



ANALYSIS OF THE DRUG ACQUISITION PROCESS: A CASE STUDY AT THE CITY HALL OF MANAUS

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ABSTRACT

The management of government purchases is an issue that plays a prominent role in the daily lives of Brazilian public managers. At the same time, it represents a challenge for issues related to legal aspects, efficiency, and administrative effectiveness. The general objective of the article is to evaluate the spending on the purchase of medicines through the minutes of registration of prices, within the scope of the Municipal Health Department of Manaus, with a budget cut from the years 2013 to 2015. For that, a case study of an exploratory nature was carried out. Data were collected through documentary research with the Protocol System of the secretariat. Subsequently, they were categorized and a database that enabled the analysis of the drug acquisition processes was generated. The results of the research indicate that the investment in the purchase of medicines is independent of the budget allocation and the efficiency of the drug procurement process is associated with the chain management of the entire acquisition process.

Keywords: Public Spending; Government Procurement; Acquisition of Medications.



1. INTRODUCTION

The Federal Constitution of 1988 recommends that health is a right of all Brazilians, ensuring the reduction of the risk of diseases and other health problems, as well as universal and equal access to actions and services for their promotion, protection and recovery, by means of social, public and economic policies, being a duty of the State and its confederate entities (Brasil, 1988).

To that end, the legislation establishes that the Unified Health System (SUS, acronym in Portuguese), created by Law No. 8,080, of September 19, 1990, should guarantee everything necessary to prevent, treat and cure diseases, including access to medicines, which are distributed free to SUS users. (Brasil, 1990).

The Municipal Health Secretariat of Manaus (SEMSA, acronym in Portuguese) undertakes a major budgetary effort to comply with the legislation, in order to make available the necessary medicines for the health treatment of SUS users that are attended on a daily basis in health care establishments (EAS, acronym in Portuguese) in Manaus.

In 2010, SEMSA had a budget allocation for Pharmaceutical Assistance in the amount of R\$ 8,767,932.32; in 2011 the allocation was R\$ 18,354,963.59 (increase of 109.34%); and in 2012¹ of R\$ 25,966,359.18 (an increase of 41.47%). Interrupting the growing series, in 2013, the allocation was R\$ 20,462,649.73 (a decrease of 21.20% in relation to the previous year); in 2014 it was R\$ 19,168,147.20 (decrease of 6.33% in relation to the previous year); and in 2015 there was an increase of 70.46% over the value of the previous year, determining an allocation of R\$ 32,674,397.56².

According to the available data, from 2010 to 2015, the public administration has designated R\$ 125,394,449.58 for Pharmaceutical Assistance, used primarily for the acquisition of medicines and health supplies³.

The acquisition of medicines, goods, products or services within the public sphere is regulated by Law 8,666 of June 21, 1993 (Brasil, 1993). This administrative instrument aims at disciplining and regulating the procurement/purchase/hiring process by means of public bidding. The bidding aims to ensure compliance with the constitutional principle of isonomy and to select the most advantageous proposal for

public administration in order to avoid fraud and misappropriation of public money (Brasil, 2006).

Concerning public administration, which is not for profit, its profitability comes from the economy. The lower the procurement cost the higher the economy for the public treasury. Similarly, the lower the cost involved in procuring medicines and health supplies, the greater the savings for the SEMSA.

In this direction, the general objective of the research was to evaluate the spending on the purchase of medicines through the SEMSA price registration minutes, with a budget cut from the years 2013 to 2015.

The article is divided into six sections, the first being the introduction. the theoretical reference is found in the second part, in which it is sought to base the theme with the state of the art. Then, the methodology that describes how the research was developed is presented. The analysis of the results, based on the research data, is in the fourth section, followed by the conclusion and references.

2. THEORETICAL REFERENCE

2.1 Supply chain management

Ballou (2006) says that the origin of the term Supply Chain Management (SCM) is a mystery. Cooper et al. (1997) and Cerra et al. (2014) state that it first appeared in the literature in the early 1980s, and it was only in the 1990s that the academic literature demonstrated its theoretical foundation and methodological assumptions, differentiating it from Logistics/Integrated Logistics⁴.

Cooper et al. (1997) tacitly claim that SCM and logistics have different processes. Logistics is an SCM process, exercised within the focal company. SCM encompasses the process flow management of various companies, from the primary (upstream) suppliers to the end consumer (downstream), with their management from the focal company (Santos et Alves, 2015).

According to the Council of Supply Chain Management Professionals (2016), SCM is the planning and management of all activities involved in procurement, transformation and supply. It also includes all logistics management activities,

1 Submission No. 1468/2015-LAI/OUVMSUS/GABIN/SEMSA, of April 10, 2015.

2 Planning Department – DEPLAN/SEMSA.

3 Priority, but not essentially, as the resource can also be used for the acquisition of equity as, for example, dental instruments or hospital/outpatient equipment.

4 Taking the Annual Conference of the Council of Logistics Management, which was held in the United States in 1995, as a reference, 13.5% of the works presented contained the term "supply chain" in the title. In 1997, this percentage rose to 22.4%.



coordination and collaboration with channel partners (suppliers, intermediaries, third-party service providers, and customers). In essence, SCM integrates demand management (input) and supply management (output) within and between companies (Cooper *et al.*, 1997; Ballou, 2006; Wanke et Corrêa, 2014).

Other correlated definitions in the literature corroborate the understanding of the concept of SCM, with emphasis on the evolution of the perception that the authors have over time on the process, as can be seen in Table 1.

According to these definitions, SCM is a new design for the strategic-operational management of an organization (public or private), integrating work processes, unifying communication channels, applying new information technology (IT) tools, and adding value to the flows of partners (customers and suppliers) into a single chain, as if it were a large pull system.

2.2 Public procurement management

The Federal Constitution of 1988, in its Article 37, item XXI, establishes public bidding as a *modus operandi* for public purchases, that is, the contracting of works, services, purchases and disposals within the public administration, direct and indirect, in the three Powers, as well as Union, States, Municipalities, and Federal District (Brasil, 1988). It is duly regulated by Law No. 8,666 of June 21, 1993, which

establishes the rules on the bidding processes of the public administration (Brasil, 1993).

A successful purchase means buying goods and services in the right quantity and quality, at the right time, at the most economical price possible for the public administration (Tridapalli *et al.*, 2011).

The Court of Auditors of the Union defines bidding as the formal administrative procedure in which the public administration calls, by means of conditions established in its own act (notice or invitation), companies wishing to submit proposals for the offer of goods and services (Brasil, 2010).

Its objective is to provide greater savings to the public administration, selecting the most advantageous proposal, ensuring equal opportunities for all interested parties and making it possible to attend the competition of as many competing companies as possible (Brasil, 1993; 2010).

The legislation also establishes modalities for public tenders (Brasil, 1993). Modality is the specific way of conducting the bidding procedure, based on criteria defined in Law (Brasil, 2010), as shown in Table 2.

2.3 The Price Registration System

Article 15, item II, of Law No. 8,666, of June 21, 1993, establishes that purchases, whenever possible, should be processed through a Price Registration System (Brasil, 1993;

Table 1. Supply Chain Management Definitions

Author	Definition
Santos et Alves (2015)	It is the management of the entire supply chain, from the focal company, covering the whole flow of product transformation, focusing on business processes related to the requirements of end customers, aiming to achieve competitive advantage, adding value in the vision of customers and other stakeholders.
Souza (2015)	It is the management of all activities associated with internal and interorganizational logistics, as well as coordination and collaboration among all partners in the chain, be they suppliers, service providers or consumers.
Simon et al. (2015)	It is the integration of key end-user business processes through primary suppliers that deliver products, services and information that add value to customers and other stakeholders.
Cerra (2014)	It is the integration of key end-user business processes to the original suppliers that provide products, services and information that add value to customers and stakeholders.
Wanke et Corrêa (2014)	Chart that integrates logistics and distribution networks, production operations and supply activities within and between companies.
Ballou (2006)	It is the planning and management of all activities involved in the supply and acquisition, conversion and all logistics management activities. Coordination and collaboration with channel partners, who can be suppliers, intermediaries, third-party service providers and customers. In essence, supply chain management integrates supply and demand management within and between enterprises.
Cooper et al. (1997)	It is the integration of end-user business processes through initial vendors that deliver products, services, and information that add value to customers.

Source: Prepared by the authors, 2017.



Table 2. Bidding modalities

Legislation	Modality	Definition	R\$ Works and services of Engineering	R\$ Purchases and Services	Can it be electronic?	Price Registration?
Law No. 8,666/1993	Competition	Bidding mode among any interested parties who, at the initial stage of preliminary enabling, prove to have the minimum qualification requirements demanded in the bidding for the execution of their object.	Up to 150,000.00	Up to 80,000.00	No	Yes
	Price survey	Bidding modalities between interested parties duly registered or that meet all the conditions required for registration until the third day before the date of receipt of the proposals.	Up to 1,500,000.00	Up to 650,000.00	No	No
	Invitation	Bidding modalities between interested parties of the branch pertinent to their object, registered or not, chosen and invited in a minimum number of three by the administrative unit.	Above 1.500.000,00	Above 650.000,00	No	No
	Tender	Modality of bidding among any interested parties for the choice of technical, scientific or artistic work, through the institution of awards or remuneration to the winners.	Not applicable		No	No
	Auction	Modality of bidding between any interested party for the sale of movable property unserviceable to the administration or of products legally seized or pawned or for the sale of immovable property.	Not applicable		No	No
Law No. 10,520/2002	Trading floor	Bidding procedure carried out among interested parties in the field that deals with the object of the bidding proving to have the minimum qualification requirements demanded in the public notice, in which the dispute for the supply of common goods or services is made in public session. It can be done face-to-face or electronically.	Not applicable	Any amount	Yes	Yes

Source: Adapted from Brasil, 1993; 2010; SEBRAE, 2014a; 2014b. Prepared by the authors, 2017

SEBRAE, 2014c), being regulated by Decree No. 7,892, dated January 23, 2013.

The Price Registration System⁵ is the set of procedures adopted by the public administration for the formal registration of prices for future acquisitions, which makes possible several contracting purchases, sporadic or successive, without the need for a new bidding process for each acquisition (Brasil, 2010; SEBRAE, 2014b).

According to the Court of Auditors of the Union, this is a list of products and suppliers, selected through a previous bidding process, for eventual and future procurement of goods and services (Brasil, 2010; SEBRAE, 2014c). A peculiarity is that the minutes of registration of prices are available to the bodies and entities participating in the registration, but also to any other body or entity of the public administration, even though it has not participated in the bidding process (Brasil, 2010).

⁵ The Price Registration System is not a bidding modality or a type of bidding.

The Price Registration System should be adopted preferably when: (a), there is a need for frequent contracting by the characteristics of the good or service; (b) by the nature of the object it is not possible to define in advance the quantity to be demanded by the Administration; (c) the acquisition of goods with provision for installments or contracting services required by the Administration is more convenient for the performance of the duties; and (d) it is advantageous to purchase goods or contract services to serve more than one public administration body (Brasil, 2010).

2.4 Quality of expenditure/cost management in the public sector

Behind the theme of public procurement through the bidding process, aiming to purchase goods and services with lower value, is the question of quality of spending/cost management, which assumes that the more efficient and effective the procurement process, the better the financial results, the lower the government disbursements, and the greater the economy for the public treasury.



Cost management is important because public resources are increasingly limited, making it impossible for governments to meet all demands and manage the functioning of the public machine; thus, there is a need for governments to find a smart way to raise and spend public money (Tridapalli *et al.*, 2011), mainly through public purchases (Dezolt *et al.* 2016).

According to Tridapalli and Borinelli (2015), this whole cycle involving public procurement, from the definitions of the demands to the end of the useful life of the assets or the end of a contract, can be defined as SCM.

According to the specialized literature, cost is any disbursement related to the production of goods or service. Padoveze (2011) defines costs as the amount paid for something. Pinto (2009) understands that costs are accumulated expenses related to the manufacture or acquisition of products. Leone (2000) defines cost as the monetary measurement of goods or services purchased. The costs can be fixed or variable, direct or indirect, and are usually linked to the tripod cost-volume-profit.

In times of crisis, unemployment, economic instability, globalization, high competitiveness, and entry of new competitors, cost management has become indispensable for the survival, maintenance, and profitability of any organization, both public and private.

In the private sector there was a readjustment of profitability to lower levels; profit became the result of the price of the product minus the cost (Martins *et al.*, 2012), and the cost can no longer be passed on in its entirety to the final consumer. In the public sector, there was a need to make cuts, reallocate resources and set new priorities. In this sphere, the transfer of the cost to the final consumer represents an increase in taxes in order to increase the collection.

In the same direction, public expenditures in the Union, states, and municipalities can be defined as any disbursement made by the public administration in the acquisition of a good or contracting of a service (Brasil, 2010; SEBRAE, 2014b).

Data indicate that public spending on purchases, acquisitions and contracts has grown in recent years. In Brazil, according to Tridapalli et Borinelli (2015), public purchases represent 10% of gross domestic product (GDP). In world terms, public purchases comprise 18% of GDP (Tridapalli *et al.*, 2011).

3. METHODOLOGY

For this research, whose general objective is to evaluate the spending for the acquisition of medicines by means of

price registration minutes at SEMSA, the method used was a case study (Yin, 2010).

The case study is a thorough investigation, a research that analyzes in depth one or more research objects, which can be an organization, groups of an organization, a governmental program, an educational system, a social unit, a person, family, group or community (Zanella, 2009; Gerhardt et Silveira, 2009; Prodanov et Freitas, 2013).

The objective of the case study is to provide an analysis of the context and the processes involved in the studied phenomenon, allowing a great knowledge with rich detail, as well as to know deeply the “how” and “why” of a certain situation that is supposed to be unique, seeking to discover what is most essential and characteristic in it (Gerhardt et Silveira, 2009).

It consisted of an exploratory research, of an applied nature, whose approach to the problem was accomplished through the epistemological procedure of quantitative and qualitative research.

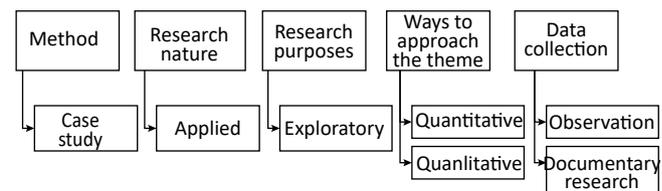


Figure 1. Methodological characteristics of the study

Source: Prepared by the authors, 2017.

Applied research is related to knowledge acquisition for the purpose of practical application in specific situations (Prodanov et Freitas, 2013). Its motivation is the solution of concrete, practical and operational problems (Zanella, 2009).

Exploratory research has the objective of deepening knowledge about a fact, phenomenon or object, providing greater familiarity with the problem, making it more explicit (Zanella, 2009; Gerhardt et Silveira, 2009; Gil, 2010).

According to Zanella (2009), quantitative research is characterized by the use of statistical instruments in the collection and processing of data. It is concerned with numerical representativeness, with objective medication and the quantification of results. Gerhardt et Silveira (2009) and Prodanov et Freitas (2013) point out that in quantitative research everything can be quantifiable, and opinions and information can be translated into numbers.

Qualitative research is characterized by the non-use of statistical tools in data analysis (Zanella, 2009; Prodanov et



Freitas, 2013). According to Gerhardt et Silveira (2009), qualitative research is concerned with aspects of reality that cannot be quantified; in the same direction, Prodanov et Freitas (2013) describe qualitative research as an inseparable link between the objective world and the subjectivity of the subject that cannot be measured or described numerically.

Research data were collected through documentary observation and research. The information was collected together with the Protocol System - PROTUS, and was later categorized, generating a database that allowed the analysis of the processes.

4. ANALYSIS OF RESULTS

The locus of the research was the SEMSA, created by Law No. 1,240, of November 20, 1975. It is the competent body within the administrative structure of the Municipality of Manaus for the execution of public health policies and services in the municipality.

The Department of Logistics (DELOG) is the competent sector, within the administrative structure of SEMSA, to manage SEMSA's entire supply chain, from procurement (supply logistics), receiving and storage (internal logistics), distribution to the SEMSA Network (distribution logistics) and collection of waste products (reverse logistics).

The data referring to the processes of acquisition of medicines by means of price records were organized into three research sources: (1) Database Processes, (2) Pawn Database and (3) Database Processing. Subsequently, they were structured and categorized into eight stages.

Step 1 - Treatment of the primary database

The Logistics Department, through information collected by the Processes Sector, provided the primary database with pertinent information on the drug acquisition processes, with 324 records indexed by the number of commitment, as in Figure 2.

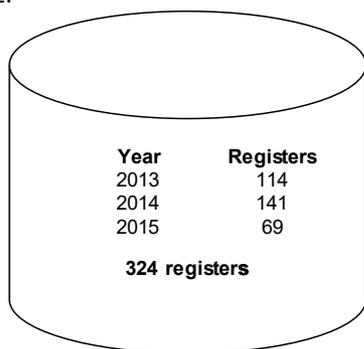


Figure 2. Primary database
 Source: Research Data, 2017

Each record of the primary database was composed of the following fields as shown in Table 3.

Table 3. Primary database fields

Field	Description
PAWN	Pawn Number (primary key *)
PROCESS	Process number
PROVIDER	Supplier's name
PAWN DATE	Pawn issue date
PAWN RESOURCE SUPPLY DATE	Date the supplier received the pawn
EXPENSE	Spending Description
PAYMENT PROCESS	Payment process number
PAWN VALUE	Pawn value

Source: Prepared by the authors, 2017

* Primary key in a database is a single record; it is not repeated in any other field

Step 2 - Creating the database Processes

In order to modify the structure of the primary database by placing the administrative process number as the primary key⁶, the Microsoft Access Software was used to create the Process Database, obtaining the result shown in Figure 3.

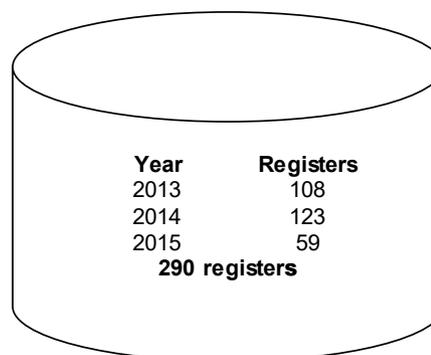


Figure 3. Database Processes - I
 Source: Research Data, 2017

Step 3 - Extending the database Processes: PROTUS

Subsequently, a process number search was carried out with the Protocol System - PROTUS in order to collect more data of the administrative processes, resulting in an increase in the following data: (1) date the process was formalized in PROTUS; (2) number of the memorandum that generated

6 Primary key in a database is a single record, it is not repeated in any other field.



the administrative process; and (3) description of the administrative process.

Step 4 - Extending the database Processes: documentary research

Documentary research was carried out in the memoranda issued by the Logistics Department, using as reference the number of memo provided by PROTUS, resulting in the inclusion of the following data: (1) date of issuance of the memorandum; and (2) description of the memorandum.

With the latter data, the construction of the Processes database was completed, containing the fields described in Table 4:

Table 4. Process Database Fields

Field	Description
YEAR	Year of the process
PROCESS	Process number (primary key)
MEMORANDUM_NO	Memo number
DATE_MEMORANDUM	Date of issuance of the memorandum
DESCRIPTION_MEMORANDUM	Description of the memo subject
DATE_FORMALIZ_PROTUS	Date of formalization of the process
PROTUS_PROCESS_DESCRIPTION	Process description
QUANTITY_PAWN	Number of pawns generated
DATE_PAWN	Date of pawn
DATE_SUPPLIER_REC_PAWN	Date the supplier received the pawn
PAWN_NO_1	Number of pawn 1
PAWN_VALUE_1	Value of pawn 1
PAWN_NO_2	Issue Number 2
PAWN_VALUE_2	Value of pawn 2
PAWN_NO_3	Issue Number 3
PAWN_VALUE_3	Value of pawn 3
PAWN_NO_4	Number of pawn 4
PAWN_VALUE_4	Value of pawn 4
SUPPLIER	Supplier's name

Source: Prepared by the authors, 2017

Step 5 - Finishing the Database Processes

Analyzing the Processes database, it was verified that 69 records did not deal with the administrative process for acquisition of medicines, as shown in Table 5:

Table 5. Undue Records

Quantity Records	Description
10	Memorandum that generated procurement process was not of DELOG
1	The number of the memorandum does not appear in PROTUS, which makes it impossible to check if it was really a medication purchase memorandum
7	The number of the memorandum does not appear in PROTUS, which makes it impossible to check if it was really a medication purchase memorandum
51	The DELOG memorandum does not deal with the purchase of medicines, other matters are, for example: (a) adherence to the minutes; (b) bidding, (c) acquisition of dental, chemical and record material

Source: Research Data, 2017

Excluding these 69 undue registrations, the Processes database ended with 221 records, representing the universe of administrative processes surveyed in the time frame from 2013 to 2015.

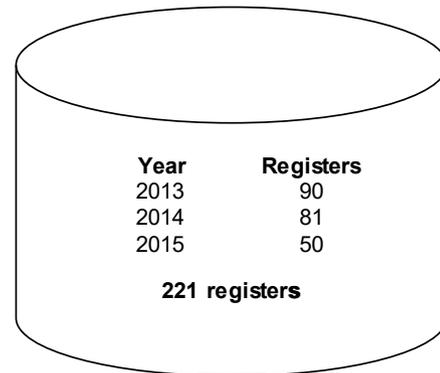


Figure 4. Database Processes - II

Source: Research Data, 2017

Step 6 - Creating the database Pawns

Due to the need for specific treatment of the data of the tasks, the Microsoft Access Software was used to create the database Pawns, from the database Processes, obtaining the result shown in Figure 5.



Year	Registers
2013	94
2014	91
2015	58
243 registers	

Figure 5. Pawns Database
 Source: Research Data, 2017

Step 7 - Extending the database Pawns: SisEstoque

In the sequence, a survey was carried out by the number of the commitment with the Inventory System – SisEstoque⁷, resulting in an increase in the following data: (1) date of first supply of medicines to DELOG; (2) date of the last supply of medicines to DELOG; (3) quantity of supplies for the same purpose; and (4) total value.

With these last data, the construction of the database Pawns was completed, containing the following fields according to Table 6.

Table 6. Database Fields Pawns

Field	Description
YEAR	Year of the process
PAWN_NUMBER	Pawn number (primary key)
PROCESS	Process number
DATA_OF_PAWN	Pawn issuing date
PAWN_VALUE	Pawn value
DATE_FIRST_SUPPLY_DELOG	Date of first supply of material to DELOG
DATE_LAST_SUPPLY_DELOG	Date of last supply of material to DELOG
QUANTITY_SUPPLIES	How many times has the supplier provided material in the DELOG for the same pawn
TOTAL_VALUE_SUPPLIED	Total value of all supplies of material relating to the same pawn

Source: Prepared by the authors, 2017.

Step 8 - Database Proceedings Processes

⁷ The data analyzed in the Inventory System were from 01/01/2013 to 12/31/2016, due to the possibility of a 2015 Pawn being finalized in 2016.

The Department of Information Technology provided the Processes database, based on the Protocol System - PROTUS, with the processing of all the drug acquisition processes, according to the Processes database, from the date of its formalization until the filing date of the administrative process, with the time spent in each department/sector and the transit time between each department/sector.

Table 7. Database fields Proceedings Processes

Field	Description
PROCESS	Process number
SEQ	Sequential number
SECTOR	Sector name
ENTRY_SECTOR	Date of entry into the sector
EXIT_SECTOR	Date of exit from sector
TIME_IN_SECTOR	Time remaining in the sector (days)
TIME_TRANSIT	Transit time between one sector and the other (days)

Source: Prepared by the authors, 2017

With this information, the construction of the databases Sources was finalized, which supported the results of the research, as explained in the sequence.

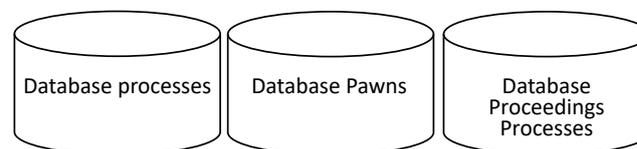


Figure 6. Database Sources

Source: Prepared by the authors, 2017

Administrative Procurement Processes

According to Table 8, there is a decrease in the number of administrative processes opened by DELOG for the purchase of medicines. From 2013 to 2015 there was a 44% reduction in the number of open administrative procedures.

Table 8. Number of administrative processes

Description	2013	2014	2015	Total
Quantity of processes	90	81	50	221

Source: Research Data, 2017

Tridapalli et Ferrer (2006), studying the SCM of the Government of the State of Amazonas, suggest the unit cost of R\$ 234.91 per acquisition process. There are no studies available on the unit cost of an administrative process for the acquisition of goods and services within the Municipal



Government of Manaus and neither did this research have this purpose.

However, for estimating the cost of the drug acquisition processes in this research, the unit cost value proposed by Tridapalli et Ferrer (2006) of R\$ 234.91, adjusted by the General Market Price Index (IGPM, acronym in Portuguese) of 2007 to 2016, was used as reference, reaching the amount of R\$ 444.28⁸.

In this direction, it is verified that the greater the number of administrative processes for acquisition of medicines, the greater the cost for the public power. The converse is also true: decreasing the amount of administrative processes will cost less. Therefore, the ideal is to rationalize the management of the chain to the maximum to have as few administrative processes as possible.

The analysis of the commitments indicates a rationalization of the opening of administrative processes, not implying in the reduction of the volume of the acquisition. It is seen that in 2015 only 50 administrative processes were opened, with a total commitment value higher than in 2013, when 90 administrative processes were opened. The highlight is the reduction of the total value of the commitments of 22.7% from 2014 to 2015, as presented in Table 9.

There is another question that permeates the efforts generated by the acquisition processes: the pawns that are received by the suppliers, but that no medicine box is delivered to DELOG.

The survey indicates that in 2013, three pawns in the total amount of R\$ 39,618.00 and in 2014, seven pawns in the amount of R\$ 177,727.50 had their deliveries zeroed.

In order to analyze the other data of the research, only the valid efforts were analyzed, that is, pawns whose suppliers made deliveries to DELOG.

As mentioned earlier, the budget allocation for pharmaceutical assistance is primarily used for the procurement of medicines and supplies for health, but not essentially.

It is verified that in the year 2015 only 35.84% of the value of the budget allocation was committed for the acquisition of medicines by means of records of price, as shown in Table 11.

⁸ Monetary updating was necessary due to the time between the publication of the article by Tridapalli et Ferrer (2006) and the conclusion of this research. For the calculation, the Exact Calculation tool (available at <<http://http://calculoexato.com.br>>) was used in the period from 01/01/2007 to 12/31/2016, utilizing the IGPM as index.

After the Medications Division/DELOG elaborates the medication acquisition memorandum, the document goes to the Secretariat for Administrative Management and Planning (SUBGAP, acronym in Portuguese) to authorize the formalization of the administrative process with PROTUS. In 2014, the memo waited almost a week to have its processing authorized. In 2015 there was a slight decrease compared to 2014, yet the average waiting time was relatively high: 4.9 days.

A relevant finding of the research is the time of issuance of the note of commitment after the formalization of the administrative process with PROTUS. It is relevant, therefore, to show the operational capacity of SEMSA's internal departments/sectors in streamlining the administrative process, that is, the faster the pawn bill is issued, the greater the internal operationalization.

The results indicate that, in 2013, the commitment grade was issued, on average, with 20.3 days. Throughout 2014 and 2015 there was a worsening in this data, with the average reaching 40 days in 2015, which is practically double the 2013.

An analysis focused on the 50 administrative processes of 2015 reveals a fact that may explain why this time is so high: lack of standard of the flow of processing of administrative processes for acquisition. The research identified at least five different flows of administrative procedures for the acquisition of medicines.

Another important fact is that, as of mid-2015, by determination of the Municipal Government of Manaus, all administrative processes for the acquisition of goods or services have necessarily passed through the Committee on Budgetary and Financial Management (CGOF, acronym in Portuguese), which is on the premises of the Municipal Secretary of Finance (SEMEF, acronym in Portuguese), that is, the administrative process had to physically leave the premises of SEMSA, thus leading to an increase in the processing time of the process.

The Bidding Law does not establish the deadline for the supplier to withdraw the commitment note (Brasil, 1993), thus being at the discretion of the bidding notice, which regularly establishes a period of five days.

This act is important, because from the science of the supplier of the issuance of the pawn bill by the Government, it has 30 days to complete the supply of the items described in the pawn. Therefore, the longer the supplier takes to withdraw and inform it, the longer it will take to deliver the material.



Table 9. Quantity of pawns

Description	2013	2014	2015	Total
Number of processes	90	81	50	221
Number of pawns	94	91	58	243
Total value of pawns	R\$ 11.704.321,86	R\$ 15.146.675,50	R\$ 11.711.910,20	R\$ 38.562.907,56

Source: Research Data, 2017.

Table 10. Valid pawns

Description	2013	2014	2015	Total
Quantity of processes	90	81	50	221
Quantity of processes involved	94	91	58	243
Total value of pawns	R\$ 11.704.321,86	R\$ 15.146.675,50	R\$ 11.711.910,20	R\$ 38.562.907,56
Quantity of processes involved - suppliers did not make any delivery	3	7	0	10
Total value of pawns without deliveries	R\$ 39.618,00	R\$ 177.727,50	-	R\$ 217.345,50
% of total value of pawns*	0,34%	1,17%	-	0,56%
Number of valid pawns**	91	84	58	233
Total amount of valid pawns	R\$ 11.664.703,86	R\$ 14.968.948,00	R\$ 11.711.910,20	R\$ 38.345.562,06

Source: Research Data, 2017.

* Calculation: $([100] \times [\text{Total Value Pawns Without Deliveries}]) / [\text{Total Value Pawns}]$

** Calculation: $[\text{Quantity of pawns}] - [\text{Number of pawns whose suppliers did not make any delivery}]$

Table 11. Budget allocation x pawn value

Description	2013	2014	2015	Total
Quantity of processes	90	81	50	221
Quantity of pawns	94	91	58	243
Total value of pawns	R\$ 11.704.321,86	R\$ 15.146.675,50	R\$ 11.711.910,20	R\$ 38.562.907,56
Budget allocation for pharmaceutical assistance	R\$ 20.462.649,73	R\$ 19.168.147,20	R\$ 32.674.397,56	R\$ 72.305.194,49
% pawned value available for pharmaceutical assistance*	57,20%	79,02%	35,84%	53,33%

Source: Research Data, 2017.

Table 12. Average processing time

Description	2013	2014	2015	Total
Average time the memo waits for authorization to process (in days)*	2,8	6,7	4,9	4,7

Source: Research Data, 2017.

* Calculation: Arithmetic mean of the product between [formalization date in PROTUS] – [date of the memorandum]

* Calculation: $([100] \times [\text{Total Pawn Value}]) / [\text{Budget Allocation Pharmaceutical Assistance}]$

Table 13. Mean time in PROTUS until the issue of pawn bill

Description	2013	2014	2015	Total
PROTUS mean time until the issue of pawn bill (in days)	20,3	30,7	40	31,6

Source: Research Data, 2017

*Calculation: Arithmetic mean of the product between [Issue Date of Pawn] – [Date of Formalization in PROTUS]. Obs.: no records were registered in which the (1) date of the pawn was lower than the date of formalization in PROTUS; and (2) date of issue of pawn lower than or equal to 14 days after the formalization date in PROTUS.



Research data indicate that in the years 2013 to 2015 the average number of days to withdraw the pawn has been well over five days. In the year 2014 the average was 32.3 days, that is, more than one month.

Table 14. PROTUS mean time up to the pawn bill

Description	2013	2014	2015	Total
Average time for issuing the pawn bill until the supplier receives the pawn (in days)*	16,8	32,3	20,1	23,4

Source: Research Data, 2017.

*Calculation: Arithmetic average of the product between [Date that the Supplier Receives the Pawn] - [Issue Date of the Pawn]. Note: no records were recorded in which the (1) date of the pawn was lower than the date of formalization in PROTUS and (2) the date of issue of the pawn was lower than or equal to 14 days after the formalization date in PROTUS.

The final product of a procurement process is the delivery of the medicines by the supplier to the Logistics Department. As mentioned, the supplier has 30 days after receipt of the pawn bill for the total delivery of all items and their quantities.

However, the research data show a large lead time between receipt of the pawn bill and delivery of the drugs. In 2013, it was 30.9 days, on average, for the supplier to make the first medicine delivery. Data worsens in 2015, with an average of 40.8 days.

The time to deliver the full commitment, in turn, was 118.5 days, on average, after receiving the pawn in 2013. This number has been falling over the years, but still has a long lead time. In 2015, for example, the survey indicates an average of 72.7 days for completion of a pawn.

Table 15 provides a general summary of the period 2013-2015 on the purchase of medicines by means of price registration minutes.

The increase in budgetary resources is significant for pharmaceutical assistance for the year 2015, an increase of 70.46% in relation to the resources of 2014. Contrary to this increase in resource is the value of the acquisition (pawns) of medications in 2015, accounting for only 35.84% of the budget⁹. In 2014, 78.09% of the amount of the appropriation was pawned for the purchase of medicines.

⁹ However, it cannot be concluded that only 35.84% of the budget allocation was spent on drugs. It may be that other bidding modalities have been used for this purpose. Only acquisitions by means of price record minutes were the object of study of this research.

Making a vertical analysis of the year 2015, comparing it to the years 2014 and 2013, it can be seen a significant deterioration in all indicators, despite the fact that there were more financial resources in 2015.

Of the total R\$ 11,711,910.20 used to purchase drugs, the total amount of R\$ 10,382,169.66 was delivered by suppliers, representing 88.65% of the total amount invested and only 31.77% of the total value of the budget for pharmaceutical assistance.

5. CONCLUSIONS

The quality of public spending has guided the public administration in recent years due to the political, economic and social moment of Brazil. In addition, the need to use the scarce public resources efficiently urges amidst the state's history of inefficiency.

In this sense, with the objective of evaluating the quality of public spending with the purchase of medicines through the SEMSA price registration minutes, in the time frame 2013-2015, it was possible to make an analysis of the drug acquisition processes and SCM.

The research data indicate that, in the period, the lowest transfer to pharmaceutical assistance occurred in 2014 - R\$ 19,168,147.20, representing a budget of 6.33% lower than that of 2013 and 70.46% lower than that of 2015 which was R\$ 32,674,397.56.

However, despite the fact that 2014 had the lowest budget for pharmaceutical assistance, data indicate that this year, spending on drug procurement, as well as on SCM, had a better quality/management. In 2014, 78.09% of the budget allocation¹⁰ was committed to purchase drugs compared to 57% and 35.84% for the years of 2013 and 2015, respectively.

Of the amount pawned in 2014 for the acquisition of medicines, 95.22% of the total value effectively came to the Logistics Department, that is, of all drugs purchased in that year, 95.22% were delivered by suppliers to DELOG. This percentage was 91.94% and 88.65%, in 2013 and 2015, in that order.

In this same direction, using the reference value of the pharmaceutical budget and comparing it with the total value of medicines delivered by the suppliers to DELOG, there is a 52.41%, 74.36% and 31.77% in 2013, 2014 and 2015, respectively, which shows a better efficiency in the year 2014.

¹⁰ Only valid commitments.



Table 15. Budget allocation x pawns x value delivered

Description	2013	2014	2015	Total
Quantity of processes	90	81	50	221
Budget allocation for pharmaceutical assistance	R\$ 20.462.649,73	R\$ 19.168.147,20	R\$ 32.674.397,56	R\$ 72.305.194,49
Total amount of valid pawns	R\$ 11.664.703,86	R\$ 14.968.948,00	R\$ 11.711.910,20	R\$ 38.345.562,06
% value of the valid pawns on the budget*	57%	78,09%	35,84%	53%
Total value of drugs delivered to DELOG**	R\$ 10.723.951,49	R\$ 14.253.650,17	R\$ 10.382.169,66	R\$ 35.359.771,32
% total value of medicines delivered in DELOG on the total value of valid pawns	91,94%	95,22%	88,65%	92,21%
% total value of medicines delivered in DELOG on budget allocation***	52,41%	74,36%	31,77%	48,90%

Source: Research Data, 2017.

* Calculation: $([\text{Total Value of Valid Pawns}] / [\text{Budget allocation of Pharmaceutical Care}]) \times [100]$

** Calculation: Sum of Total Value of Valid Employee entries in DELOG

*** Calculation: $([\text{Total Amount Delivered Pawns}] / [\text{Budget allocation of Pharmaceutical Care}]) \times [100]$

The results of the research indicate that in 2014, despite having lower budgets, there was greater efficiency and better quality in public spending with the acquisition of medicines and SCM, which shows that the quality of public spending does not depend on the total value of available resources, but it depends on the management of the whole acquisition process.

In addition, the research results indicate the need for public managers to redirect their attention to the cautious use of public resources, mainly from the perspective of the Public Sector Acquisition Chain Management. In this direction, public purchases play a fundamental role for the rational, efficient and effective use of resources made available to meet the demands of the population that needs medicines.

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