

THE USE OF LOGISTICS AS A COMPETITIVE ADVANTAGE THROUGH AGB-SYSTEM SOFTWARE - BRAZIL .

André Gomes Barros¹, Denise Cristina de Oliveira Nascimento², Cristiane de Jesus Aguiar³ and Fabrício Moraes de Almeida⁴

¹Universidade Candido Mendes (UCAM) – Campos dos Goytacazes – RJ, Brasil. E-mail: eng.andre1978@gmail.com

²Universidade Candido Mendes (UCAM) – Campos dos Goytacazes -RJ, Brasil.

³Universidade Candido Mendes (UCAM) Campos dos Goytacazes -RJ), Brasil.

⁴ PhD in Physics (UFC), with post-doctorate in Scientific Regional Development (DCR/CNPq). Researcher of the Doctoral and Master Program in Regional Development and Environment (PGDRA/UFRO). Leader of line 2 — Technological and Systemic Development, and Researcher of GEITEC — Federal University of Rondônia, Brazil. E-mail: dr.fabriciomoraes001@gmail.com

Abstract— *The present study aims to make an analysis of the logistic management of an offshore company, regarding a stock of materials through the same service provision for Petrobrás and the response time (logistic indicator) is a fundamental factor, even of because it implies contractual issues.*

There are many offshore companies that use Logistica to become more competitive, such as those in the Campos Basin. This company in question undertook a deployment of a stocking process and a system such as AGB-SYSTEM to assist in the management of product storage, thus increasing its productivity.

Using the AGB-SYSTEM, a more specific procedure was received the result of a 32.25% increase over a period of 12 months, since the business already had the procedure and no software was used to manage product storage.

Keywords— *procedure, AGB-SYSTEM, logistics, management, storage*

I. INTRODUCTION

The present study has as a way to develop the analysis of the logistics management of an offshore company in the offshore area, regarding material storage since we know that it provides service to Petrobrás and the response time (logistic indicator) is a fundamental factor, even of survival, as it implies contractual issues.

Before the study the company did not have a procedure in the area of Logistics that aimed at the storage and importance of the stocking process as a competitive

advantage. After the study the company came to realize the importance and to have this procedure to increase its competitive advantage.

Since biblical times, military leaders have used logistics. The wars were long and often distant, large and constant displacements of resources were necessary. In order to transport troops, armaments and heavy war chariots to combat sites where planning, organization and execution of logistical tasks were necessary, involving the definition of a route, not always the shortest, since it was necessary to have a source of water drinking, transportation, storage and distribution of equipment and supplies. (DIAS, 2009, p.27)

Faced with a scenario and in constant socioeconomic variations and highly competitive, in which the organizations are inserted, the concern of the companies in offering better performance and quality in the products offered appears. One way to efficiently and effectively meet customer expectations and satisfaction is through the logistics process, which encompasses a chain whose mission is to put the right products or services in the right place at the right time and in the desired conditions, thus avoiding the waste. In this context the logistic process of storage studied in the company in question becomes an essential factor for a company that wants to continue in the market, since it is new and had in the document that would guide the logistics management of storage.

According to LAROUSSE (2001, p.610), "Logistics is part of the art of war that aims to guarantee provisions, transportation, accommodation, hospitalization for the military personnel in operation." In this way, it can be seen that over the centuries, logistics already showed its importance, even if in an auxiliary way, without the perception on the part of its leaders that it could be used in a strategic way.

Supply Logistics is directly linked to the process of purchasing materials, inventory control, warehousing and transportation from the supply source to the company responsible for the production process or distribution. The internal is responsible for moving, packaging and moving the finished products within the company premises or interplants, so that they are available for distribution logistics that will make the products available at the access points for the final consumer.

II. REVIEW OF LITERATURE

Logistics began with military operations, as generals had the need for armament replacement, food, medical help at just the right time on the battlefield.

Movement and storage activities that facilitate the flow of products from the point of purchase of the raw material to the point of final consumption, as well as the information flows that put the products in motion, in order to provide adequate levels of service to the customers. customers at a reasonable cost. (BALLOU, 2012).

The evolution of business logistics is divided into three eras, which will be discussed below.

Before 1950: to date, logistics within companies was taken care of by different sectors. It was common for transportation to be commanded by production;

stocks through marketing, finance and production; processing orders for sales or finances. In this way, it resulted in a conflict of objectives and responsibilities in logistics activities.

According to Ballou (2012, p. 28): "Until about 1950, the camp remained dormant. Companies fragmented the management of key logistics activities. "

Soon after World War II, many logistical concepts were generated and began to be used today. This influence lasted only a few years, but by 1945 companies began to put transport and storage under the responsibility of a single manager. According to Pozo (2010, p.04): "The armed forces of America were the first to use this concept of logistics in World War II and successfully [...] in the early 1950s." Between 1950 and 1970 - development: between the early 1950s and the 1960s there was a very great evolution of theory and practice of logistics. With this evolution of theory, marketing and management professors were upset because companies paid more attention to buying and selling than to physical distribution.

After 1970 - years of growth: business logistics began to reap the benefits of using them, but companies appeared

to be more concerned with profits than with cost control. Often this evolution was masked by the inefficiency of the market, both in distribution and in production. According to Bowersox and Closs (2001), "Business logistics, as a field of business administration, entered the 1970s in a state described as semimaturity."

Some events were fundamental to this evolution, such as the oil industries, which since 1973 increased oil prices over the next seven years, influencing the market decline and rising inflation.

Logistic Strategic Planning is a tool widely used by the most successful organizations, collaborating in setting goals and actions to face future situations and achieve their goals. All this, due to his interpretation of the environment, directing and adapting the organization in the most appropriate way to reach them (OLIVEIRA, 2010).

It aims to reduce the chance of errors and change the path traced by the company, to consider the necessary resources and feasibility of the enterprise. Due to the market's many difficulties, which arise daily due to technological advances and competition, strategic planning has become one of the first steps for business continuity and success. (SLACK et al., 2002)

The logistics processes, within an organization, correspond to all the activities necessary for the delivery of a product or service to the clients, since it is constituted by several activities that through a good management can be characterized as a competitive advantage for the company, besides the search for internal and external integration, seeking to meet the needs of moving information, products and materials more quickly, reliably and safely.

Supply logistics can be seen as the set of activities used by companies related to the acquisition of materials from suppliers, seeking the integration between transport and suppliers with the objective of obtaining greater efficiency in resupply, as well as the strengthening of purchasing power and reducing costs for the administration of goods and services. However, for better interaction between stakeholders, communication is of fundamental importance in order to have a supply effectively. Thus, for Moura (1997, p.9):

According to Ballou (2006), supply logistics encompasses all the activities carried out in the acquisition of materials necessary for the production or distribution of products, using methods such as storage, handling, storage, transportation and information flow. In this way, the logistics of supply has as subprocesses the storage and transportation.

For Porter (1989), apud Souza (2012), internal logistics are considered as activities associated to the receipt, storage and distribution of inputs in the product, such as material handling, warehousing, inventory

control, fleet scheduling, vehicles and return to Providers. For Silva (2012), the internal logistics includes all the activities carried out in the logistical support for the production, involving all the flow of materials and components in the acquisition of the inputs until the delivery of the finished products to the distribution logistics. Souza (2012) argues that internal logistics refers to the whole process of receiving, storing, controlling and distributing materials used within an organization.

Logistics is considered to be one of the most important areas within an organization, as it has enabled companies to stand out from their competitors through competitive strategies.

Still for Souza (2012), the main characteristics of the internal logistics are: a) Attendance to the employees - responsible for attending the material resources used within the organization; b) Task Optimization - allows the reduction of the time between the tasks performed by the organization's employees through the elimination of spaces and delivery in the ideal quantity; and c) Integration of the other sectors of the organization - Once the material resources used in each of the sectors of the organization need to be surveyed, providing within the limits the standardization of these resources, the internal logistics approach the sectors discussing the application and the use of their products in the execution of their tasks.

According to Moura (2005), the movement of materials involves the entire process from the entry of goods into the organization, location, positioning and distribution of materials, facilitating the movement, until the storage and exit of the goods.

Ballou (2006) argues that the stock for companies is indispensable for a good performance of the activities, since if there is a stock within the organization, the risk of not attending to a customer is minimal, since the stock is a good of the company that will be used to meet future demands, and the company is protected from any unforeseen events that may occur with the process or the demand for the products.

The movement of materials is inserted within any organizational process becoming a key point, since besides being representative in the total cost of the products has a direct connection with the quality of the products. Therefore, when well managed, it will bring great competitiveness to the company (MOURA, 2005).

In order to have a good use of movement and the optimization of spaces, it is also necessary that the layout is well planned, taking into consideration the type of process and the characteristics of the company.

According to Ballou (2012, p.24), "The extensive use of inventories results in the fact that, on average, they account for approximately one to two thirds of logistical costs, making stockkeeping a key logistics". For a

dynamic value aggregation to inventory, it must be positioned close to the consumers or to the vessel ports. Maintaining multiple stock points generates a high cost, causing the stored products to have added to their market value of approximately 33% per year.

III. METHODOLOGY

The present research was guided by a set of techniques and procedure, through which the reality of the process in question was studied and analyzed: "The logistic process of storage as business strategy: case study in an industry in the offshore area.

Its objectives were achieved through an exploratory approach, since, according to Gil (2002, p.41), exploratory research aims to provide greater familiarity with the problem, with a view to making it more explicit or to constitute hypotheses.

Under this idea, information was collected through a semi-structured interview and questionnaire about the process: stock logistics saving throughout 2017.

IV. RESULTS

As a result of the interviews and questionnaire responses we suggested the following procedure implementation together with the AGB-SYSTEM.

Direct Benefits of AGB-SYSTEM software deployment.

1 – Inventory Control
2– Purchasing Administration
3 – Receiving Materials
4 – Product Control
5- Forecast of Demand
6 - Cost Accounting
7 – Tax Accounting
8 – Product Control

Chart 1 : Benefits of AGB-SYSTEM software
 Source : Elaborated by the author (2018)

PROCEDURE

• PURPOSE

Define the Rules and Procedures for the receipt and movement of Materials and Products from purchases made by the company, as well as materials moved between the warehouse and the production process, in order to optimize activities and ensure the most adequate conditions for reliability the process.

• SCOPE

From the arrival of the materials and / or products through the logistics area, raw material output for the manufacturing, receipt of intermediate materials or finished from the factory and output of the finished products for assembly or sale.

• APPLICATION FIELD

All areas of the company with processes related to receiving and moving materials and / or products.

• ENJOYING NO FOUNTAIN

• RESPONSIBILITIES

The Logistics Area is responsible for all necessary support and guidance to the Material Receipts sector for the fulfillment of its activities, in accordance with this Policy, as well as to support the Receipt Receipt sector, guaranteeing the write-off of purchase orders and receipt of the notes in the AGB-SYSTEM.

It is the responsibility of the Logistics (Warehouse) sector to receive the materials and / or products delivered by the suppliers, only when they are in accordance with the specifications in the respective purchase orders, as well as to ensure that the materials comply with the receipt generated by the AGB-SYSTEM, based on the invoice of the supplier. It is the responsibility of the controlling sector to guarantee the tax receipt of the materials and / or products in the AGB-SYSTEM, generating their entry and accounting in the stock.

At the time of preparation and issuance of the receipt, the corresponding purchase requests will be downloaded, generating the tax deeds and the respective payments to the suppliers.

The IT Area is responsible for maintaining the AGB-SYSTEM, as well as all necessary adjustments to the implementation of this Procedure.

• POLICIES

The Logistics Area of the company has authority and responsibility for the management of the Receiving of Materials (Warehouse) sector located in Rio de Janeiro / RJ.

The Procurement Area, together with the Logistics area, shall keep track of all deliveries of goods and / or products in order to correct distortions and, in particular, identify the reasons why they occurred.

The Logistics Area - Material Receipts Sector together with the Controllershship Area - Receipt Receipts Sector, shall maintain strict control over all goods and / or products received as well as the Receipts received in the AGB-SYSTEM.

The Logistics Area must elect an employee of the company to be responsible for coordinating the work done in the Warehouse, for the physical receipt of the goods and / or products in the AGB-SYSTEM.

All goods and / or products delivered to the warehouse must be checked before being unloaded and must be supported by Receipt Notes generated by the AGB-SYSTEM. The original invoice of the supplier and his approved purchase order will be retained in the entry order at the time of the tax receipt that will be given before the physical receipt of the material. Materials and / or products in disagreement with the Purchase Order or without their respective Invoices, can not be received and must be returned to the supplier for appropriate measures.

The AGB-SYSTEM must be configured to accept the receipt of materials, with differences in their quantities, within the tolerance levels accepted by the system and authorized by the Company.

All returns must be approved by the supervisor of the Quality Area and must be immediately notified to the requesting area of the material and / or product, the reasons for which they have generated the return.

In case of return of material and / or product to the supplier, the Purchasing Area must negotiate new deadlines, having as basic premise the urgency of the new receipt.

All occurrences involving returns of materials or correctness in the process due to errors in billing, should be included in the performance monitoring report of the suppliers.

The quality tests carried out on some Raw Materials shall comply with the technical criteria applied by the responsible area and the lead time foreseen for its accomplishment. Once the Raw Material has been refused, all of its process of receipt and payment to the supplier must be immediately reversed, avoiding greater inconvenience in the process.

• Warehouse Ordinance

All delivery of material and / or product, must be accompanied by the respective Tax Notes and the

Knowledge of Transportation, when applicable, that must be presented by the carrier in the Ordinance before its release for delivery in the warehouse.

The official of the tax receipt should check the documents and pay attention to the data of the Invoice, verifying the correct existence of the data required for acceptance of the same, such as: Corporate Ratio, Address, Material Description, Purchase Order N° and Contact Person in the company.

The invoice must be checked with the purchase order, if everything is correct, the tax receipt will be formalized and the Receipt Note will be issued, which will be the mirror of the vendor's NF, as well as the basis for the physical conference to be carried out by the Area of Logistics. With the Receipt Note, as well as the left-hander of the NF that has been detached, the vehicle will continue to the physical receiving sector (Warehouse), for physical and material quality and / or product conference. If NF is in disagreement with the Purchase Order, it will be up to the Purchasing Department to solve such problem, including, to return the merchandise, if it is the case.

The materials and / or products to be used directly in the Production and in the Maintenance sectors, as well as the fixed assets will follow the same process above.

Any Technical Reports that accompany some Raw Materials, whose presentation by the supplier of the material is mandatory, should be sent to the Quality Control department for analysis and approval of the quality of the material being delivered.

- **Physical Receipt of Materials and / or Products**

The responsible official in the Warehouse must check all goods with the respective Receipt Notes before they are unloaded. The goods must have their weight or confirmed quantities for their acceptance.

If there is disagreement in the process (Merchandise vs. Receipt) outside the tolerance levels, the warehouse supervisor must notify the supervisor of the Purchasing Area and arrange for the return of the material to the supplier, if applicable.

Materials and / or products that need to be unloaded directly in the Production or in the Maintenance sectors should be checked prior to their unloading by the responsible ones in those areas, through the Receipt Note that can be delivered to the responsible ones through the own drivers of the carriers.

Note: Checking the goods and / or products delivered to the Production and Maintenance sectors must be checked by checking the respective quantities and

accepting differences within the tolerance limits set in the system.

Subsequent to the conference of the materials, if approved, those responsible must legibly sign and stamp the note of the invoice and the Receipt Note and advise the driver that before leaving the company the driver must return the Receipt Note to be attached to the note and forwarded to the accounting for registration and filing.

If there are distortions in the process, outside the limits of tolerance configured in the system, those responsible in the areas should communicate to the Material Receiving department, so that it can take the appropriate measures, and even return the materials to the suppliers, if applicable.

- **Receipt of Invoices (Fiscal)**

The official responsible for receiving the Notes in the AGB-SYSTEM must do so in accordance with the respective Purchase Orders, taking into account the following items: material code, material description, quantity, place and deadline, prices unit / total, incidence of taxes and payment terms.

Fiscal Notes diverging from their respective Purchase Orders must be returned to suppliers for regularization. For this, the responsible in the Receipt of Invoices field, should obtain the approval of the Supervisor of the Purchasing Area and of the Controllership area.

All Material Purchasing Tax Notes must be inserted in the AGB-SYSTEM, obeying the legal deadline of up to 05 (five) business days from the date of entry of the document in the company premises, for its fiscal books and, later sent to Area of Controllership for due diligence on your custody.

The taxpayer should pay attention to the receipt of materials that may be benefiting from the tax credit (ICMS, IPI, PIS and COFINS), which will be determined upon receipt of the invoice. Any discrepancies should be corrected and immediately notified to the Purchasing Department.

The second copies of the Invoices relating to the deliveries of Computer and Telephony Equipment shall be delivered to the IT area for custody and control. Such copies may be used when sending the equipment for repair still under warranty period.

- **Letters of Correction and Complementary Fiscal Notes**

In cases where there is a need and the possibility of obtaining a letter of correction, the person responsible for receiving the tax must formally communicate to the

Controllership Area, which in turn must approve and request its issuance to the supplier.

In cases where there is a need to issue an invoice supplementary to the price, the person responsible for receiving the tax must formally communicate to the Purchasing department, which shall approve and request its issuance from the supplier.

In case of approval in the issuance of an additional invoice of price, all criteria for the approval of a new Purchase Order must be observed, canceling the previously issued request.

GROOVING MOVEMENT

• RESPONSIBILITIES

The warehouse is responsible for the physical custody of all material classified as Raw Material, Intermediate Product and Finished after assembly.

The Logistics Area is responsible for all necessary support and guidance to the Warehouse sector for the fulfillment of its activities, in accordance with this Policy, as well as to support this sector with regard to all movement of warehouse material, ensuring, including maintenance of this movement in the AGB-SYSTEM .

It is the responsibility of the Logistics (Warehouse) sector, to receive the materials, as above, as well as the control of the permanence of these materials in the inventories and their outputs for production, consumption and maintenance and sales.

The IT Area is responsible for maintaining the AGB-SYSTEM, as well as all necessary adjustments to the implementation of this Procedure.

• POLICIES

The COMPANY Logistics Area has authority and responsibility for the management of the Warehousing sector located in Rio de Janeiro / RJ

The Controllership Area, in conjunction with the Logistics area, shall maintain a "follow-up" on all the physical movements of the warehouse, in the sense of financial control, for subsequent valuation and accounting of inventories.

The Logistics Area shall promote rotating inventories in the Warehouse, in periods not exceeding 7 (seven) days, always maintaining updated information, in order to guarantee the accuracy of the data obtained with the physical materials; the physical adjustments to the AGB-SYSTEM will be carried out by the Controller, after the appropriate analysis of the reasons for the differences identified.

The AGB-SYSTEM must be configured to control any and all movements of the stocks, indicating their origin and destination.

All output of material from the warehouse must be supported by the document "Order Reserve" - which is issued by the OF - Order of Manufacture - which in turn must be referenced to a PO - Purchase Order -

There can be no duplication of material withdrawal for the same Order of Manufacture. If material in excess of the reserve is required, it must be justified by the production control planning (PCP). It is up to the PCP industry to control the materials in the factory.

In the case of return / return of partial or total material, the return values to the inventory must be the same as those of the exits and will be given to the inventory by the warehouse sector.

All occurrences involving returns / returns of materials or correctness of the process due to errors in the requisition and must be included in the material handling accompaniment report.

All material / product shall maintain a standardization of its unit of measurement. To do so, it is up to the Purchasing Department to create the standardization of these materials, however, it is up to the Warehouse Area to pay attention to the inventory in the appropriate and standardized unit of measurement.

• PROCEDURES

The Warehouse, based on the Receipt Note will proceed in the input of the material in the inventory, paying attention to the standard unit of measure of the company. This entry will be made physically and financially on the AGB-SYSTEM .

For the delivery of raw material to the factory, the warehouse official must mandatorily check the quantity reserved in the Order of Manufacture.

If there is a need for material in excess of the amount of the reserve, the amount delivered in the specific field of the reserve shall be noted. Subsequently, this difference will be justified by the person in charge of the PCP, as mentioned previously. The AGB-SYSTEM will automatically issue a warning - and generate a report to be analyzed by the PCP.

It is up to the PCP to prepare and insert in the AGB-SYSTEM the notes of manufacturing hours per Order of Manufacture

The Controllership, based on the information generated by production control planning (PCP) and Warehouse, will monthly update the accumulated values of manufacturing costs for the valuation of inventories.

The handling of the finished products is the responsibility of the Warehouse, which will enter into the inventory based on the receipt of the material from the factory. The entry is made in the system AGB-SYSTEM and will be

confronted with the Order Reserve. If there is a higher quantity than scheduled, such divergence should be analyzed and justified by the PCP. The AGB-SYSTEM will automatically issue a warning - and generate a report to be analyzed by the PCP.

V. CONCLUSION

With the implementation of the procedure as a result of research obtained through the application of the questionnaire and interviews in this company, it was noticed a great lack of management of the storage activities that entailed to the company. Afterwards, AGB-SYSTEM software was implemented, with the following main benefits: Delayed delays, better customer service, increased productivity, reduced maintenance costs, streamlined decision making, compliance with tax legislation and the final result obtained classified as excellent for the company studied, as it had greater control over the storage management and related areas, increasing its productivity by 32.25% in a period of 12 months.

REFERENCES

[1] BALLOU, R. H. Gerenciamento da cadeia de suprimentos/logística empresarial; tradução Raul Rubenich. – 5.ed. - Porto Alegre: Bookman, 2006.

[2] LARROUSSE, Ática: Dicionário da Língua Portuguesa – Paris: Larousse / São Paulo: Ática, 2001.

[3] GIL, A. C.. Como elaborar projetos de pesquisa – 4. ed. São Paulo: Atlas, 2002.

[4] SLACK, N., CHAMBERS, S., JOHNSTON, R. **Administração da produção**. 2 ed., São Paulo: Atlas.

[5] OLIVEIRA, D. de P. R. **Planejamento estratégico**. 28 ed. São Paulo: Atlas, 2010.

[6] BOWERSOX, D. J.; CLOSS, David J. Logística empresarial: o processo de integração da cadeia de suprimentos. São Paulo: Atlas, 2001.

[7] DIAS, M. A. P. Administração de materiais: uma abordagem logística. 5. ed. São Paulo, SP: Atlas, 2010.

[8] POZO, Hamilton. Administração de recursos materiais e patrimoniais: uma abordagem logística. São Paulo: Atlas, 2001.

[9] POZO, Hamilton. Administração de recursos materiais e patrimoniais: uma abordagem logística, 2ª ed. São Paulo: Atlas, 2002.

[10] MOURA, R. A. **Check sua logística interna**. São Paulo: Imam, 1998.

[11] SOUZA, G., CARVALHO, M.; LIBOIEIRO, M. Gestão da cadeia de suprimentos integrada

à tecnologia da informação. *Revista de Administração Pública*, Rio de Janeiro, v. 40, n. 4, jul./ago. 2006.

[12] PORTER, M. E. **Vantagem competitiva: Criando e sustentando um desempenho superior**. 23. ed. Rio de Janeiro: Campus, 1989.

[13] REINALDO A MOURA (Brasil). **Definição de Armazenagem ou Estocagem**. 2014. Disponível em: <<http://estudandologistica.com.br/armazenagem-2/definicao-de-armazenagem-ou-estocagem>>. Acesso em: 12 maio 2018.

[14] DIAS, J.C.Q. (2005), Logística Global e Micrologística, Edições Silabo.