

**STATE LOGISTICS - CASE STUDY OF THE DISTRIBUTION OF TEXTBOOKS IN
BRAZIL**

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INTRODUCTION

The National Program for the Textbook and Didactic Material, known as PNLD (in Portuguese, *Programa Nacional do Livro e do Material Didático*), comprises a set of actions aimed at the systematic, regular, and free distribution of didactic, pedagogical, and literary works, as well as other materials to support educational practice, such as educational games, computer software, and phone applications, intended for students and teachers in public basic education schools in the country, as well as nonprofit community education institutions affiliated with the government. This public policy, which originated from the National Book Institute created in 1929 and has been consolidated and expanded over time to its current model, has contributed to Brazilian education but has also faced questioning, mainly due to its high cost.

Organizations are continuously seeking greater efficiency in their processes, with the aim of optimizing and rationalizing resources, reducing costs, improving the quality of products and services, enhancing relationships with stakeholders, and meeting increasingly high customer expectations. In the public sector, this requirement is even greater, as it includes services aimed at guaranteeing access to fundamental rights such as education, in addition to the obligation to follow the principles of public administration established in the federal constitution, such as the principles of legality, impersonality, morality, publicity, and efficiency. In this context, logistics plays a fundamental strategic role in both private organizations and the public sector and can contribute to efficient and high-quality public policies through integrated, dynamic, and well-organized logistics actions.

Brazil still faces numerous challenges, such as the lack of universalization of basic services, deficiencies in public services' quality, limited effective social participation and control, fiscal, economic, social, institutional, and health crises. The Brazilian state has undergone significant changes throughout its history, driven by constant crises, an ongoing democratization process, incomplete administrative reforms, income inequality, and unequal technological, social, and economic progress across the Brazilian territory (Corrêa & Passador, 2019). These characteristics of the Brazilian public sector have brought impacts to logistics and new challenges for the government. Despite the evident logistics challenges in a country with continental dimensions, precarious or nonexistent infrastructure, and regional differences, Brazil stands out as a major producer and exporter of commodities, with an extensive and important logistical network.

Since 1994, the distribution of PNLD has been carried out by the Brazilian Post and Telegraph Company, known as *Correios*, a federal public company responsible for the delivery and distribution system of mail in Brazil. To distribute PNLD materials throughout the country, a significant number of different modes of transportation (planes, boats, trucks, vans) are involved, aiming to deliver books to over 30 million students before the start of the school year. Prior to the involvement of *Correios*, distribution was carried out by private companies, and only 25% of textbooks reached the hands of students and teachers before the start of the school year. The remainder arrived during the school year, which hindered students, teachers, and overall teaching planning (ECT, 2003). Currently, PNLD represents the largest customized operation for *Correios* and one of the largest logistical operations in the world, moving around 80 tons of books, approximately 130 million units, and delivering them to all Brazilian municipalities (FNDE, 2023).

Nevertheless, the program receives criticisms regarding its costs. In the past three years, the investment in PNLD was nearly R\$ 4.5 billion reais. Additionally, there are concerns about the lack of competition in the exclusive distribution carried out by Correios and the limited participation of the private market in the operation. These questions arise in light of the imminent expiration of the contract between the National Fund for Education Development (FNDE) and Correios in 2022, the government's lack of intention to continue with the current distribution model, allowing for direct participation of the private market in distribution, and the intention to privatize Correios, creating a scenario of many uncertainties that require further investigation and evaluation of alternative models for distribution.

There is a need to deepen and expand studies and theoretical and practical literature regarding the impacts of public policies on public administration (Rocha, 2004). The issues presented raise the formulation of the following research question, which characterizes the general interest of this work: How does the distribution logistics process of the National Program for Didactic Books (PNLD) occur in Brazil, considering the theoretical assumptions of public planning, state capacities, and market structure in this segment? Therefore, this work aims to understand how the current distribution logistics process of PNLD occurs. Additionally, it intends to analyze the scenario of the national logistics market, contributing to the improvement of PNLD's distribution logistics management in Brazil. Moreover, this article evaluates the public policy of book distribution (PNLD) by Correios and utilizes multiple methods for the research's development. Given the aforementioned, the main hypothesis of the research is that Correios currently satisfactorily meet the logistics demand of PNLD. Thus, based on the provided context and the established research hypothesis, the following methodological approach is presented.

METHODS

This study adopts a combination of qualitative and quantitative research approaches, with an explanatory and descriptive nature. Beyond understanding the choice of the current distribution logistics for the program, which involves questions such as "what" and "how," it aims to identify the effectiveness of this choice and suggest improvements for the implementation of the policy nationwide. Thus, it encompasses questions like "why," "what," "how much," etc. Research with this level of complexity should establish relationships between observed variables and measures, which are determined based on the development of the theoretical framework. It also aims to determine the nature and intensity of these relationships through diverse data collection procedures, including the use of semi-structured questionnaires, in-depth interviews, and the collection of secondary data from official documents (Gil, 2002).

In addition, a quantitative approach is adopted to analyze indicators and other data that allow for an understanding of the distribution logistics adopted by PNLD. The qualitative approach aligns with the researcher's understanding since the reality of this research context is subjective and diverse, and even though questionnaires are used in data collection, qualitative analysis techniques will predominate (Chueke & Lima, 2012). The qualitative approach seems more appropriate when the problem is little explored, and there is a need to understand the phenomenon holistically, in all its complexity (Godoy, 1995).

To identify the current logistics positioning of PNLD and analyze the program's distribution logistics decisions, a descriptive research approach was employed, based on literature review and research on documents from Correios and FNDE. Additionally, in-depth interviews were

conducted with key individuals involved in the distribution process, and visits were made to Education Secretariats, Correios Distribution Centers, and Public Schools in different regions of the country, specifically in Curitiba/PR, Brasília/DF, Manaus/AM, Belém/PA, São Luís/MA, and São Paulo/SP.

Furthermore, data collection was carried out through a digital questionnaire with open-ended and closed-ended questions, presented and sent to the participants of the 16th National Technical Meeting of Textbook Programs, an event promoted by the National Fund for Education Development (FNDE) in Belém/Pará, from June 7th to 10th, 2022. The event was attended by PNLD managers from all regions of the country. We received 136 questionnaires completed by event participants, of which 117 are directly involved in some stage of PNLD (85.4%). The questionnaire included questions about the participants' work location (region of the country, state, and municipality), workplace (education secretariat, school), direct involvement in PNLD and its stages, their overall evaluation of the program, pre-existing knowledge about the distribution logistics carried out by Correios, evaluation of this logistics, satisfaction level with PNLD and its logistics, whether materials arrive at schools on time, local difficulties regarding potential delays, and open-ended questions for reporting problems and suggesting improvements for the program and its logistics. The data were compiled in spreadsheets for analysis.

Additionally, to analyze the program's distribution logistics decisions, the investigation of PNLD's distribution logistics process was conducted based on the theoretical assumptions of government planning and state capacities. The former concerns the ability to consider the social, economic, political, and cultural reality and its influence on decision-making processes (Saragon & Oliveira, 2018), aiming to set goals that can lead to achieving the organization's expected results and sustaining them (Oliveira, 2012). Planning can be defined as a rational and organized thought process that provides, based on contextual analysis, conditions for anticipating possible situations and selecting the best ways to manage the organization (Abrucio, 2009). Considering that planning still poses a major obstacle in the formulation, implementation, and control of public policies, its execution in the public sector should aim for the best performance of activities, taking into account the complexity of demands, the flow of information required for its management, and the coherence of actions taken (Fernandes, 2013).

The latter, state capacities, are related to the attributes of the state that enable it to conduct public policies towards their intended purposes and the achievement of proposed objectives (Bersch et al., 2012; Hendrix, 2010; Pereira, 2014; Gomide et al., 2014; Bichir, 2015; Pires & Gomide, 2016). This approach emphasizes the state's ability to exercise power (at the macro level) by considering the formation and construction of state apparatuses for creating and maintaining order or (at the micro level) by the ability to identify problems, develop solutions, execute actions, and deliver effective results through thorough analysis of the instruments and processes that enable the state to develop and implement public policies. In summary, it involves analyzing the state's capacity to propose and implement public policies considering its structural and governance limitations in a typical relationship between structure and context, considering the social, economic, political, and cultural contexts, which encompass events, actors, scenarios, and the power relations or interests at play (Souza, 2014). In other words, it reflects the state's competence to achieve objectives and purpose.

To analyze Correios' state capacity in meeting PNLD's needs, three of the seven dimensions identified by Cingolani (2013) were considered: the relational/territorial, transformative, and legal dimensions. The selected approach for evaluating state capacity was the choice of two

generic measures: the percentage of deliveries made within the contracted timeframe and the evaluation of PNLD managers as a praxis of state capacity.

CORREIOS AND PUBLIC POLICIES IN BRAZIL

The logistics of Correios is based on a network of agencies, sorting/transportation centers, and postal object distribution, with a unique presence in all Brazilian municipalities. In 2021, Correios closed the year with a total of 11,013 service units (6,028 own agencies and 4,985 outsourced agencies) and 4,449 specialized units in fleet management, mail and parcel processing, delivery, cargo handling, and logistics (ECT, 2021). Despite this nationwide network, there are profound regional inequalities related to infrastructure availability and general circulation conditions that drastically affect delivery times. These unequal flow conditions are linked to the selective urban development characteristics in the country, which prioritize the capitals of the southern and southeastern states and their metropolitan regions. The regions with lower flow conditions, where delivery times are slower, mainly consist of municipalities in the Northern region, some in the Northeast region, and Mato Grosso. Nevertheless, Correios include all capitals in their cargo air transport network, regardless of their less significant economic development, irrespective of market demand.

Correios play an important role as an agent of territorial integration and in overcoming inequalities imposed by the territory. Not only due to their nationwide presence - a logistical and technical aspect - but also as a state-owned company - a political aspect - that makes its network available as a logistical instrument of the State for implementing public policies. Correios act as the main logistics operator in public policies and represent the logistical arm of the Brazilian State. Their presence and network's capillarity are the distinguishing features that set Correios apart from any other organization in the country. According to Venceslau (2018), Correios participate or have participated in:

- Creation of addresses, together with municipalities, and assignment of Zone Information Code (Zip code);
- Issuance and regularization of Individual Registration;
- Issuance of digital certifications; in 2021, Correios issued over 57,000 digital certificates, functioning as an electronic identity for individuals and legal entities;
- Execution and logistics of the Zero Hunger Program, which began in 2003, where Correios agencies became collection and distribution points for over 615 tons of food;
- Creation of the Postal Bank in 2002, making Correios a banking correspondent;
- Creation of *Exporta Fácil* in 2003, facilitating the exportation of small volumes, including customs clearance;
- Logistic operation in the judiciary system;
- Distribution of various materials for the Ministry of Health;
- In cases of disasters, agencies serve as collection and distribution points for affected areas;
- Logistic operation with the Superior Electoral Court, ensuring confidential, synchronous, and secure distribution of electronic voting machines and other materials required for voting days;
- Delivery of exams, simultaneously in all Brazilian municipalities, for the National High School Exam (ENEM), National Student Performance Exam (ENADE), Provinha Brasil, among others, in a confidential manner, one hour before the start at all locations, and collecting the exams on the same day after the completion;
- Partnerships with institutions conducting public exams.

Last but not least, in partnership with the National Fund for Education Development (FNDE), Correios carry out one of the largest textbook distribution operations in the world. The National Program for the Textbook and Didactic Material (PNLD) ensures systematic, regular, and free distribution of books and other materials to support educational practice in Brazil. Since 1994, Correios have been responsible for the logistical operation of the program, which moves approximately 80 tons of books and delivers them to all 5,570 Brazilian municipalities in a mega-operation that utilizes various modes of transportation. The logistics operation of PNLD has peculiar characteristics, where the educational material must reach schools before the start of the school year in sufficient quantities based on the previous year's School Census information. This national public policy promotes the unification of the education system across the country, establishes a democratic process for teachers to choose the works, and overcomes the scarcity of educational materials, especially in remote areas.

LOGISTICS OF CORREIOS FOR PNLD

The PNLD, as a public policy, has its origins in the National Institute of the Book, created in 1929, and over time, it has solidified and gained momentum, expanding into the current PNLD model. The logistical distribution of the materials and textbooks that comprise the PNLD has accompanied the program's expansion. Before Correios took over the logistical distribution services for PNLD, only 25% of the materials purchased by the government arrived before the start of the school year, with the majority being delivered throughout the year, which disadvantaged students, teachers, and the national educational planning (ECT, 2021).

Since 1994, the distribution of PNLD has been carried out by Correios, a public company responsible for the execution of the mail sending and delivery system in Brazil. In this initial phase between 1994 and 2001, Correios developed their logistical system to meet the unique demands of PNLD, which differ from conventional deliveries, where the order is immediately sent for delivery upon receipt by Correios. The books and educational materials chosen by the teachers need to reach schools before the start of the academic year. There was a significant gradual increase in the number of textbooks purchased and distributed during this period, as shown in Table 1.

Table 1 – Evolution of the PNLD textbooks distribution by Correios

Acquisition Year	Academic Year	Distributed Books	Beneficiary Students
1994	1995	56,973,686	5,459,344
1995	1996	80,267,799	29,423,376
1996	1997	84,732,227	30,565,229
1997	1998	84,254,768	22,920,522
1998	1999	109,159,542	32,927,703
1999	2000	72,616,050	33,459,900
2000	2001	109,650,315	32,523,493
2003	2004	119,380,441	31,911,098
2007	2008	128,490,570	38,282,087
2010	2011	135,916,919	37,114,908
2013	2014	157,134,808	39,403,259
2015	2016	128,588,730	34,513,075
2016	2017	152,351,763	29,416,511

2017	2018	153,899,147	31,135,526
2018	2019	126,099,033	30,017,770
2019	2020	172,571,931	28,477,093
2020	2021	136,832,401	28,870,244
2021	2022	207,299,694	57,039,896
2022	2023	131,092,199	47,472,671

Adapted from Araújo (2011) and FNDE (2023).

This first phase of book delivery by Correios (1994-2001) was marked by the program's expansion and the development of Correios' distribution system, which was awarded the World Mail Awards in 2002 in the Customer Service category, competing with distribution companies from the United States, Spain, Italy, Singapore, and Sweden. This brought global recognition to PNLD and Correios.

However, with the progressive expansion of PNLD and the increase in operational distribution costs, which exceed R\$ 250 million annually, there was a need to improve the distribution logistics for this operation, which has unique characteristics and requires customized solutions. Concepts of lean logistics and ABC Analysis, also known as Pareto Analysis, were incorporated, aiming for greater efficiency in the logistical process and a new way to organize and classify deliveries based on their importance or representativeness. The goal was to optimize stocks, reduce resource waste, and deliver more accurately, minimizing "redelivery" to the same schools, secretariats, and municipalities.

Based on historical information on the quantity of materials delivered in the program and the incorporation of these concepts, Correios developed a unitization system (algorithm) that prioritizes deliveries based on economic batch sizes. It seeks a balance between the capacity and productive scheduling of each publisher, the quantity of materials (Stock Keeping Units - SKUs) to be sent to each school, package sizes (shipments), vehicle loading capacity, and the number of trips (delivery routes) required to complete the delivery. This system is called Virtual Palletization and has enabled the distribution of materials throughout the national territory in a more cost-effective and accurate manner. Nevertheless, the logistics distribution of PNLD involves a significant number of transportation modes (airplanes, trucks, vans, and boats) to deliver thousands of books and educational materials to over 30 million students before the start of the school year.

Currently, PNLD is Correios' largest customized operation, directly involving over 2,500 people. It moves approximately 80 tons of materials and involves around 20 different publishers producing over 2,200 different materials (SKUs). It is important to highlight that the materials are selected by teachers and schools through a democratic process of choice. Publishers produce and package these materials following a virtual screening (virtual palletization) developed by Correios, which collects and directs the materials to their distribution centers throughout the country. Correios then performs the handling and combination of loads (picking) and delivers these materials directly to schools, secretariats, and municipalities in all 5,570 Brazilian municipalities. This entire process, from the teacher's selection to the delivery to schools, takes a little over four months (Santos et al., 2017).

According to Vaz and Lotta (2011), the demand and complexity for the production of goods and services, as well as their implementation and operationalization, have led the government to resort to suppliers, concessionaires, and third sector organizations to varying degrees. The

demand for better public services and the constant transformations in the role of the state have prompted governments to seek innovative management tools and methods.

The logistics of Correios for PNLD exemplify this partnership between the state and a public company to effectively implement a national educational policy. Correios' extensive network and expertise in distribution have been instrumental in ensuring the timely and widespread delivery of educational materials to schools across Brazil. Through the continuous improvement of their logistical system and the adoption of lean logistics principles, Correios has optimized its operations and enhanced the efficiency of PNLD's distribution, reaching millions of students and supporting the unification of the educational system in the country.

Overall, the logistics of Correios for PNLD demonstrate the successful collaboration between a public company and the government in implementing a complex and critical public policy. Through their extensive network, specialized distribution centers, and innovative approaches to logistics, Correios has played a crucial role in providing access to educational materials for students nationwide, contributing to the improvement of education in Brazil.

STATE CAPACITIES

The analysis of state capacities is directly related to the promotion of development. In the face of economic crises caused primarily after the World Wars, it has always been the role of the state to seek and promote alternatives to overcome economic and social backwardness. This pursuit was based on conducting industrialization projects in underdeveloped countries and reindustrialization in developed countries.

This state intervention was seen as a way to generate economic development, promote industrialization, increase agricultural production, and accelerate urbanization (Gomide, 2016). However, the role of the state began to be questioned in the late 1970s due to growing distrust regarding the capacities and interests of the state, which were not always aligned with social demands. This context found support and gained strength in neoliberal theories (Evans, 1995). However, the practical measures of neoliberalism gradually lost legitimacy over the years and were unable to overcome economic instability, unemployment, and the growth of poverty in the late 1990s. From this point onwards, there was no theoretical, ideological, or political hegemony regarding the role of the state in development.

In the face of the variety of concepts, numerous works have emerged that delve into the role of the state and its capacity to promote economic development in the country (Tilly, 1975). These works have received contributions from various fields of knowledge and theories such as Marxist theory, the statist movement, and Weberian traditions. Currently, new questions and concepts such as governance and the effectiveness of state action in public policies have emerged (Cingolani, 2013). Nevertheless, there are some congruencies in the debate on state capacities, where it is worth mentioning the issue of the centrality of the state in carrying out its functions in a professionalized manner and independently of specific interests of certain social groups.

Cingolani (2013) identified, in his systematic review, at least seven main dimensions in studies that address state capacity. They are as follows:

- **Military dimension:** The state's capacity to monopolize the administration of coercive power.

- Fiscal dimension: The capacity to extract resources from society (taxes, fines) and exercise control over state expenditures.
- Administrative dimension: The capacity to maintain a professional and isolated bureaucracy (Weberian tradition).
- Transformative or industrialization dimension: The capacity to intervene in the productive system and shape the economy.
- Relational or territorial coverage dimension: The state's capacity to permeate society and internalize social interactions within its territories' actions.
- Legal dimension: The capacity to guarantee commitments made by the state and enforce contracts.
- Political dimension: The capacity of elected leaders to influence political priorities among institutions (parties, congresses, chambers, unions, etc.).

Although there are other classifications regarding the dimensions of state capacity, many of them are convergent as they express the same dynamics and interactions. Once the main dimensions have been established and the main concepts of state capacity have been presented, the discussion turns to the ways of measuring this capacity. According to Cingolani (2013), there are three main approaches in the literature for measuring state capacity.

The first approach is the most applied in the economics and international relations literature, and it consists of choosing a generic measure using large-scale statistical studies and uncommon variables in the field as a proxy for state capacity, such as the date of the first national census, per capita GDP, homicide rates, or the seniority level of the bureaucracy. In the second approach, a limited and single definition is chosen as the corresponding proxy, and the focus of the works is solely on one aspect of capacity. In this case, the dimension of interest corresponds to clear and direct measures or, to a lesser extent, indirect measures, as seen in the work of Hendrix (2010), which relates state administrative capacity using commodity exports and the confiscation index as proxies. The third approach adopts multiple dimensions of state capacity, establishing and creating composite or aggregated indicators that account for different aspects. This approach is used as a strategy to overcome the multidimensional nature of the subject. Fortin (2010) establishes a classification for developed countries, using five measurements in four dimensions of state capacity, combining corruption indices (administrative), money held in banks and property rights (legal), revenue tax (fiscal), and infrastructure reforms (transformative).

In general, most of the works reviewed by Cingolani (2013) associate state capacity with administrative capacity using Weberian characteristics and proxies, influenced by the work of Evans (1995), who establishes that state capacity is associated with the ability to implement public policies, which would require a professionalized bureaucracy equipped with resources and instruments, as established by Gomide (2016). The vast majority of these studies focus only on the bureaucratic dimension, neglecting the other dimensions of state capacity that lack more measurement forms.

Few studies address how to measure capacities in the political and relational dimensions, perhaps because various actors influence the formulation and implementation of public policies. Another highlight is the scarcity of national works that address coordination capacity, which may be associated with the federal characteristic of Brazil, where there is a level of autonomy and interdependence among the entities (municipalities, states, and the federal government) in the processes of public policies (Fortin, 2010).

EVALUATION OF CORREIOS' CAPACITY

The evaluation of public policies is important for the establishment of a functional democracy, enabling the improvement of established strategies, particularly in education policies that are essential for reducing social inequalities and ensuring full exercise of citizenship (Oliveira & Passador, 2019). According to Castro (1996), when seeking elements to discuss the implementation of education public policy focused on textbooks, it is necessary to understand and assess not only how the spending occurs, through government priorities, but also the possibilities for improving the state's capacity and the Brazilian market in this segment.

This type of evaluation is still incipient in Brazil, unlike in developed countries. The need for monitoring and evaluating the quality-of-service provision, coupled with the operational difficulties of the PNLD due to its complexity and scope, requires measures to improve management through the proposition of actions that contribute to increasing its effectiveness. Therefore, the evaluation of implementation constitutes a task that will assess the relevance of maintaining or replacing institutional arrangements and opens up possibilities for investigations into the consequences that new procedures may generate.

In this case, the justification for this protocol of intention is threefold: first, due to the need to evaluate the logistic distribution decisions based on planning constructs and state capacities, as well as their influence on the implementation and operationalization of public policy; second, the importance of providing technical advice on the current model and the logistics market scenario in Brazil, considering the collaborative relationships between the National Fund for the Development of Education (FNDE) and the Brazilian Postal and Telegraph Company (ECT), responsible for the distribution logistics of books and educational materials; and, finally, to develop and suggest improvements to enhance the logistic distribution management of the PNLD in Brazil. For the analysis of Correios' state capacity in serving the PNLD, three of the seven dimensions identified by Cingolani (2013) were considered: the relational/territorial dimension, the transformative dimension, and the legal dimension.

The relational or territorial dimension stands out and is of great relevance in Correios' role in the PNLD. Due to the need for territorial coverage of the public policy and Correios' unique reach in all Brazilian municipalities, it allows the State to permeate society as a whole and internalize social interactions within its actions throughout the territory.

The transformative dimension can be observed in the hiring of individuals and companies to participate, even temporarily, in the processes of handling materials at distribution centers and in the transportation and distribution of books. The state is capable of intervening in the local productive system and shaping the economy, promoting regional development in the logistics sector, and generating jobs and income.

The legal dimension arises from the need to ensure the constitutional commitments made by the State regarding quality education for all and the execution of the contract between FNDE and Correios. The selected approach to assess and measure state capacity, among the three presented by Cingolani (2013), was the first one, which consists of choosing generic measures, in this case, the percentage of deliveries made within the contracted deadline and the evaluation conducted by PNLD managers as proxies for state capacity.

According to FNDE, Correios have consistently achieved an average percentage of 99.5% of deliveries made by February 10th in recent years, which demonstrates the efficiency of the distribution system given the complexity of the process. The residual percentage (0.05%) corresponds to books and materials posted after the specified period, technical shipments, Teacher's Manuals, or damaged materials (stolen, lost, or misplaced), as well as other situations that may occur in an operation of this magnitude, which require additional deliveries after the established deadline.

Despite the excellent performance of Correios in distributing the PNLD, there are some issues related to delays in rural schools, a short time frame for checking the shipments (time pressure), delays due to school vacations, errors or lack of address data updates, seasonal issues (rainfall), and difficulties accessing certain regions, as some areas can only be reached by rivers during periods of flooding. These points should be taken into consideration when evaluating the logistic distribution of the PNLD.

According to Santos et al. (2017), when referring to the distribution logistics of the PNLD, it involves a partnership between the Ministry of Education, through FNDE, and Correios, which is responsible for delivering materials to public schools nationwide in a timely manner for use by students and teachers throughout the academic year. Although it is considered a milestone in the distribution of educational materials in the country, the PNLD still faces bottlenecks, mainly derived from the formal division between the program's planning and standardization functions and the administrative responsibility for executing the actions, which involve the process of selection, purchase, and distribution of books (Miranda & De Luca, 2004). These problems stem from the administrative operationalization process and include systematic delays in distribution, inconsistencies in book selection by teachers and book dispatch by FNDE, delays in schools receiving the books, as well as weaknesses in the process of using the sent works, which in some cases are disregarded by teachers.

The two main criticisms raised by some of the local managers of the PNLD, who responded to a questionnaire about the program's logistic distribution, are not directly related to the Correios' role in distribution. They are related to the quantity of books that arrive at schools, which for some schools is lower than the actual demand. This may be caused by the way the number of students for the following year is estimated, which is based on the school census and often overlooks class closures, changes in students' addresses, dropouts, and new enrollments. These factors may have little impact on the total number of books acquired but can create significant discrepancies in some schools and classes.

Additionally, there are delays in deliveries to schools in rural areas, where the final distribution responsibility lies with the municipal education secretariats and city administrations. They receive the materials from Correios and are responsible for organizing and delivering the books to schools located in these areas before the start of the academic year. However, some of these entities lack resources or infrastructure to carry out this task, resulting in delays in delivering materials to students and teachers.

Figure 1 shows that out of the 136 participants who answered the questionnaires, 116 are directly involved in some stage of the PNLD (85%), indicating that they have knowledge of how the distribution of materials occurs in their schools and education secretariats.

Figure 1 - Participants' Involvement in the PNLD

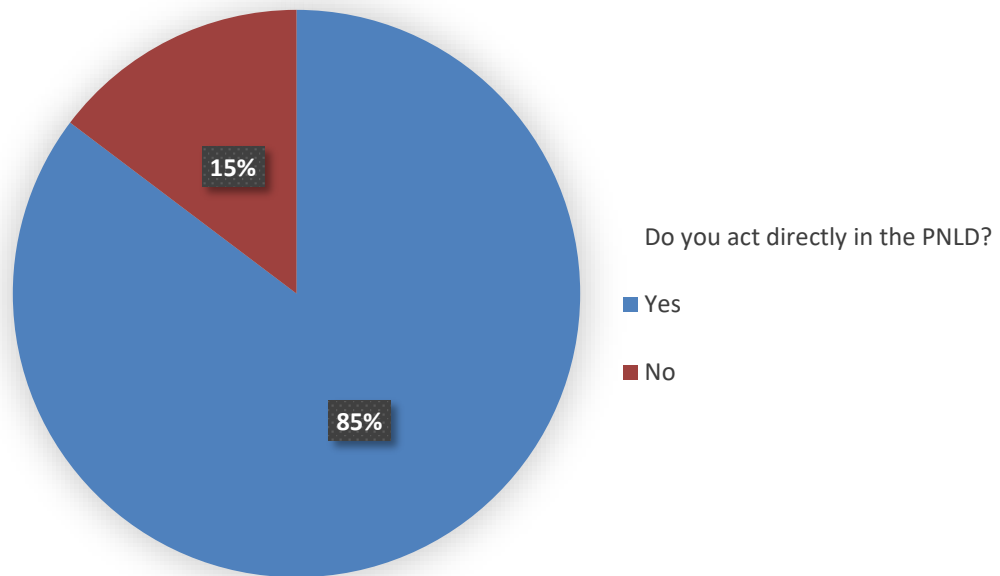
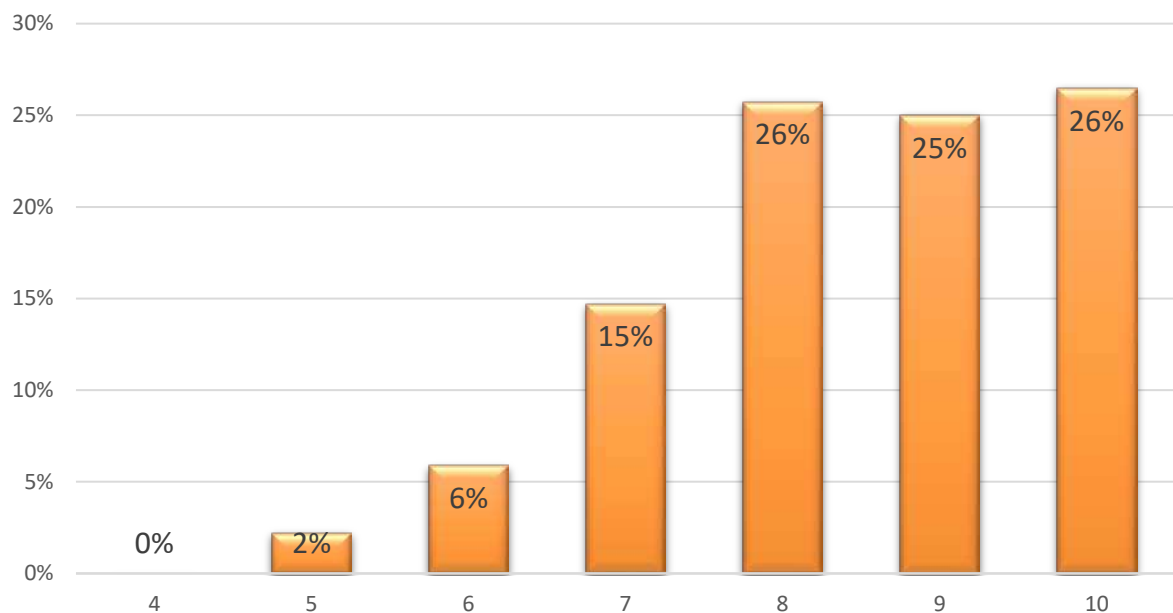


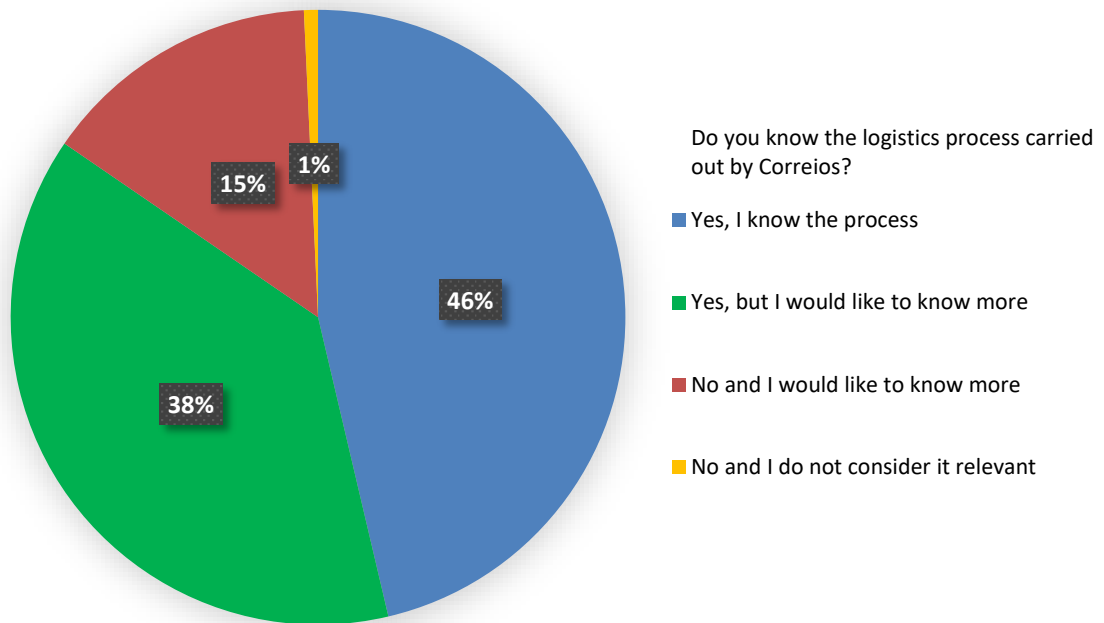
Figure 2 shows the grades (from 0 to 10) that the participants attributed to the question, What grade (0 to 10) would you give to the PNLD in general. We can observe that the participants evaluate the program very positively, giving the PNLD an average rating of 8.4, with a median of 9. There were no ratings below 5, and only a few (8%) rated it below 7.

Figure 2 - Ratings of the PNLD overall



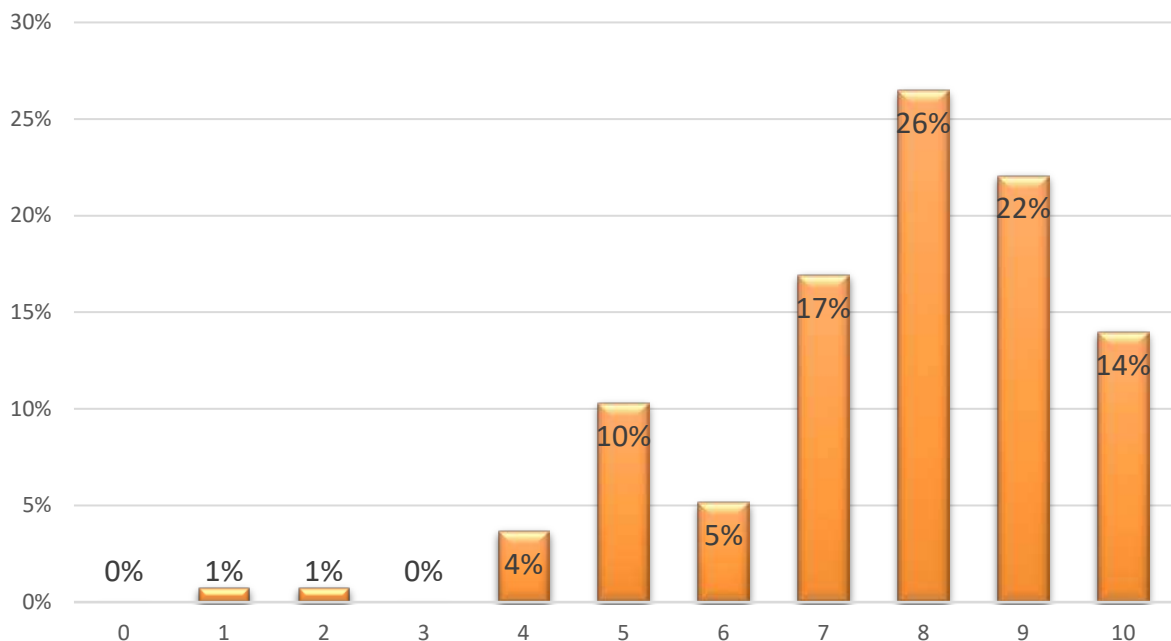
Out of the 136 participants in the survey, 84% (115) stated that they are familiar with the distribution logistics of the PNLD, as shown in Figure 3. According to the data, 63 participants (46%) consider themselves to have a deeper understanding of the process, 52 (38%) are familiar with the process but would like to know more, and only 21 respondents indicate that they do not have knowledge about the distribution logistics of the PNLD.

Figure 3 - Knowledge about the PNLD Distribution Logistics



However, participants rate the distribution logistics carried out by Correios with an average score of 7.7 (Figure 4), with a median of 8, which is nearly 0.7 points lower than the score given to the PNLD. When they were asked what grade (0-10) would you give for the logistics (distribution and delivery) of the PNLD. When asked about the reasons for their evaluation, they mention issues related to insufficient quantities of books and delays in rural schools, which are not directly attributed to Correios. This indicates the need for more information to be provided to these managers about the distribution process.

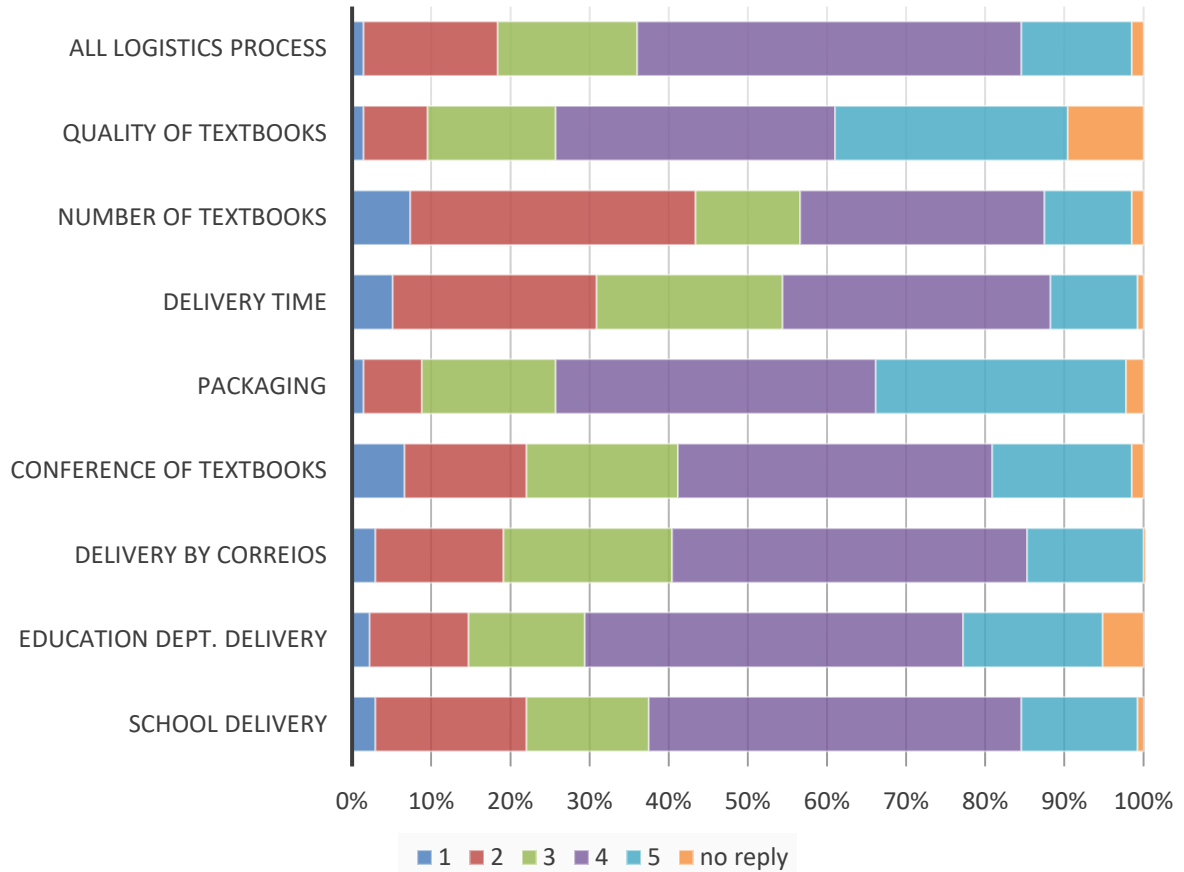
Figure 4 - Evaluation of PNLD Logistics



LEVELS OF SATISFACTION OF LOCAL MANAGERS OF PNLD

In evaluating the levels of satisfaction among the 136 participants of the questionnaire administered to local managers of PNLD from all regions of the country, it is possible to identify some important aspects related to the logistics of PNLD, both in terms of distribution and broader aspects such as quantity and quality of the materials delivered. Figure 5 presents the participants' level of satisfaction with PNLD, considering a numerical scale from 1 to 5.

Figure 5 - Levels of Satisfaction of Participants with PNLD.



In the first graph, it can be observed that the level of satisfaction with the overall logistics of the program (acquisition, production, storage, distribution, and delivery) is considered good, with an average rating of 3.6 (on a scale of 0 to 5). This average remains consistent in aspects related to deliveries to schools (3.5), to education departments (3.7), deliveries by Correios (3.5), and material inspection upon receipt (3.5). It is worth noting that the second graph shows an increase in negative evaluations regarding deliveries to schools, possibly due to delays in rural schools. However, this increase does not significantly affect the average rating, indicating the punctuality of this issue.

This average significantly increases when assessing aspects of packaging and condition of the delivered materials (4.0), as well as the quality of the books (3.9) distributed by PNLD. However, there is a significant decrease in ratings regarding delivery deadlines (3.2) and quantities of materials (3.0).

These data support the observations raised in the evaluation of Correios' capacity, where the criticisms and specific problems mentioned are not related to the company's performance in the distribution of PNLD. It is important to highlight that Correios are not responsible for the procurement or estimation of purchases for the following year. These responsibilities lie exclusively with FNDE/MEC, who also have a technical reserve of books to meet such specific demands, which are distributed and delivered throughout the school year.

Regarding delays in rural areas, Correios deliver to education departments and municipalities within the agreed-upon deadlines, as stipulated in their contract with FNDE. The issues with delays in these areas are related to the lack of organization, infrastructure, and resources of local education departments to carry out the final delivery to rural schools, as well as delays in the requests for technical reserve materials.

CONCLUSIONS

Over the past three decades, Correios has been exclusively providing the distribution service for books and materials in the PNLD program, demonstrating the technical capacity required for such a complex operation and adapting to the continuous development of this essential public policy in Brazilian education. Correios has been successful in meeting this demand, with 99.5% of PNLD deliveries being completed by February 10th. This success is attributed to the necessary conditions that Correios possesses to provide the service in accordance with the requirements for the full execution of PNLD. These conditions have been built and improved over time.

Correios has the infrastructure and the ability to mobilize resources in a short period, which is rare in the national public administration. Being the largest logistics operator in the country, Correios, as a publicly owned company, is the only one present throughout the national territory, serving all Brazilian municipalities, including the smallest and most remote ones where any logistics operation is economically unfeasible due to difficulties in accessibility or low volume of services provided/demanded.

A logistics operation of the magnitude of PNLD must necessarily reach all municipalities in the country, including the most isolated cities, which requires a greater coverage and capillarity to reach the entire Brazilian territory. Correios is the only national company with the scale and capacity to meet the current distribution demands of PNLD. The national logistics market and private logistics operators have been rapidly developing in recent years, expanding their presence in the territory and optimizing resources through the use of technologies and leaner processes. However, there is no single company in the country with the same capacity and national coverage as Correios.

The logistics performed by the key players involved in the PNLD distribution process (FNDE, Correios, publishers, and the market) aim to deliver the materials in the shortest possible time, with the best cost, providing speed, quality, and security, as observed in this study. Although there are occasional issues, the entire process has been carried out efficiently and has yielded satisfactory results in recent years. There is a continuous improvement in the process and the refinement of distribution in an extremely complex environment, including significant private sector involvement, such as the leasing of warehouses, hiring of workforce, and local fleet rentals, contributing to regional development in the country.

Long-term solutions such as consortia of companies in different regions of the country, where multiple companies come together to meet specific demands (PNLD), or local concessions by regional lots, could be viable alternatives in the event of a potential replacement of Correios as the logistics operator for PNLD. Gradually developing a national distribution network to achieve coverage throughout the territory, capillarity, and commitment to this public policy, which currently only Correios possesses in Brazil.

However, in addition to the time required to develop such a network, there are other fundamental aspects to consider in this analysis, such as the management and oversight of one or multiple contracts of this magnitude in a decentralized manner, which would be more complex and challenging. Furthermore, some regions in Brazil lack basic local infrastructure (suitable warehouses for the operation, trained human resources, adequate transportation modes) for a company or logistics operator to meet the demands of PNLD.

Therefore, a thorough and cautious evaluation of such alternatives would be necessary, considering their impact on service provision and the management and oversight of the distribution process, which is currently integrated and centralized by FNDE and Correios. This could result in significant losses for an essential public policy in education that has been developed and refined by the public administration, achieving levels of excellence in terms of efficiency and effectiveness.

This study presents a preliminary evaluation of Correios' state capacity to meet the logistics demand of PNLD, identifying and mapping the current logistics positioning of PNLD and its managerial implications. It was possible to identify and assess all logistics decisions and their influence on the implementation and operationalization of the public policy. The level of delegation of services between FNDE and Correios is quite high and centralized, yet it serves the social interest and presents reasonable logistics integration costs in PNLD execution. Correios seeks improvements in its processes to reduce operational costs without compromising its commitment to public resources and welfare.

Through future work, it will be possible to develop a more accurate assessment of the current model, considering the collaborative relationships among FNDE, Correios, and the market, and indicating methodologies and technologies that can contribute to the improvement of the logistics management and distribution of PNLD in Brazil.

REFERENCES

Abrucio, F. L. (2009). Nova Gestão Pública. In L. M. de Oliveira & M. C. C. P. Galvão (Eds.), *Desenvolvimento gerencial na administração pública do Estado de São Paulo*. São Paulo: Fundap - Secretaria de Gestão Pública.

Araújo, J. B. (2011). *Processo logístico de distribuição dos livros didáticos no Brasil* (Undergraduate thesis). Universidade de Brasília, Brasília, Brazil.

Bersch, K. S., Praça, S., & Taylor, M. (2012). An archipelago of excellence? Autonomous capacity among Brazilian State Agencies. Paper presented at the Princeton University - Universidade de São Paulo Conference on "State Capacity in Developing World," São Paulo, Brazil.

Bichir, R. M. (2015). Capacidades estatais para a implementação de programas de transferência de renda: os casos de Brasil, Argentina e África do Sul (Texto para Discussão: IPEA, nº 2032). Brasília, Brazil: IPEA.

Castro, J. A. (1996). O processo de gasto público do Programa do Livro Didático (Texto para Discussão: IPEA, nº 406). Brasília, Brazil: IPEA.

Chueke, G. V., & Lima, M. C. (2012). Pesquisa Qualitativa: evolução e critérios. *Revista Espaço Acadêmico*, 11(128), 63-69.

Cingolani, L. (2013). *The State of State Capacity: A review of concepts, evidence and measures* (Working paper, No. 31). Maastricht, Netherlands: Graduate School of Governance.

Corrêa, V., & Passador, C. S. (2019). *O campo do conhecimento em administração pública no Brasil: uma análise a partir do olhar do Guerreiro Ramos*. Brasília, Brazil: Enap.

ECT - Empresa Brasileira de Correios e Telégrafos. (2003). Departamento de Vendas no Atacado. Logística de distribuição e entrega dos objetos do Programa Nacional do Livro Didático (PNLD). Relato de Experiência. Escola Nacional de Administração Pública (ENAP). Retrieved from <http://repositorio.enap.gov.br/handle/1/553>

ECT - Empresa Brasileira de Correios e Telégrafos. (2021). Relatório da Administração Correios – 2021. Retrieved from <https://www.correios.com.br/aceso-a-informacao/institucional/publicacoes/relatorios/relatorio-de-administracao/relatorios-de-administracao>

Evans, P. (1995). *Embedded Autonomy: States and Industrial Transformation*. Princeton, NJ: Princeton University Press.

Fernandes, A. G. (2013). *Balanced Scorecard aplicado à Administração Pública: uma proposta de planejamento estratégico para o Departamento de Administração e Economia da Universidade Federal de Lavras* (Master's thesis). Universidade Federal de Lavras, Lavras, Brazil.

FNDE - Fundo Nacional de Desenvolvimento da Educação. (2023). Dados Estatísticos do Programa Nacional do Livro e do Material Didático (PNLD). Retrieved from <https://www.gov.br/fnde/pt-br/aceso-a-informacao/acoes-e-programas/programas/programas-do-livro/pnld/dados-estatisticos>

Fortin, J. (2010). A tool to evaluate state capacity in post-communist countries, 1989-2006. *European Journal of Political Research*, 49(5), 654-686.

Gil, A. C. (2002). *Como elaborar projetos de pesquisa* (4th ed.). São Paulo, Brazil: Atlas.

Godoy, A. S. (1995). Pesquisa qualitativa: tipos fundamentais. *Revista de Administração de Empresas*, 35(3), 20-29.

Gomide, A. A., Silva, F. S., & Pires, R. R. C. (2014). Capacidades estatais e políticas públicas: passado, presente e futuro da ação governamental para o desenvolvimento. In L. M. Monastério,

M. C. Neri, & S. S. Dillon (Eds.), *Brasil em Desenvolvimento 2014: Estado, planejamento e políticas públicas*. Brasília, Brazil: IPEA.

Gomide, A. A. (2016). Capacidades estatais para políticas públicas em países emergentes: (des)vantagens comparativas do Brasil. In A. A. Gomide & R. R. Boschi (Eds.), *Capacidades Estatais em Países Emergentes: o Brasil em perspectiva comparada*. Rio de Janeiro, Brazil: Instituto de Pesquisa Econômica Aplicada.

Hendrix, C. S. (2010). Measuring state capacity: theoretical and empirical implications for the study of civil conflict. *Journal of Peace Research*, 47(3), 273-285.

Miranda, S. R., & De Luca, T. R. (2004). O livro didático de história hoje: um panorama a partir do PNLD. *Revista Brasileira de História*, 24(48), 123-144.

Oliveira, D. P. R. (2012). *Teoria geral da administração: uma abordagem prática* (3rd ed.). São Paulo, Brazil: Atlas.

Oliveira, L. R., & Passador, C. S. (2019). Ensaio teórico sobre a avaliação de políticas públicas. *Cadernos EBAPE (FGV)*, 17, 324-337.

Pereira, A. K. (2014). *A construção de capacidade estatal por redes transversais: o caso de Belo Monte* (Doctoral dissertation). Instituto de Ciência Política da Universidade de Brasília, Brasília, Brazil.

Pires, R. R. C., & Gomide, A. A. (2016). Governança e capacidades estatais: uma análise comparativa de programas federais. *Revista de Sociologia e Política*, 24(58), 121-143.

Rocha, R. (2004). A avaliação da implementação de políticas públicas a partir da perspectiva neo-institucional: avanços e validade. *Cadernos Ebape*, 2(1), 1-12.

Santos, A. H. A., Silva, B. G. J., Lisboa, A. P., Santos, G. S., & Chile, R. P. (2017). Logística de distribuição e entrega dos objetos do Programa Nacional do Livro Didático – PNLD: um Estudo de caso na unidade dos Correios de Aracaju-SE. In IX Simpósio de Engenharia de Produção de Sergipe - SIMPRO. Aracajú, Brazil: Publisher.

Saragon, M. S., & Oliveira, D. R. (2018). *Análise de Conjuntura: Adequações do Instrumento para as Decisões de Planejamento*. In XLII Encontro da ANPAD. Curitiba, Brazil: Publisher.

Souza, H. J. (2014). *Como se faz análise de conjuntura* (34th ed.). Petrópolis, RJ, Brazil: Vozes.

Tilly, C. (1975). *The Formation of National States in Western Europe*. Princeton, NJ: Princeton University Press.

Vaz, J. C., & Lotta, G. S. (2011). A contribuição da logística integrada às decisões de gestão das políticas públicas no Brasil. *Revista de Administração Pública*, 45(1), 107-139.

Venceslau, I. (2018). O correio como braço logístico do estado: a execução de políticas públicas por meio da rede de agências postais no território brasileiro. *R. Bras. Geogr.*, 63(2), 24-37.