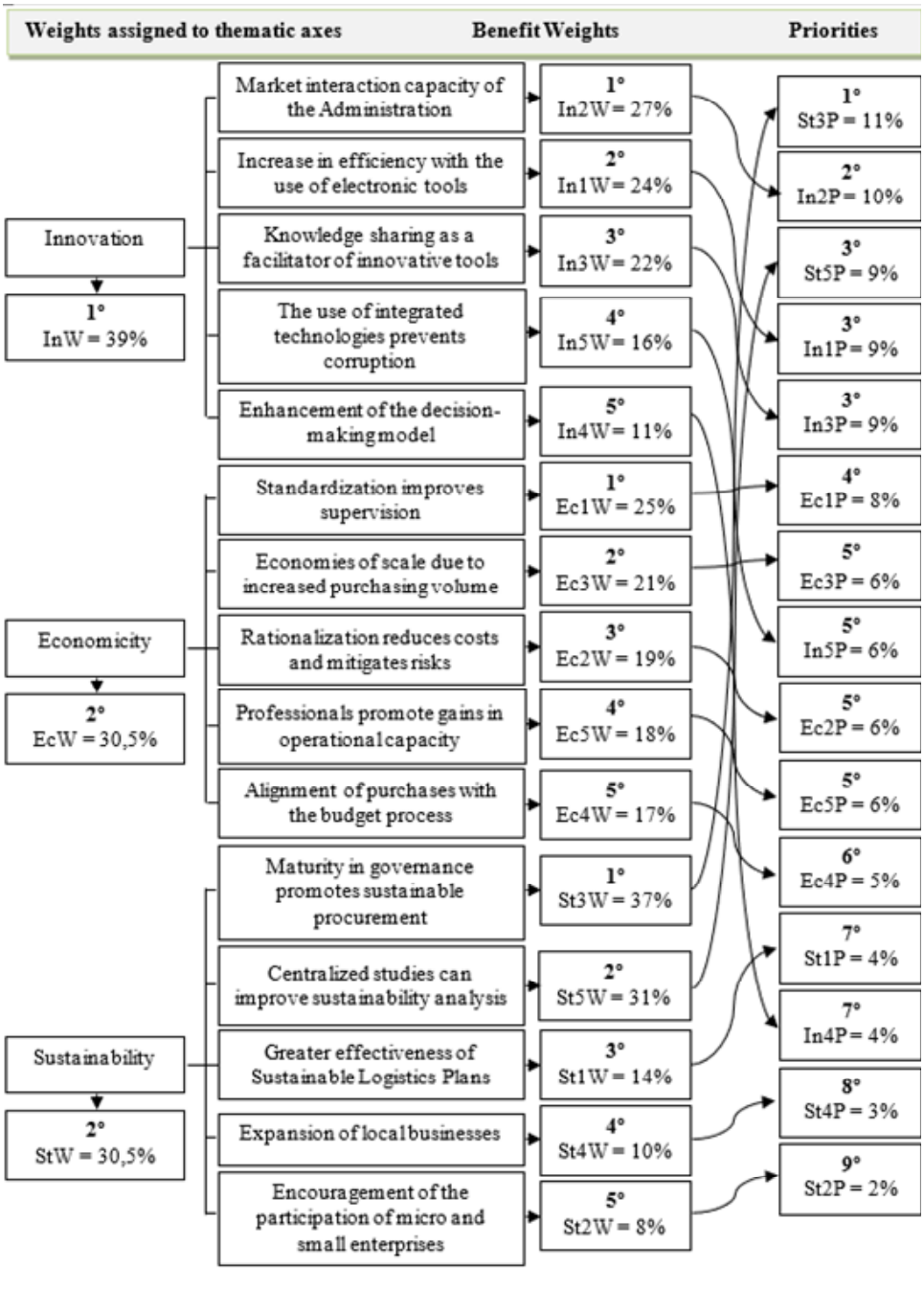
Nineteen respondents declared that they work in institutions linked to the Executive branch. Fifteen are based in the city of Brasília, three in Rio de Janeiro, one in Aracaju, and one in Manaus. Regarding the roles, the profile was quite heterogeneous, with six specialists in hiring planning, five in senior management, five in supplier selection, three in institution control or audit, and another three in various activities. Therefore, it is expected that reaching a consensus among experts will be difficult, given the diversity of their work.

3.2 Hierarchisation of centralised purchasing benefits

The hierarchy of the benefits of centralised purchasing is depicted in Figure 2. The weight values of each thematic axis and each benefit, as well as the product between them – known as the Priority value – are presented in Figure 2. The results do not show any consistency problems; all RC values reached are lower than 0.5%, well below the maximum level of 10% admitted by Saaty and Vargas (2001).

In the experts' view, innovation had the greatest impact in relation to the other thematic axes; its weight value was 39%, almost 10% higher than the values calculated for the economic and sustainability axes. The greater weight of the innovation axis is related to the perception that it is a determining dimension for the success of actions in the other two axes (Reis and Cabral, 2018; Pappano, 2019; Demircioglu and Vivona, 2021). Thus, gains in sustainability and, mainly, in economy are related to innovations in centralised public purchasing processes.

Figure 2 Example matrix of pairwise comparisons between criteria (C)



The relationship between innovation and economics is widely covered in the literature. References cite successful cases in Chile, the USA, the UK, and European Union countries (Wang et al., 2019; IPEA, 2020; Stritch et al., 2020). In addition to OECD countries, the advantages of using e-procurement tools stand out (Dlakuseni et al., 2018),

especially in the COVID-19 era with its social distancing measures (Ahmad and Dhoon, 2024), or the e-marketplace adopted in countries such as Egypt, Ethiopia, and Indonesia (Storbjörk and Stenius, 2019). These authors argue that government partnerships between purchasing centres and the utilisation of private companies' websites are positive for meeting common demands. In an analysis of 3,755 purchasing processes, Reis and Cabral (2018) highlighted significant innovative actions that expedited processes and secured more advantageous prices for Brazilian public authorities.

To innovate in e-procurement, Yamusa et al. (2024) automated a system capturing the entire public procurement lifecycle including a machine learning component. In the same research line, Abdullahi et al. (2024) employed machine learning algorithms to automate the process of classification of tender titles/descriptions into categories based on United Nations Standard Product and Service Code (UNSPSC).

The first four most important benefits, represented by six of the 15 variables, accounted for 56% of the total Priority value. In other words, approximately one-third of the benefits encompassed more than half of the importance of all variables. Among the four most important benefits, two were highlighted from the sustainability axis (St3 and St5), three from innovation (In2, In1, and In3), and one from economy (Ec1), all of which were classified as the most important in their respective thematic axes (Figure 2).

The most important benefit was St3. This variable indicates that the maturity in governance promoted by centralised hiring is decisive for achieving institutional sustainability. The importance of governance for achieving sustainability is corroborated by Lundberg and Marklund (2018), as governance defines the long-term strategic objectives of institutions. Without it, actions tend to seek short-term results, limiting sustainability gains to their full extent (Pacheco et al., 2022).

Sönnichsen and Clement (2020), on the other hand, argue that the incorporation of sustainability increases the level of governance maturity in public institutions. To Pacheco et al. (2022), the relationship between governance and sustainability is reciprocal, where governance promotes sustainability and vice versa.

According to Porta et al. (2022) procurement governance should adhere to the following guidelines: regionalisation in the centralisation of purchases; decentralisation of lower value purchases and centralisation in the contracting of complexes objects, as engineering public services. The first guideline aims to enable small regional suppliers to serve multiple units, promoting economies of scale. This approach seeks to achieve cost savings, ensure broad competition and stimulate regional markets. The second guideline forgoes some economies of scale but maintains other advantages. When dealing with lower value purchases, the authors conclude that the economic impact is minimal while efficiency can be significantly improved. The final guideline focuses on the specialisation of complex and high-value service contracts, allowing more economies of scale through processes managed by highly specialised technical teams.

The second most important benefit was In2, which suggests that innovations in the administration's ability to interact with the market lead to improvements in planning and negotiation. This result is consistent with the findings of Aboelazm and Afandy (2019) and Abrahim and Tarekegn (2020), who indicate that in shared purchases, communication between suppliers and public agents can lead to an increase in the State's bargaining power, underscoring the significance of employing innovative tools for this interaction. Similarly, Abrahim and Tarekegn (2020) noted that innovative instruments

contribute to standardising goods and services, promoting purchasing synergies, and enabling adaptation to local requirements.

Three benefits were tied for the third priority position, two from the innovation axis (In1 and In3) and one from the sustainability axis (St5). The In1 benefit refers to increased efficiency in the centralised purchasing process due to the use of electronic tools. This possibility is confirmed by Pappano (2019) and Soares et al. (2019), indicating a reduction in procedural steps, combined with a decrease in operational inconsistencies, and consequently, obtaining better results. The aforementioned authors argue that procedural tools influence state functioning, as they are linked to substantial activities for the delivery of public services and goods. The use of technology improves the workflow, despite barriers such as changes in legislation and lack of team training (Soares et al., 2018; Demircioglu and Vivona, 2021; Morley, 2021).

The In3 benefit, which addresses the role of innovative tools in sharing knowledge, resources, and strategies, expands the range of innovative possibilities in shared purchasing management, now including advances in the area of information management. This benefit is confirmed by Dlakuseni et al. (2018). According to the authors, information and communication technology tools improve tracking, monitoring, and control activities, thereby reducing the potential for inappropriate corrupt behaviours.

Although public procurement often lacks strategic sophistication, procurement officials are engaging with transparency and governance tools designed to incorporate multi-stakeholder participation and dialog (Sattari et al., 2022). For those authors, in certain instances, this resulted in the development of new procurement policies, guidelines, and control documents, which were incorporated into their supplier code of conduct and, more broadly, into their supply chain management strategies.

The St5 variable measures the importance of centralised studies for analysing sustainability dimensions. It is common for institutions, both public and private, to have or carry out some sustainability initiatives, but often in an isolated and non-systematic manner. The positioning of St5 demonstrates the experts' concern with implementing effective actions rather than engaging in greenwashing. Furthermore, experts understand that sustainability initiatives require support from senior management, as well as broad communication and engagement from all employees of the institution (Bravi et al., 2020).

Compared to the other axes, especially sustainability, there was less variability in the experts' perception of the benefits of the economic axis. Consequently, the benefits of the economic axis were positioned in the middle of the hierarchy of priorities (Figure 2).

The Ec1 benefit, ranked as the most important in the economic axis, corresponds to the standardisation of procedures as a way of optimising processes and improving supervision of the contracting phases. Secondly, benefit Ec3 indicates that gains in scale and price reductions are benefits arising from the volume of concentrated purchases. These benefits are widely corroborated by the literature, even though the economic impacts generated in the relationship between the market and the State are not necessarily immediate (Neuenfeld et al., 2018; Reis and Cabral, 2018).

The Ec2 benefit refers to the rationalisation of efforts, which reduces administrative costs and mitigates the risk of waste. According to Soares et al. (2018), achieving economy does not necessarily compromise quality, nor does it entail rejecting broad competitiveness. Neuenfeld et al. (2018) corroborate this statement, as they understand that by consolidating demands and optimising the quality/price ratio, administrative costs are reduced.

Still within the economic axis is the benefit Ec5, which suggests efficiency gains due to the increased presence of specialised professionals resulting from the centralisation of purchases. This benefit was addressed by Baldus and Hatton (2020) and Sturmer et al. (2022) when they pointed out operational improvements in the so-called 'collaborative governance.' According to these authors, the challenge is to encourage the engagement of agents involved in centralised purchasing, in addition to implementing cogent standards.

In a similar view, Porta et al. (2022) present solutions for the specialisation of public officials in managing procurement processes, in the so-called: smart contracts. Their study addresses practices related to the centralisation of procurement but also identifies several challenges: insufficient technical expertise among procurement teams, a shortage of staff, and, lastly, non-integrated systems. The latter poses a challenge for forming centralised procurement teams, as it can disrupt other activities if there is a lack of synergy among team members, as well as the ongoing effort to prevent data entry errors.

The Ec4 benefit, related to better budget control due to integrated purchasing planning, is corroborated by Storbjörk and Stenius (2019) and Paes et al. (2019). According to these authors, the management challenge of dealing with budgetary limitations and the risks of resource constraints can be mitigated with the adoption of joint purchases. Libório et al. (2023) results show price reduction in public procurement by paying contracts on time, as well as micro and small companies increase their participation in auctions by 30%.

Among the less important benefits, three (3) from the sustainability axis stood out: St1, St4, and St2. The explanation for St1, which suggests the promotion of sustainable logistics plans (PLS) with the centralisation of purchases, may be related to the fact that these plans, in general, focus on economy, prioritising actions to rationalise expenses and reduce costs and waste, but with little emphasis on social issues (Brasil, 2012). Furthermore, Soares et al. (2019) pointed out that the PLS lacks normative evolution in Brazil, as many public managers have difficulty drafting, internalising, and applying its guidelines.

Hafsa et al. (2021) reinforce that governments decisions can affect social outcomes through either socially responsible production or socially responsible purchasing. While focusing on products and services acquired by the government (both directly and indirectly), rather than prioritise produces from the local suppliers. The authors argue that social public purchasing can enhance overall social benefits to influence social outcomes. In this way, the public procurement aims to meet broader social goals beyond price and quality, including supporting disadvantaged communities through social purchasing policies and opportunities for strategic use of public procurement by governments.

As for St4 and St2, which relate to the centralisation of public purchasing as a driver of local development (St4) and small and micro businesses (St2), experts may have been sceptical about the extent to which these benefits can be achieved. A harmful consequence considered in the centralisation of purchasing occurs during the supplier selection stage. Local companies, especially smaller ones, are unable to compete with large national suppliers due to their inability to reach the desired scale and/or their presentation of higher prices. To solve these problems, Sikombe (2023) study concentrates on public buyers' regulatory compliance and implementation of secondary goals such as SME-oriented policies (Small and Medium-sized Enterprises).

As regards the development of the centralised interaction with suppliers, Berg et al. (2022) point that the quality of expert support and structuring of the work could be

improved by having more concrete tools for sustainable public procurement management. The authors also point that the versatility, dynamics and available resources of procuring organisations should be the basis when seeking to promote more extensive exchange of experiences. Yet, they should offer reliable sources of knowledge and ensure that the leaders of the organisation are onboard in the development process.

In the supplier selection stage, there are often risks of the emergence of purchasing cartels, monopolies and episodes of corruption (Stritch et al., 2020; Morley, 2021; Petersen et al., 2022). Research by Atkinson et al. (2023) shows that competitive contracting by the US federal government is more an ideal than actual practice. According to Aboelazm and Afandy (2019) and Leiva et al. (2020), the participation rate of micro and small companies in large tenders is an international challenge, given the difficulty of competing with large suppliers.

4 Conclusions

The implementation of the centralisation of public purchasing has several benefits, proven by various empirical evidence worldwide, including in underdeveloped countries. However, in Brazil, its implementation is precarious and has room for improvement. To address this, the objective of this research is to analyse the main benefits that can be achieved with the centralisation of purchasing in Brazil.

The data were obtained from a group of experts with high experience and knowledge in centralised purchasing in Brazil. The experts unanimously pointed out that the main benefits of centralisation in public procurement arise from process innovations. The understanding is that the centralisation of purchasing promotes professionalism and improved management. This creates a favourable environment for innovation, and any technological advance, given the large volume traded, can lead to a major impact on the other two axes: economics and sustainability.

For the experts consulted, the importance of the sustainability axis was equal to that of economics, but the variability in judging the benefits that represent sustainability was much greater. In the sustainability axis, two benefits stood out (St3 and St5), representing 68% of the total importance, while in the economic axis, the distribution of importance between the benefits was more balanced.

In general, it is expected that all the benefits highlighted in the economics axis will result in some gain in efficiency. In the sustainability dimension, three benefits may have been perceived as debatable (St1, St4, and St2). The reason may be related to the specificity and difficulty of implementing PLS, even in centralised purchasing models. The other two benefits, St4 and St2, concern the promotion of local and more competitive markets with the centralisation of public purchases; however, practice has shown contradictory evidence on these issues.

This study has contributed to exploring new approaches to centralisation and emphasised the need for reflection on decision-making processes for implementing models in federal agencies and expanding centralised procurement in various contexts.

The literature offers numerous possibilities for future research, including a deeper analysis of alternative evaluation criteria – both quantitative and qualitative – to involve a broader range of experts. This study also aimed to enhance understanding of centralised public procurement, supporting public institutions in making more informed decisions

and promoting the adoption of centralisation to advance strategic and socio-economic objectives.

The adoption of centralised purchasing models encourages the professionalisation of the institution's governance, resulting in possible benefits. Regarding sustainability benefits, these will only be fully achieved if governance incorporates long-term strategies and is not restricted only to actions aimed at short-term economics. Improving governance also favours the creation of an innovative environment, but it is not enough to just have professional governance; it is necessary to build a collective mentality in the team that promotes the search for new ideas, methodologies, technologies, business models, processes, products, services, among others.

About research limitations, the use of questionnaire as a data collection method presents limitations that may undermine the reliability and validity of the research outcomes. Criteria for selecting interview participants could introduce selection bias, particularly if the participants are primarily or advanced experienced in Public Procurement. Additionally, the researcher's involvement with the composition of the main axes could introduce observer bias. The vary articles in English and Portuguese languages might have introduced cultural nuances and government structural differences. The limited publications and specificity of the topic also present challenges. Moreover, the limited number of participants constrains the generalisability of the findings.

Future research should address gaps in empirical experiences with centralised procurement and corresponding public socio-environmental performance strategies. Challenges include a lack of information among public officials and inconsistent case documentation.

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Appendix

Table A1 Database

Sample	*Questions*								
	In1	*In2*	*In3*	*In4*	*In5*	*Ec1*	*Ec2*	*Ec3*	*Ec4*
1	5	3	2	1	4	2	4	5	1
2	1	3	5	4	2	2	4	3	1
3	2	5	4	3	1	3	2	1	5
4	2	3	5	4	1	2	4	3	1
5	3	4	5	2	1	4	3	5	1
6	5	2	3	1	4	5	1	4	2
7	3	1	5	2	4	3	2	5	1
8	4	5	2	1	3	5	4	3	2
9	4	2	3	1	5	4	2	5	3
10	4	5	1	2	3	3	4	5	2
11	1	3	5	4	2	4	2	3	5
12	3	5	1	4	2	2	1	3	4
13	4	5	3	1	2	2	3	5	1
14	5	1	2	3	4	3	5	1	4
15	3	4	1	2	5	5	4	1	3
16	5	4	2	1	3	4	2	5	3
17	2	5	4	1	3	4	3	1	5
18	5	3	2	1	4	5	4	2	3
19	2	4	5	1	3	3	4	1	2
20	5	4	2	1	3	4	2	1	5
21	2	4	5	3	1	1	3	5	2
22	3	2	4	5	1	3	2	1	5

Table A1 Database (continued)

Sample	*Questions*								
	Ec5	*St1*	*St2*	*St3*	*St4*	*St5*	*St*	*In*	*Ec*
1	3	3	2	4	1	5	3	2	1
2	5	3	2	5	1	4	3	1	2
3	4	1	2	5	3	4	2	1	3
4	5	3	2	5	1	4	3	1	2
5	2	1	3	4	2	5	1	3	2
6	3	2	3	5	1	4	3	1	2
7	4	3	1	4	2	5	3	1	2
8	1	5	1	2	3	4	1	3	2
9	1	1	3	5	2	4	2	1	3
10	1	3	4	2	1	5	1	2	3
11	1	3	1	5	4	2	1	3	2
12	5	5	1	3	2	4	2	3	1
13	4	2	3	4	1	5	1	3	2
14	2	3	1	5	2	4	1	3	2
15	2	3	4	5	2	1	1	2	3
16	1	1	2	3	5	4	1	3	2
17	2	2	1	5	4	3	3	1	2
18	1	4	1	5	3	2	2	3	1
19	5	1	2	5	3	4	2	3	1
20	3	4	1	3	2	5	2	3	1
21	4	4	1	3	2	5	3	2	1
22	4	4	1	5	2	3	1	3	2