


Public procurement to confront COVID-19: an analysis based on the contingency theory

Compras públicas para enfrentamento da Covid-19: uma análise sob a lente da teoria contingencial

Contratación pública para hacer frente al Covid-19: un análisis desde la lente de la teoría de la contingencia


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Abstract

This study analyzes the characteristics of public acquisitions by exemption from bidding to face COVID-19 from the perspective of Contingency Theory. By assuming that the uncertainties related to the external environment alter the dynamics of acquisitions, expenditures committed to the federal government during the entire fiscal year 2020 were analyzed. The compiled data compare the characteristics of the bidding exemptions applied under the traditional protection of Law 8,666/1993 to those that originated from Law 13,979/2020, specific to face the pandemic. The study used descriptive analyzes, Chi-Square test, to verify the association between the characteristics and created perceptual maps with the aid of Multiple Correspondence Analysis. The results show that, despite the difference among the institutional objectives of each body, there is a harmony in the application of resources when the theme is COVID-19. The cost of procurements related to COVID-19 is high due to the loosening of limits by Law 13,979/2020, showing that the uncertainties of the external environment are essential to modify the guidelines of the institutions and align their objectives.

Keywords: COVID-19; Contingency Theory; Budgetary and Bid Classifications; Public Procurement

Resumo

A partir da teoria contingencial, este estudo analisa as características das aquisições públicas por dispensa de licitação para enfrentar a Covid-19. Assumindo que as incertezas relacionadas ao ambiente externo alteram a dinâmica das aquisições, abordaram-se as despesas empenhadas no Governo Federal durante 2020. Os dados compilados permitiram comparar as características das dispensas de licitação realizadas sob amparo da Lei 8.666/1993 e aquelas originadas da Lei 13.979/2020, específica para combater a pandemia. Utilizaram-se análises descritivas e teste chi-quadrado para verificar a associação entre as características e criar mapas perceptuais mediante análise de correspondência múltipla. Os resultados demonstram que, apesar da diferença entre os objetivos institucionais de cada órgão, há sintonia na aplicação dos recursos em relação à Covid-19. O custo dessas aquisições é elevado em razão do afrouxamento de limites gerado pela Lei 13.979/2020, denotando que as incertezas do ambiente externo são fundamentais para modificar pautas e alinhar os objetivos das instituições.

Palavras-chave: COVID-19; Teoria Contingencial; Classificações Orçamentárias e Licitatórias; Aquisições Públicas

Resumen

El estudio analiza las características de las adquisiciones públicas por exención de licitación para enfrentar el Covid-19 desde la perspectiva de la Teoría de Contingencias. Suponiendo que las incertidumbres relacionadas con el entorno externo alteran la dinámica de adquisiciones, se analizaron los gastos comprometidos con el gobierno federal durante todo el año fiscal 2020. Los datos recopilados comparan las características de las exenciones de licitación realizadas al amparo de la tradicional protección de la Ley 8.666/1993 a las que se originaron en la Ley 13.979/2020, específica para combatir la pandemia. La investigación utiliza análisis descriptivos, prueba de Chi-Cuadrado, para verificar la asociación entre las características y mapas perceptivos creados a través del Análisis de Correspondencia Múltiple. Los resultados demuestran que, a pesar de la diferencia entre los objetivos institucionales de cada organismo, existe una armonía en la aplicación de los recursos cuando el tema es Covid-19. El costo de adquisiciones relacionadas con Covid-19 es alto, debido a la flexibilización de límites por la Ley 13.979/2020, mostrando que las incertidumbres del entorno externo son fundamentales para modificar los lineamientos de las instituciones y alinear sus objetivos.

Palabras clave: COVID-19; Teoría de la Contingencia; Clasificaciones Presupuestarias y de Licitaciones; La Contratación Pública

1 Introduction

In recent years, the performance of the public sector has gained relevance due to its ability to provide services with public resources in an efficient and effective way, which concerns both those who formulate these policies and the analysts (Andrews et al., 2016). However, recent studies show how the external environment imposes challenges on institutions, a phenomenon commonly addressed by the contingency theory, which indicates the factors that can influence the behavior and ability of organizations to make decisions (Donaldson, 2001).

Internal organizational factors can be adjusted or adapted according to the needs and objectives; the contingency theory suggests that the results of organizations are broadly shaped by their external and internal context (Andrews et al., 2016). Therefore, environmental factors influence the dynamics of negotiations, affecting the wealth of private and public companies and generating challenges and threats in their operations and in the economic environment in general (Klann et al., 2014).

Regarding the current pandemic scenario, the influence of the external environment on the application of resources to face COVID-19 must be discussed. For such purpose, exemptions from bids involving both common acquisitions, referenced by Law 8,666/1993 (Law 8,666, 1993), and those resulting from an extreme factor such as the pandemic and receiving support from Law 13,979/2020 (Law 13,979, 2020) are compared. From this context emerges the question that motivates this research: what are the characteristics of public acquisitions made through exemption from bidding to face the COVID-19 pandemic? In this sense, in the current situation of pandemic and economic recession, analyzing the behavior of expenditures based on the characteristics of public acquisitions brings out their academic and, especially, economic and social importance, considering the influence on the country's economy – to meet a social demand for public health of a contingency nature –, generated by the allocation of resources (which should be allocated to other areas) for procurement to cope with the pandemic.

In practice, this study verifies if procurements to cope with the pandemic have characteristics different from those of traditional procurements. Besides, the direction of public resources is possible to be observed, either due to institutional aspects or due to functional-programmatic elements. One of the theoretical contributions that stands out in this study is the application of contingency theory to public sector entities, evidencing a gap in research, since no studies relating the behavior of public expenditures to contingency theory were found.

From the academic perspective, studies, including those interdisciplinary, must aim to understand this new disease, whose reflections on health, life in society and economic conditions are still unknown. In this sense, this study fills a gap in research by investigating how government action has behaved at this unique time, especially regarding efforts to expedite and make the procurement of items pertinent to the COVID-19 pandemic more flexible.

2 Theoretical Framework

In this theoretical framework, aspects related to contingency theory, budget classifications and bidding were conceptualized.

2.1 Contingency theory

Contingency theory is based on the premise that contingency factors affect the dynamics of organizations. Burns and Stalker (1961) were the first to study this theory by examining how organizations identify and respond to the conditions of stability and change generated by the internal and external environment, classifying responses as appropriate or dysfunctional. That is, they sought to verify the relationship between the internal (management practices) and the external environments of these organizations.

Espejo (2008) synthesizes the mechanistic structures of Burns and Stalker (1961), in which control is concentrated, there is greater hierarchical rigidity and greater specialization of tasks and hierarchization (more verticalized structures), besides the centralization and formalization of controls. The organic structure, in turn, is less rigid regarding hierarchy, which is more horizontal; in which tasks are more delegated, management controls are more formal and there less specialization, since the social division of labor is not prioritized, as mentioned earlier.

The contingency approach is related to the environment and its interdependence regarding management practices aimed at the managers' decision-making. This relationship is highly complex due to many factors. Thus, the environmental variable is independent, unlike management practices. Therefore, the contingency approach generates a reactive behavior in organizations, that is, the environment influences management practices (Espejo, 2008).

In general, the core of contingency theory is that organizations, public or private, are affected by external or internal contingency factors. Otley (2016) mentions that external factors include technology, competition or market hostility, environmental uncertainty and national culture (Sell et al., 2020).

Chenhall (2003) alerts to the importance of the external environment in the decision-making process. For the author, the external environment is a powerful contextual variable that is the basis of research based on contingencies, especially due to the uncertainty of this variable. According to Wadongo and Abdel-Kader (2014), the environment is a relevant contingency factor due to the uncertainty or difficulty in forecasting, and the dynamism and adversity faced by organizations.

Considering that contingency theory seeks to understand and explain the way in which companies operate under conditions that may vary according to the environment in which they are inserted and which are influenced according to their external environment, it is accepted, therefore, that threats or opportunities influence the structure and internal processes of organizations (Beuren & Fiorentin, 2014). Therefore, analyzing the behavior of public expenditures in the current context of uncertainties caused by COVID-19 become relevant.

2.1.1 Contingency theory in the public sector

Christensen and Yoshimi (2003) verified the role of professional bodies in stimulating changes, especially structural variables, to explain accounting changes in the public sector, pointing to the need to research the influence of management consulting firms as a factor to understand altered performance reports.

Andrews et al. (2016) used contingency theory and resource-based theory to analyze organizational capacity in the public sector. Their findings identify a single central configuration of the organizational attributes associated with high-capacity departments with low structural complexity and staff stability. In turn, Costa Netto (2017) researched information technology governance (ITG) in a public organization in the state of Rio Grande do Sul, Brazil, analyzing how contingency factors can alter the balance of power among the subunits of an organization. The author adopted the theory of contingencies and strategies of intraorganizational power by Hickson et al. (1971) with the general objective of analyzing the influence of intraorganizational power on the effectiveness of the ITG mechanism.

Cavichioli et al. (2018) analyzed how contingency factors influence the implementation of cost information subsystems in the public sector (Sicsp), seeking to add results to contingency theory. Sell et al. (2020) investigated the influence of contingency factors on the performance of municipalities over three government mandates. Considering internal contingency elements, the authors showed their significant influence on the performance of the municipalities.

In general, both internal and external contingency factors influence organizational dynamics in the public environment, and evidence the information that can be altered by their influence. In this sense, contingency factors are very likely to change the behavior of expenditure in the public sector, especially regarding the current scenario of contingency of public resources caused by COVID-19. Thus, it is necessary to evaluate if expenses are being allocated as expected to cope with the pandemic.

2.2 Budget and bidding classifications

Budget classification allows the government entity to standardize and direct its performance according to its purposes, valuing the institutional actions expected and provided for in the rules of public planning. For such purpose, budget resources are arranged according to programs, subprograms and other design to

achieve institutional objectives (Ibrahim, 2011). This process of segmentation of functions and programs between the organs is fundamental for the political, administrative and economic process of government action, indicating the institutional objectives and areas and objectives of resource expenditures (Cretu, 2013).

Thus, the public administration, using the functional-programmatic, institutional and the nature of expenses, can detail its action plans and act in a way that increases, reduces or even changes organizational directions (Mikesell & Mullins, 2001), such as in the case of procurements to face the COVID-19 pandemic, when public agencies with institutional and functional-programmatic objectives adapted to the environment and directed their acquisitions to common objects.

In this area, the budget classification, evaluated in functional-programmatic criteria, is considered as a modernization inherent to the program-budget, since it demonstrates the achievements and the governmental effort for the benefit of the population. Besides, the design based on the nature of expenditures points to the means by which the government intervenes in society, promoting public investments and wealth formation. This design can also occur in a purely analytical way, in the form of expenditure elements, which strictly expose to what the expenditure refers (Giacomoni, 2019).

Another way to evaluate public expenditures addresses the way procurements were made. For such purpose, several formal procedures are instituted seeking, among others, to receive impersonality, isonomy, advertising and competition among participants interested in providing materials and services to the government (Lima, 2018). However, the bidding process is considered plastered and bureaucratic, sometimes hindering dynamically timely procurements (Vieira et al., 2018).

That said, specific bidding modalities that distinguish the procedures and formalities according to the type of procurement and value were created to make the procurement process more agile and flexible. From this situation, the bidding exemption emerges, provided for by Article 24 of Law 8,666/1993 (Law 8.666, 1993), which houses procurements other than those to constructions and engineering services of up to R\$ 17,600.00, according to Decree 9,412/2018. However, this exceptionality is only applicable in specific situations, provided for by the bidding law, especially when competition between suppliers is not feasible (Lima, 2018; Trail et al., 2018).

Although the exemption from bidding allows a more simplified contracting, the procedures needed to be even more flexible in a moment of public health calamity, such as that experienced with COVID-19, thus encompassing timely procurements according to the needs of each agency. In this context, Law 13,979/2020 (Law 13.979, 2020) was promulgated, with measures to address the pandemic, such as specific rules for acquisitions that allow the use of the exemption from bidding in procurements to face the coronavirus, besides the simplified procedural instruction that streamlines the hiring process.

3 Methodological Aspects

This is a descriptive and explanatory study, which uses a quantitative approach based on descriptive statistics and multiple correspondence analysis. For such purpose, considering the proposed objective, data on the characteristics of public procurement by the federal government throughout the 2020 fiscal year were collected, when the pandemic spread in the national territory. In this sense, a database was built containing categorical data on the budget classification and bidding of public acquisitions during the year.

These data were collected on the *Tesouro Gerencial* platform (MTS,2020), which compiles records of the Integrated System of Financial Administration of the Federal Government, allowing to distinguish the legal bases used in procurements to face the coronavirus from other frequent expenses. The aggregated data in the system are available on the transparency portal (General Controller's Office, 2021). However, with the help of the platform, filters could be created according to the expenses committed, discriminating the agencies involved and having the data available according to their functional-programmatic classification, bidding and through the nature of the expenditure.

Regarding the categorization of the sample, from the bidding point of view, there was a concentration on public procurements made by bidding exemption. In this sense, the procurements that used as reference Law 8,666/1993 (Law 8,666, 1993) were compared with those based on the possibility of simplified acquisition through Law 13,979/2020 (Law 13,979, 2020), exclusive to coping with the pandemic.

The option for bidding exemptions occurs due to the conditions of acquisition, which are out of the other bidding instruments provided for in the applicable rules, simplifying the event due to the possibility of a procurement through derisory amounts without prejudice to impartiality in the supplier's award (Giacomoni, 2019).

Moreover, the choice of bidding exemptions considers that there could be divergences of comparability between different bidding instruments to face the pandemic, especially because Law 13,979/2020 (Law 13,979, 2020) predicted only a new form of acquisition by exemption, without intervening in the other devices. Therefore, to maintain isonomy in the comparison, this study classified the acquisitions among exemptions provided for by Law 13,979/2020 (Law 13,979, 2020) and Law 8,666/1993 (Law 8,666, 1993).

Regarding budget categorizations, the variables were classified according to their programmatic function, the nature of expenses and the branch of the institution. From these data, the institutional actions,

objects of application of resources and the purpose of the agency's action can be identified (Giacomoni, 2019; Lima, 2018; Ministry of Finance, 2019).

The initial budget, in turn, provided for by the Budget Law did not prepress specific actions to address the pandemic. Thus, during the 2020 financial year, specific budgetary resources were added for this purpose, especially with the creation of action 21C0, which aimed to deal with the public health emergency of international importance resulting from coronavirus (General Controller's Office, 2021).

A description of the variables and procedures performed to meet the research question through the protocols of statistical analysis was also presented.

3.1 Description of variables

Concepts related to the budget classification were used, containing 6 variables and two other bidding variables, in addition to categorizing in what type of body that performed the expenditure, which allows to analyze occasionally any differences in expenditures between different ministerial bodies. That is, if the spending focuses on a particular organ or a joint effort has been made. Based on these considerations, Table 1 shows the variables used.

Table 1:
Construction of variables

Observable Variable	Categorization	Related Concept	Operation Theoretical	Reference
Legal Support	COVID-19, Other Layoffs	Bidding	Segment procurements by legal basis, either by Law 8,666/93 (regular procurement) or by Law 13,979 / 20 (Facing COVID-19)	Vieira et al. (2018)
Institutional	Contro / Administrative Legislative Judiciary Oct. Ministries education Health	Institutional	Corresponds to the final ministerial activity or maximum body in which the expenditure was made	Giacomoni (2019); Mikesell e Mullin (2001)
Resource Source	Transfers Contributions Other Recipes Credit operations Own Rec. Tax	Budgeting	Identifies the sources of funds that finance government activities	Ministry of Finance (2019)
Budget Program	Other Programming education Economics / Development Health Safety	Functional Budgeting- Programmatic	Articulates the set of actions for the realization of a pre-established common objective	Giacomoni (2019); Lima (2018)
Budgetary Function	Other Function Insurance Education Public security Agriculture Economics / Development Culture Housing Health	Budgeting Functional- Programmatic	Related to the agency's institutional mission with the areas of activity (health, education, security, among others)	Giacomoni (2019); Lima (2018)
Economy Category	Capital, Costing	Budgeting Expenditure Nature	It allows recognizing if the expenditure is directed to the formation of patrimony (capital), or if it is current expenses (costing)	Giacomoni (2019); Lima (2018)
Expense Element	Personal Scholarships / Daily Fin Exp. Mat.Consum Other Elements Services Terc. Works and Imob Material Perman	Budgeting Expenditure Nature	Identifies the object of public expenditure. Its discrimination occurs through sub-elements	Giacomoni (2019); Lima (2018)
Value Involved	Expensive, Inexpensive	Budgeting	Interprets Item II, Article 24 of Law 8,666/1993 (Lei 8,666/1993) to determine if the volume of expenses incurred is bulky or negligible	Giacomoni (2019); Vieira et al. (2018)

ICT: Information and Communication Technology Equipment

Source: Elaborated by the authors

All the data involved are categorical, so that it is possible to identify exclusive characteristics of public acquisitions by exempting bidding to face the COVID-19 pandemic. In this sense, the object of study are the characteristics of making procurements and not the values involved in a sovereign way. This is because, public

expenditure needs to be analyzed and public controls must be sensitive, regardless of the value, including small amounts in large quantities.

3.2 Description of the procedures

After collecting the data and building its base, the following analysis procedures were defined to meet the research question.

Table 2:
Analysis Protocol

Technique	Objective	Procedure Involved	Theoretical Support
Descriptive Statistics	To create contingency tables that show the frequency of occurrences involving procurements under Law 13,979/20 and frequency of other bids.	Distribution using contingency tables	Fávero e Belfiore (2017)
	To check the association between legal support and institutional, budgetary, functional-programmatic and bidding characteristics	Chi-Square Test (χ^2) ¹	
ACM ²	To analyze the interdependence relationship between legal protection and the characteristics of public procurement to face the COVID-19 pandemic	Eigenvalues	Hair et al. (2009); Kassambara and Mundt (2020); Lê et al. (2008); Wickham (2007)
		Correlation between dimensions	
		Graphical category distribution	

¹Significance at the level of 0.1* 0.05** 0.01***; ²ACM – Multiple Correspondence Analysis

Source: Elaborated by the authors

Therefore, considering the procedures in Table 2, the data will be analyzed using descriptive statistics, aiming to know the behavior of the sample and to clarify possible characteristics of procurements to face COVID-19. Moreover, significant differences were verified among the groups using the chi-square test to finally discuss the graphic distribution among the categories by a multiple correspondence analysis (MCA), constructing a structure that establishes the profiles of the observations and relates them to the variables analyzed. The tests were performed with the help of statistical software R, version 4.0.3 (R Foundation, 2010).

4 Analysis and Discussion of Results

This section shows descriptive statistics and multiple correspondence analysis to evidence the research findings.

4.1 Descriptive statistics

Due to the categorical data of the sample, descriptive statistics focus primarily on frequency distribution and chi-square group difference tests (Fávero & Belfiore, 2017). Both analyses are based on the behavior between the procurements related to COVID-19 and the other exemptions.

On these perspectives, only 5.92% of the total volume of bid exemptions in 2020 was destined to face COVID-19, whereas the other 94.08% are related to ordinary acquisitions. Ignorance about the effects of the pandemic led the Legislative Power to create this form of contracting, which already represents approximately one in twenty procurements per exemption, a movement explained as a contingency response in periods of unrest (Chenhall, 2003; Otley, 2016).

Regarding institutional categorization, the number of procurements to face COVID-19 is concentrated in ministerial sets linked to economic maintenance and security. This result indicates how the contingency perspective is capable of promoting a reactive effect in institutions, according to their managerial practices to the needs imposed by the environment (Espejo, 2008).

In this contingency context, the role of educational institutions is important, especially when considering the participation of acquisitions to face the pandemic (38.19%) compared to the other exemptions (17.14%). Therefore, a need for the environment has imposed a reformulation of the role of these institutions.

Besides, the comparative data between legal support and institutional categorization also show a significant difference ($\chi^2(5) = 30.487$, p-value < 0.000). Table 3 shows that the number of ministries related to economic/developmental and security matters stands out in both public procurements.

Regarding the sources of resources that cost the exemptions, differences were observed among the groups ($\chi^2(5) = 9.8979$, p-value = 0.0782) at the significance limit. Regarding the origin of the resources that finance public procurements in the context of this study, a modest use of sources of own resources was observed, which is collected directly by the agencies that perform the expenditure, since transfers from the national treasury represent the greatest source of resources, regardless of the legal support of the exemption.

Table 3:
Institutional distribution

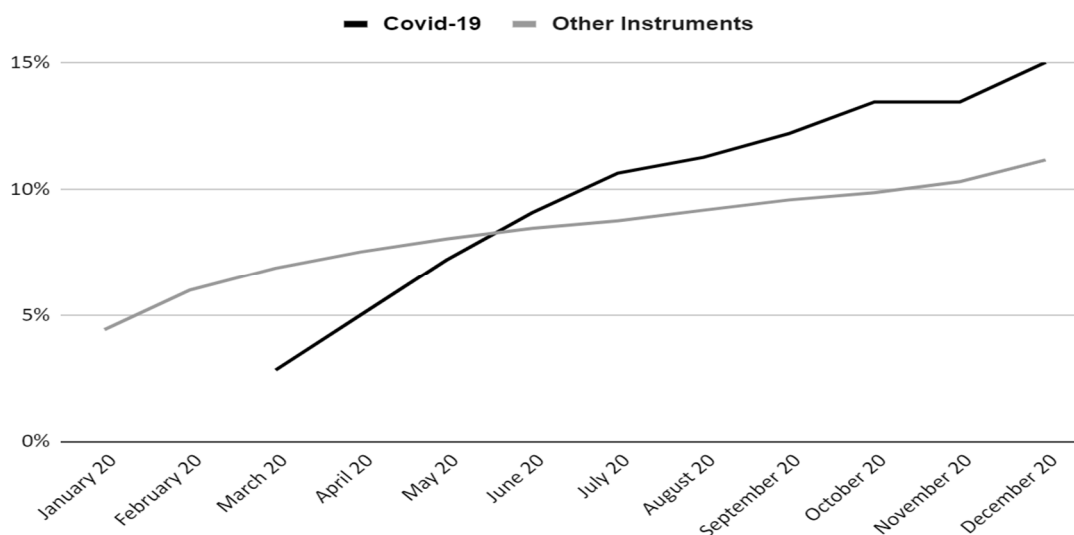
Description	COVID-19		Other Exemptions		Grand total	
Legislative	4	0.02%	1,119	0.28%	1,123	0.27%
Contro/Administr	384	1.55%	18,235	4.62%	18,619	4.44%
Health	2,317	9.33%	19,037	4.82%	21,354	5.09%
Judiciary	554	2.23%	22,217	5.63%	22,771	5.43%
Education	12,082	48.68%	67,642	17.14%	79,724	19.01%
Other Ministries	9,480	38.19%	266,355	67.50%	275,835	65.76%
Grand total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the authors

This modest use can be justified by the lack of budget credit in the sources of own resources, specific to face the pandemic, especially in government action 21C0, created specifically for this purpose (General Controller's Office, 2021). That is, budget resources to face the pandemic have not been allocated to its own sources.

Moreover, in the light of the budgetary annual principle (Giacomoni, 2019), own resources can only be committed after the collection of the corresponding financial value, which explains the slight increase in public procurements to face the coronavirus during the year. Therefore, the lack of forecast in the budget action and the low collection in the first months of 2020 limited the use of own resources to face COVID-19.

These factors devote the use of this type of resource. Figure 1 shows the loosening of bidding procedures after March, with the enactment of Law 13,979/2020 (Law 13,979, 2020).

**Figure 1: Growth in the use of own resources to confront the pandemic**

Source: Elaborated by the authors

The classification by source is essential to evidence the origin of the resources that covered the costs of the expenditure. This classification allows a detailed survey of how organizational activities are managed (Giacomoni, 2019; Kaliuha, 2016), showing the dependence on treasury resources to finance pandemic coping activities (55.12%), since the use of own resources is lower than 5%, while other expenses account for almost a fifth of layoffs as shown in Table 4.

Table 4:
Distribution by source of funds

Description	COVID-19		Other Exemptions		Grand Total	
Tax	3	0.01%	573	0.15%	576	0.14%
Contributions	120	0.48%	7,048	1.79%	7,168	1.71%
Credit operations	3,795	15.29%	55,131	13.97%	58,926	14.05%
Own resources	1,177	4.74%	72,441	18.36%	73,618	17.55%
Other Recipes	6,044	24.35%	81,060	20.54%	87,104	20.77%
Treasure	13,682	55.12%	178,352	45.20%	192,034	45.78%
Grand total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the authors

In turn, government programs and the bidding support are also distributed in a clearly distinct way ($\chi^2(4) = 53,193$, $p\text{-value} < 0.000$). Likewise, in the comparison among the procurement to face COVID-19 and the other exemptions, Table 5 shows that the programs related to education are responsible for 39% of the procurements to face the pandemic, whereas education represents only 13.97% of the other exemptions.

Table 5:
Distribution by government programs

Description	COVID-19		Other Exemptions		Grand Total	
Health	4,303	17.34%	21,753	5.51%	26,056	6.21%
Economy / Development	239	0.96%	25,879	6.56%	26,118	6.23%
Safety	508	2.05%	42,783	10.84%	43,291	10.32%
Education	9,681	39.00%	55,145	13.97%	64,826	15.46%
Other Programs	10,090	40.65%	249,045	63.11%	259,135	61.78%
Grand Total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the authors

Given the high number of procurements made by programs related to education, showed by the 39% indicated in Table 5, the results were segmented according to the object of expenditure, indicating that procurements in these government programs were concentrated in coping with the pandemic.

Thus, there is a change in the procurement pattern. According to Figure 2, whereas the other exemptions are focused on contracting outsourced services, the exemptions that used Law 13,979/2020 (Law 13,979, 2020) as legal support are concentrated on items such as hospital, laboratory, pharmacological and hygiene materials, among others.

The contingency aspect is emphasized once more. Due to the environmental bias generated by the pandemic, public agencies had to adjust their routine and assess priority acquisitions for their work plans (Wadongo & Abdel-Kader, 2014). In this context, public universities have stood out in the creation of raw materials to face the spread of the virus and in scientific production to identify and develop mechanisms to face COVID-19.

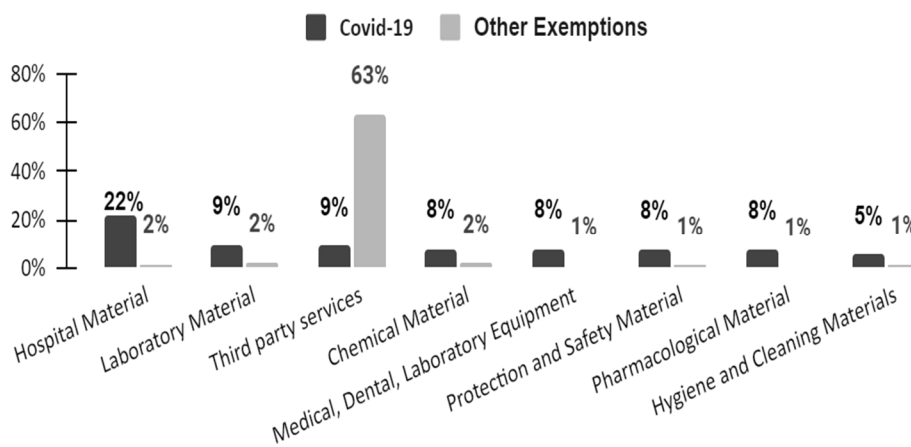


Figure 2: Objects of acquisitions in programs related to education

The data shows 76.98% of procurements to face COVID-19 and 72.88% of the other bid exemptions.

Source: Elaborated by the authors

In turn, the functional-programmatic classification, responsible for indicating institutional actions, shows that the spending areas were reordered to face coronavirus, showing the contingency device necessary to mitigate the spread of the virus, regardless of the functional-programmatic sector of the institution. Moreover, we emphasize that health-related programs represent about 17.34% of the exemptions related to COVID-19.

When considering the other bidding instruments, expenditures on health-related bodies represent 42.51% of the values committed to face the pandemic. This indicates that the values committed by the Ministry of Health are more expressive, but in a smaller number of procurements.

Regarding government functions, differences in acquisition patterns were also observed ($\chi^2(8) = 57.82$, $p\text{-value} < 0.000$). The results indicate a slight difference compared to the budget programs presented previously. Health-related budget functions have great representation in public procurement to fight coronavirus (31.07%), whereas budget programs that have the same goal are approximately 17%, as mentioned earlier.

This difference is due to the different applications between functions and budget programs. In this sense, the function is closely linked to the institutional competence of the body, whereas budget programs turn to the articulation of actions to achieve objectives and goals provided for in the budget laws (Ministry of Finance, 2019). Therefore, even though they are linked to the same concept, functions and programs have different applications that become evident in a context that demands contingent actions from public managers, as distributed by budgetary function in Table 6.

Table 6:
Distribution by budgetary function

Description	COVID-19		Other Exemptions		Grand Total	
Housing	8	0.03%	2,204	0.56%	2,212	0.53%
Culture	12	0.05%	2,931	0.74%	2,943	0.70%
Social Security	247	1.00%	11,634	2.95%	11,881	2.83%
Economy / Development	318	1.28%	13,589	3.44%	13,907	3.32%
Agriculture	85	0.34%	20,595	5.22%	20,680	4.93%
Health	7,713	31.07%	32,576	8.26%	40,289	9.61%
Education	6,686	26.94%	54,385	13.78%	61,071	14.56%
Other Functions	2,500	10.07%	119,567	30.30%	122,067	29.10%
Public security	7,252	29.22%	137,124	34.75%	144,376	34.42%
Grand Total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the authors

Regarding the classification according to the nature of the expenditure, initially the economic categories do not clearly deviate, but, statistically, the groups present the expected significance ($\chi^2(1) = 6.1723$, p-value = 0.0130). Moreover, in Table 7, in both legal frameworks, costing expenses predominate.

Table 7:
Distribution by economic category

Description	COVID-19		Other Exemptions		Grand Total	
Capital	3,288	13.25%	31,954	8.10%	35,242	8.40%
Chain	21,533	86.75%	362,651	91.90%	384,184	91.60%
Grand Total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the authors

Also according to the classification by the nature of the expenditure, there is a difference between the groups of legal support and the expense element ($\chi^2(6) = 165.22$, p-value < 0.000). The data indicate that consumables are responsible for the evident majority of procurements to face COVID-19, especially for the need to acquire hygiene and cleaning materials and personal protective items.

This classification by nature of expenditure shows how the government intervenes, either by the formation of equity or by current expenditures and indicates the type of object of procurement (Giacomoni, 2019). In this perspective, a change in consumption patterns, in which the items assume the absolute majority of procurements to face COVID-19, whereas the services of third parties were more than 50% of the procurement through exemption but represented only 11.75% of the procurements related to coronavirus.

Table 8:
Distribution by expense element

Description	COVID-19		Other Exemptions		Grand Total	
Personal			105	0.03%	105	0.03%
Scholarships / Daily			269	0.07%	269	0.06%
Works and Fixed Assets	23	0.09%	1,153	0.29%	1,176	0.28%
Permanent Material	3,230	13.01%	25,905	6.56%	29,135	6.95%
Other Elements	408	1.64%	36,931	9.36%	37,339	8.90%
Other Elements Consumables	18,243	73.50%	129,818	32.90%	148,061	35.30%
Third Party Services	2,917	11.75%	200,424	50.79%	203,341	48.48%
Grand Total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the Authors

Finally, the classification according to the value category, also different among groups ($\chi^2(1) = 24.733$, $p\text{-value} < 0.000$), exposes how the rigidity of limits keeps public spending within the reasonableness necessary for each bidding modality (Vieira et al., 2018). That is, from the release of acquisitions to confront the virus, as provided by Provisional Measure 961/2020 (Provisional Measure 961, 2020), the derisory amounts below R\$ 17,600 were clearly exceeded, whereas the other acquisitions that preserve the previous limits contained their expenses, according to the distribution by value category in Table 9.

Table 9:
Distribution by value category

Description	COVID-19		Other Exemptions		Grand Total	
Large	16,097	64.85%	91,237	23.12%	107,334	25.59%
Not Large	8,724	35.15%	303,368	76.88%	312,092	74.41%
Grand Total	24,821	100.00%	394,605	100.00%	419,426	100.00%

Source: Elaborated by the authors

The results show that, especially in the functional-programmatic classification, there were robust differences in the categorization of expenses, at the same time that the classification according to the nature of the expenditure kept similar behaviors. Such differences lead to the assumption that the finalistic activities and institutional objectives differ between the organs that make the acquisitions to face the pandemic. However, the objects of expenditure reflected in the nature of the expenses were approximated.

Besides the classification according to the nature of the expenditure, other classifications do not present different patterns of acquisition among procurements to face COVID-19 and other everyday expenses. This indicates that, despite the divergent institutional objectives, the moment requires a centrality of objectives, aiming to joining efforts to confront the pandemic.

The changes in procurement classification patterns explain the change in the behavior of the institutions analyzed (Cavichioliet al., 2018). That is, the unpredictable influence of a systemic crisis resulting from a pandemic turned out to be another aspect of the external environment that directly affects organizational contingencies and is reflected in new buying habits (Wadongo & Abdel-Kader, 2014).

4.2 Multiple match analysis

To identify possible associations with the characteristics of procurements to face the COVID-19 pandemic, multiple correspondence analysis was used as a tool for categorical data analysis, which allowed the development of a perceptual map between the variables and their respective categories (Fávero & Belfiore, 2017).

This is a method of representing rows and columns as coordinates of a chart. With the aid of this technique, similarities and differences in the behavior of variables can be identified, represented in dispersion diagrams that allow the characteristics of variables and categories to be arranged as points in relation to orthogonal coordinate axes (Fávero & Belfiore, 2017). Therefore, the advantage of this technique is the possibility of verifying the association between observable variables and objects, creating maps that allow to observe the behavior of different characteristics of the same phenomenon (Hair et al., 2009).

Considering that all the associations among variables were significant, according to the chi-square tests (χ^2) performed during descriptive analyses, the multiple correspondence analysis was based on the verification of accumulated variance, according to Table 10 resulting from the eigenvalues that correspond to the orthogonal categorization of the variables.

Table 10:
Eigenvalues

Dimension	Eigenvalue	Variance	Accumulated Variance
Dim.1	0.3456	8.9181	8.9181
Dim.2	0.3167	8.1716	17.0899
Dim.3	0.2472	6.3802	23.4700
...			
Dim.31	0.0084	0.2168	100.0000

Source: Elaborated by the authors

Considering the two initial dimensions, the perceptual map presents an accumulated variance of approximately 17%, below the desired, but considered sufficient to obtain approximate characteristics of procurements resulting from the confrontation with the coronavirus. The complete survey of all possible perspectives would consider 31 dimensions.

Therefore, the graphical distribution of the variables in Figure 3 evidences that two distinct groups were formed. The first, wrapped in a circle, groups the functional and programmatic classifications used in the efforts, besides an institutional characteristic corresponding to the maximum organ of origin of the expenditure.

On the other hand, all other variables are associated, with special attention to the legal support of the expenditure, weather it is related to COVID-19 or to the other exemptions. This corroborates the indications made in the descriptive analyses regarding the correspondence of legal support and aspects of the nature of expenditure and source of resources of the efforts.

This association indicates that the use of public resources amidst the pandemic is related to private procurements, especially broken down by the elements of the expenditure, which may involve procurements of hygiene and cleaning materials, hospital products, laboratory materials, personal protective equipment or, even, the respirators themselves.

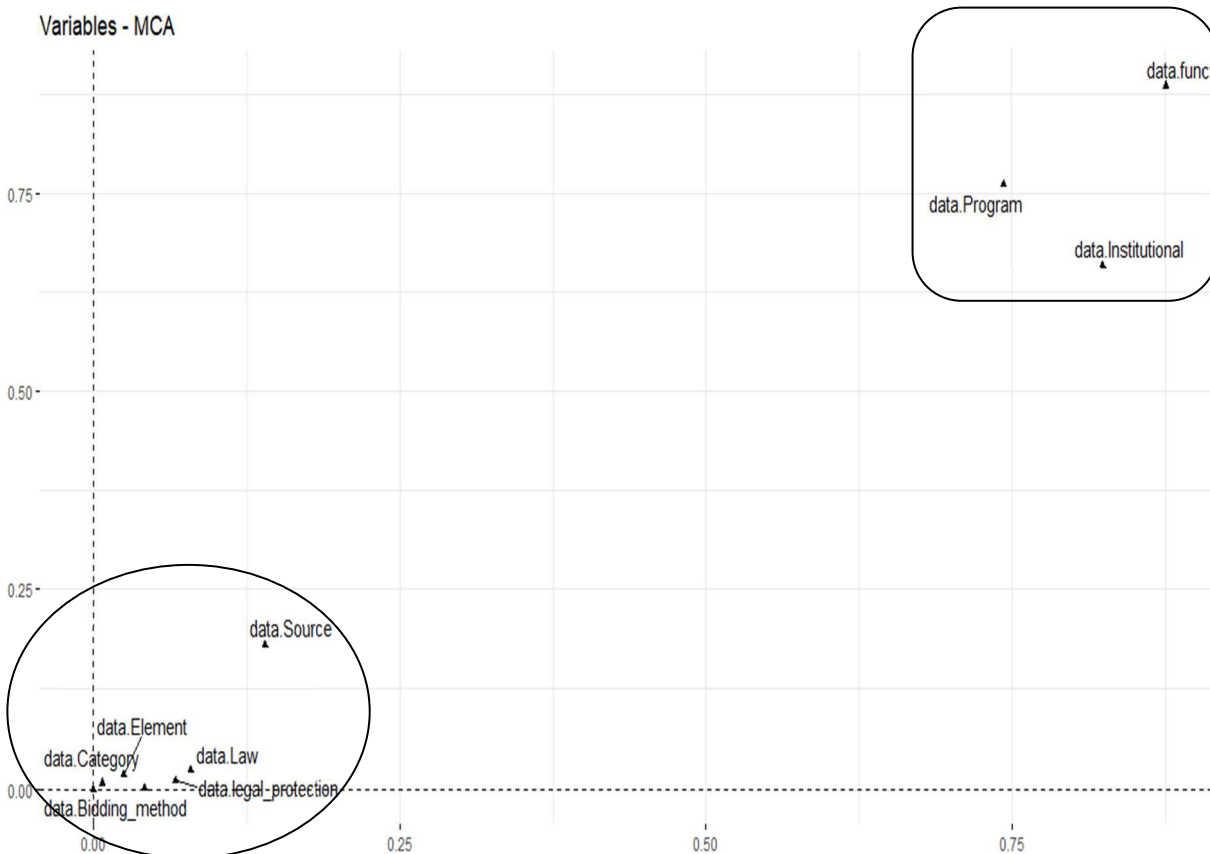


Figure 3: Perceptual map of representation of variables
Source: Elaborated by the authors

By expanding the analysis, the distribution by categories in Figure 4 allows us to understand that both the support for procurements related to COVID-19 and the other exemptions present different associations. The map indicated was traced in a way that the perceptual distance among these aspects is observed.

Although the variable “support” indicates an association with the economic elements and categories of commitments, this cannot be directly related to procurements to face COVID-19. This result can be explained by the analyzed time lapse, in which the functional-programmatic and institutional movement still adapted to accommodate new procurement models. However, despite the low volume of acquisitions, its characteristics already show a contingency behavior (Cavichioli et al., 2018) inherent to the needs of timely action to stop the spread of the disease.

On the other hand, considering that Law 13,979/2020 (Law 13,979, 2020) allows the acquisition by a simplified bidding procedure and removes the limits imposed by the bidding law, these procurements proved to be more important compared to other acquisitions. Therefore, Figure 4 shows that, slightly at the center of the figure, large procurements are the ones that are most closely related to the efforts to fight the coronavirus.

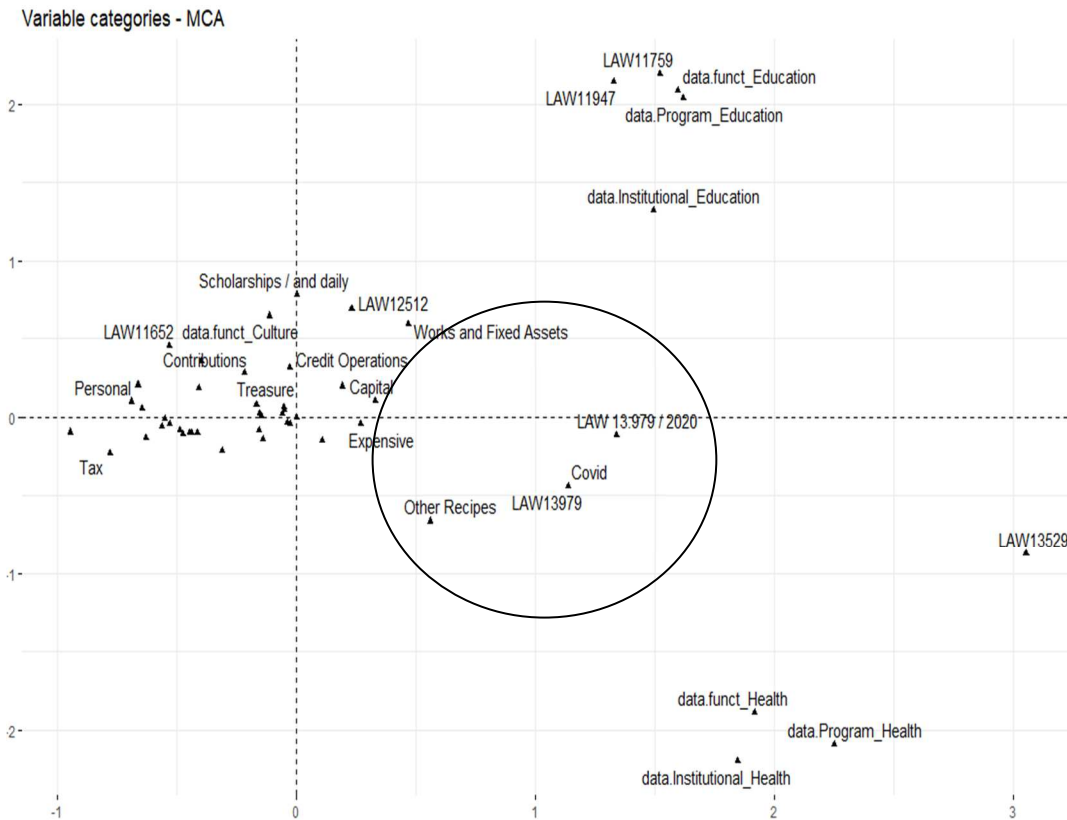


Figure 4: Perceptual map of category distribution
 Source: Elaborated by the authors

Finally, Figure 5 show that the volume of acquisitions related to COVID-19 is still considerably lower than the other procurements, when associated with the total number of observations used in the study, represented by the gray spot of the chart. In this sense, with the help of the dashed circle, it is evident that the amount of expenses to face the pandemic is still significantly lower than other procurements.

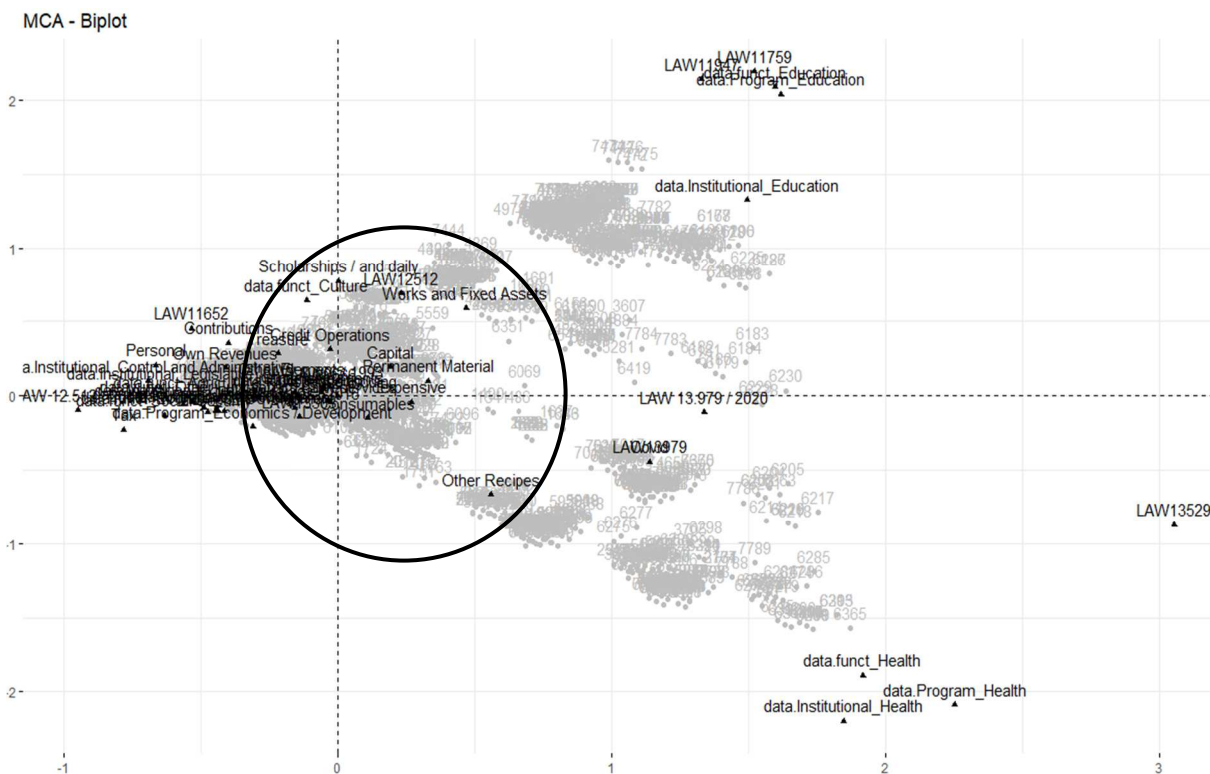


Figure 5: Perceptual map of the distribution of observations regarding the categories
 Source: Elaborated by the authors

After the appropriate surveys, we discovered that the greatest merit of this study was the indication that the functional-programmatic characteristics behave differently compared to the characteristics of the nature of the expenditure. This evidences not only the differences in purposes in the institutional actions of government agencies, but also similarities in the objects of spending during 2020, a period of expansion of the disease in Brazil. Thus, due to the uncertain and unprecedented external environment, the procurement patterns and institutional objectives verified in other procurements are left aside, meeting then new public needs and placing new items on the agenda of procurements of institutions (Wadongo & Abdel-Kader, 2014).

Therefore, the characteristics of procurements to face the pandemic have unique conditions, different from the traditional procurements. This is explained, among other reasons, by the flexibilization of bidding conditions, whose acquisition values have expanded, thus justifying the categorical distinction in the types of bidding exemptions.

On the other hand, when using the perceptual maps, we see that the functional and programmatic variables are not associated with the legal support used. That is, regardless of the purposes of government action, the references of bidding exemptions do not present clear distinctions.

Considering these data, this study is unprecedented in pragmatically relating the distinction in the governmental action of confrontation to the pandemic, whose results show a clear association among the budgetary objectives, represented by the economic category, and the elements of expenditure, in the legal support used, either to face the coronavirus by Law 13,979/2020 (Law 13,979, 2020), or regarding the other exemptions from bidding, under Law 8.666/1993 (Law 8.666, 1993).

5 Conclusions

The COVID-19 pandemic changed life in society in different forms and intensities, including government priorities. The government, faced with a health crisis, had to redirect its performance, using the public machine to fight the coronavirus.

The behavior of the public administration to face an obstacle coming from the external environment can be explained by contingency theory, in particular regarding the reordering of government priorities and objectives, besides the review of how institutions would be used. Therefore, even organs with guidelines unrelated to health matters faced the need to act in favor of a common goal.

Given this scenario, this study analyzed the characteristics of public procurements through exemption from bidding to face the COVID-19 pandemic, by an analysis of categorical variables of federal public agencies throughout Brazil during 2020. For such purpose, descriptive analyses were made on the frequencies of distribution of procurements to face the COVID-19, besides the perceptual maps obtained by multiple correspondence analyses.

The findings of this study were consistent with that indicated by the theoretical framework. There is a difference among the institutional objectives (the actions concerning each body); however, there is a certain harmony in the application of resources. That is, regardless of the purposes of each institution, similarities in the use of resources are observed when the theme is COVID-19, indicating the same procurement patterns.

In practice, the number of procurements to face the pandemic is still modest compared to the other bidding exemptions. However, the cost of these acquisitions is high, especially because of the loosening of limits promoted by Law 13,979/2020 (Law 13,979, 2020).

Besides, the proximity among government programs shows that any budgetary adjustments could be applied, even through additional credits, which would adjust the programmatic component to the functional. According to the results, budget programs are close, whereas functional classification maintains the expected distinction among institutions.

Therefore, this study is unprecedented in pointing out a change in the characteristics of procurements to face the pandemic, especially in the face of the uncertainties of the external environment, which are essential to explain the contingency aspects that have modified the agendas of public institutions and aligned their objectives.

The findings of our study are important in different perspectives, either by the use of contingency theory in public sector entities that deal with the adversities experienced in 2020, or by the understanding achieved about the existing classifications that direct public activities and, consequently, the expenditure of resources.

However, this study also has limitations, especially regarding the scope, which is limited to the federal scope, considering that agreements and voluntary transfers can offer greater understanding about the characteristics of these expenses also in states and municipalities. Therefore, future studies should expand their sample, including new characteristics, such as the operational capacity of institutions or political factors.

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Review and approval: Severo Peixe, B.C.

DATASET

The dataset that supports the results of this study is publicly available.



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