

## ANALYSIS OF THE LOGISTICS PERFORMANCE IN HOSPITALS FROM THE ADMINISTRATORS' PERCEPTION

**Quésia Postigo Kamimura**  
University of São Paulo  
E-mail: [qkamimura@usp.br](mailto:qkamimura@usp.br)

**Vitória Kedy Cornetta**  
University of São Paulo  
E-mail: [vkvfsp@usp.br](mailto:vkvfsp@usp.br)

### ABSTRACT

*Among all the services provided by organizations and Institutions that are part of the Brazilian Unified Health System (SUS), there are the hospital services. Nowadays the hospitals are seen as more complex organizations that offer health services and they are also an essential component in the services network, in the context of a productive health chain. This article aims to understand the importance of the logistics performance, from the administrators' perception, in two major public hospitals considered as national and international referral, located in São Paulo city. The methodology consisted of a bibliographic review and semi-structured interview and in loco observation. The partial findings show that 66,7% of the survey participants, in different degrees, claim that there is a formalization of the supply planning process, towards the alignment of the objectives and guidelines of the organizations; for 33,3% this "almost never" happens. For 20% for executives the systematic evaluation of the logistics performance "always" happens; for 20% it "sometimes" happens; the sum of: "almost never", "never" and "I don't know" adds up to 60% of the answers. It was concluded that there is a recognition that the organizations have formalized the supply planning processes, it is not possible to identify the alignment between the logistics guidelines and the organization, there is multidisciplinary participation and there is little monitoring of the results.*

**Keywords:** public health; hospital logistics; public administration.

### 1. INTRODUCTION

In health area, the materials and medications represent substantial part of the expenses and highlight the technology used. Data related to the participation of materials and medications in hospitals in the United Kingdom show they perform between 13 to 17% of hospital costs (HFMO, 2005). In Brazil, according to Vecina and Reinhardt (2002), the expenses with materials represent approximately 15 to 25% of the current total expenses.

According to Angaran (1999), in the United States the cost of medications aiming the hospitalized patients showed an important increase, more significant than the inflation dimensioned to health in the same period: the cost of drugs/occupied bed/year increased from US\$6,744 in 1989 to US\$21,677 in 1998, what represents an increase of 221%, or 25% of increase/year in a nine-year period. It was observed that the health operational costs are rising, not only for health organizations in the private sector but also for the Government funded one, leading to the use of management mechanisms such as planning and controlling of costs.

Borba (2006), to health organizations, it is estimated that 30% of the money invested is used with wastes, reworking, inefficiency and with excessive complexity of processes.

The hospital services are among all the services provided by the Brazilian Unified Health System, and it is an important component in the services network, in the context of a productive health chain. Nowadays the hospitals present themselves as a more complex organization that participates in offering health services.

It has to be highlighted that hospital organizations differ from the other organizations, according to the Pan American Health Organization (2004). The characteristic that distinguishes the hospital from the context of the services companies is the nature of its work. It is difficult to contextualize to citizens, politicians and health professionals the work aiming to relieve the suffering and to protect health and life as a business or industry.

Due to the specific characteristics of hospital organizations and the current turbulent environment, the federal, state and local governments, the health and other economic and social agents are worried about the crescent rising of expenses with health services and its apparent low level of efficiency. (BORBA, 2006).

In a competitive environment, the measurement of the logistics activities became important with the end of rising inflation rates, which altered the focus of the entrepreneurs making them value the real importance of products and services instead of focusing on the search for profit. (FLEURY & LAVALLE, 2000). Besides, the high cost of capital in the country made the maintenance of low levels of goods kept in stock a central factor to maintain competitiveness (FIGUEIREDO *et al*, 2003).

A health organization is a productive system directed to health, where the supply department integrates as the subsystem to meet the needs of inputs (consumption goods) and equipment (assets) of those that develop and provide the products, which are the health professionals.

Not only the products offered by health organizations are complex and require high level of professional qualification, but the utilized inputs in their production are more and more sophisticated and in bigger numbers. Vecina & Reinhardt (2002), estimate that the materials system of a hospital have between 3.000 a 6.000 items purchased on a regular basis, depending on the activities developed by the organization. Including the so-called medical-hospital consumption goods, medications and reagents used for diagnosis tests, besides special materials such as orthoses and prostheses, and general items for offices, cleaning and food.

It is undeniable the importance of a proper administration of the material hospital resources and the logistics performance. The measurement of performance has an important role in the organizational management when providing the necessary information to decision making. To Gunasekaran and Kobu (2007) and Giffs *et al*. (2007), the purpose of the measurement of organizational performance is to identify the clients' needs and collaborate with the organizations to identify problems in their processes.

This article aims to understand the importance of the logistics performance from the administrators' point of view, in two major public hospitals of national and international reference, located in São Paulo city.

## 2. LOGISTICS ROLE AND PERFORMANCE

### 2.1 The logistics role

The concept of logistics has evolved along the years, and it is still difficult today to understand the limit and functions covered by this sector.

According to the definition of the *Council of Logistics Management* (CLM), logistics is the part of supply chain process that plans, implements, and controls the efficient, economically effective flow of raw material, materials in process, finished products and related information from the point-of-origin to the point-of-consumption in order to meet customers' requirements. To BOWERSOX (2001), logistics is the process of planning which implements and controls the efficient and effective flow of products, services and related information from the point-of-origin to the point-of-conception in order to meet customers' requirements.

Many organizations are opting by logistics as a strategy to enhance their financial results and increase their power of differentiation. CHRISTOPHER (1997, p. 2) formulates the following definition:

*Logistics is the process of managing strategically the acquisition, moving and storage of materials, pieces and finished products ( and the flows of related information) through the organization and marketing channels, in order to maximize the current and future profitability through filling orders at low cost.*

To BALLOU (1993), the mission of logistics is to make the right product available, in the right amount, in the right place, in the right moment, with the right conditions, to the right client at a fair price. This author incorporates in the mission of logistics its contribution to the results of the organization, characterizing the strategic role it has to play.

To CHRISTOPHER (1997), the logistics role, towards the value proposed by Porter, adds value to the client. In this study, it is advocated that logistics, in the health services, can add value to the patient by reducing time and by adding reliability to the service delivered, contributing to the reduction of financial and capital costs related to storage.

According to WOOD e ZUFFO (1998), the organizations that opted by using logistics modified and expanded its scope, and, this way, contributed to the evolution of its concept. At the same time, they increased their contribution to the organization's performance and logistics started being seen not only as purely technical, relegated to the operational level, but it started gaining a strategic treatment.

One of the richest current variants of logistics is, without a doubt, the Supply Chain Management. It combines logistics processes that deal with the flow of materials and information inside and outside organizations, with the relationships that emerge along the chain to ensure better results in terms of the reduction of waste and added value. When dealing with relationships between organizations, it is common that the logistics thinking also approaches the issue of partnerships and logistics strategic alliances. These collaborative strategies promote the joining forces of companies – customer and supplier, customer and customer – or supplier and supplier aiming to explore the logistics activities in search of mutual advantages (FLEURY & ARKADER, 2000).

Thus, referring to the evolution of logistics thinking. At each moment, the practice of logistics reflects and at the same time feeds the logistics thinking, in a creative interaction between the academic and organizational environments. The authors state the field of Logistics evolved from a restrict treatment, which dealt with the physical distribution of materials and assets, to a broader scope, in which the supply chain is considered as a whole and the activities of purchase, material administration and distribution. Thus, it is not limited to a single role among the ones studied in Administration, but it represents, in fact, an area of integration for different approaches (FIGUEIREDO, ARKADER, 2000).

The importance of logistics has been growing over the years. The appropriate management of materials, financial and informational, is important and necessary to any organization. When dealing with hospital organization, it is imperative and challenging to hospital administrators the complex management and monitoring.

## 2.2 Logistics Performance

The management of performances aims to administrate “what” and “how” the activities are developed, in order to achieve the organization’s mission, developing the ability to generate revenue and value for customers and shareholders. This management, must provide a systematic link between organizational strategy, the resources and the processes, in a structured way, so that they can all understand where they want to get to meet the *stakeholders’* interests.

Therefore, it is necessary that the organization, in this study case, the hospital organizations, determine the situation they expect for the future, guided not only by the market potential, but also by the set of beliefs and values of the organization that defines their own mission, making it possible to draw the way to be covered, guided by specific actions, that is, enjoying the opportunities and overcoming problems.

Due to the peculiarities of each organization, the results from their strategic decisions and the conditions of the business in which it is placed, the set of indicators need to be thought for each reality. The proposed structure can be kept steady. The number of indicators should be reduced to those essential, which should be easy to get, be generated fast, of easy understanding and consistent enough to ensure accuracy and promptness in the implementation of corrective and preventive actions when needed (CAMPOS, 1998).

According to Bowersox and Closs (2001), the operations should be monitored, controlled and directed. The monitoring of measures goes along with the historic performance of the logistics system and the measures include the level of the service and the logistics costs and their components. That shows how the organization developed its operations in the past, what allows to make projections and detect opportunities for improvement. Thus, organizations that reach high performance are the ones which worry about ensuring efficiency and effectiveness of their efforts, monitoring the processes fulfillment and adopting preventive and corrective actions to correct possible deviations.

The control accompanies the present performance and it is used to ensure that the logistics process is according to established standards and also to detect problems and their causes so that possible deviations can be corrected. The damage control during transportation is an example. If the system shows that products were damaged, the logistics management will be able to identify the cause and take measures to eliminate the problem, measures such as: adapt the packing, improve the loading process or start to evaluate the conditions of the vehicles used.

Nelly (1999) shows that many authors discuss the questions related to performance measures of the organizations. She says that traditional financial indicators are criticized by the following reasons: they motivate immediate decisions, they don’t have a strategic focus, they are not enough to qualify data about quality, responsibility and flexibility, they motivate the managers to minimize the variations of the processes to get local optimizations over continuous improvement; the financial measures do not reflect the customers’ needs or inform about the competitors’ performances. The measurement of the organizational system performance is

important because it directs actions and resources to those processes that are below their potentialities. Thus, the performance measurement only justifies itself when it is used to enhance the performance (SINK and TUTTLE, 1993).

Among several models of logistics performance and indicators found in literature, this article pointed to Rosa (1996) presents the principal characteristics the indicators meet. They should be easy to be found, easy to be understood and easy to be compared and should not be ambiguous.

Slack *at al.* (1999) suggest a list of indicators, associated with the five performance elements in its model for management evaluation of the performance that combines quality, speed, reliability, flexibility and cost.

Sink and Tuttle (1993), based on their model of management evaluation, point to performance indicators that consider the parameters of efficiency, effectiveness, productivity, quality, quality of life at work, innovation and profitability.

The *Balance Scorcardé*, one of the performance models widely found in the researched literature, was proposed by Kaplan and Norton (1992) and afterwards the authors presented it as a strategic management system (KAPLAN & NORTON, 1997). The model completes the financial measures with three other perspectives that direct to the future performance. These perspectives are: the customer's perspective, the perspective of the business internal process and the perspective of learning and growing.

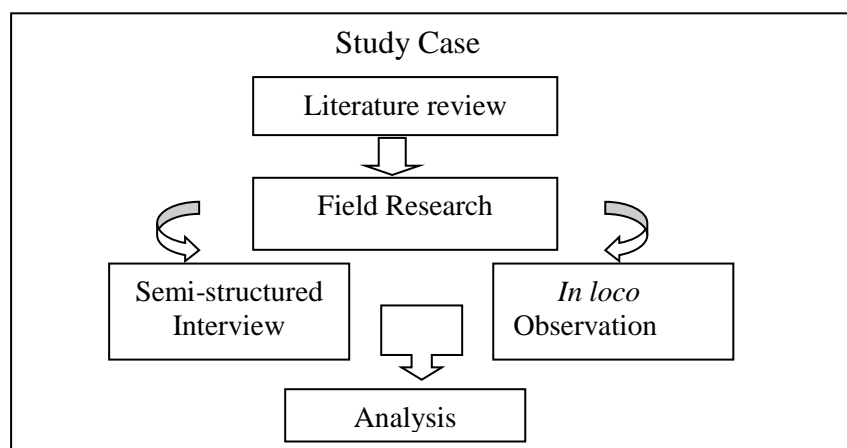
Muscat and Fleury (1993) structured the performance measurement system around competitive criteria which are prioritized by the organization's strategy, called Success Critical Factors. They start from five factors: cost, quality, time, flexibility and innovation, and develop a structure of five indicators for each of the five factors.

### 3. METHODOLOGY

The methodology used in this work consisted of literature review and semi-structured interview. The literature review addressed the following subjects: logistics and logistics performance. The field research consisted of two phases: semi-structured interview and *in loco* observation.

The interviews were semi-structured, using a script with open-ended and closed-ended questions. For the closed-ended questions, the Likert scale was used, odd scale and with five variables. The interviews and observations were carried out in two major hospitals, of high complexity and referral, located in São Paulo city.

The data collected by the described techniques subsidized the process of analysis. The process consisted of understanding the logistics process regarding the performance, flows and charts to show the additional data collected in previous phases. Picture 1 shows the schematic representations of the research methodology used in the study.



Picture 1 – Study Framework

The phase of the research based on the study case strategy consists of bibliographical research, field research and partial presentation of analysis in this article.

### 4. FIELD RESEARCH

Through literature review, it was presented the logistics function and its importance to organizations, among them, the hospitals, and also a partial review of the models of logistics performance measurement.

Two public hospitals located in São Paulo city were the Units of analysis. Chart 1 presents the legal nature, the social characteristic, the size, the level of attention and the concern with the quality of the services.

Legal Nature	Assistance Characteristic	Size	Attention Level	Quality
Public with Foundation Support	Specialized	Big	Quaternary	Certified
Public with Foundation support	General	Special	Quaternary	Certified

Chart 1 – Researched Hospital Organizations

It is observed that both public hospitals count on supporting foundations, provide outpatient and inpatient care, are acknowledged as national and international referral of high complexity and they also develop teaching and research activities. Regarding the assistance characteristic, it makes them special and general. Regarding the size, one is considered big and the other special.

#### 4.1 Presentation of the Interviews and Observation Results

Regarding the formalization of the supplies planning process, the alignment of the organization’s objectives and guidelines, if there is the participation of several areas, if the results are monitored, and the logistics performance is evaluated, 33.4% of executives inform that it “always” happens; 33.3% that it “sometimes” happens. When presenting the acceptance of 66,7% of positive answers in different degrees, it means the support to what it is recommended in the literature (BOWERSOX, CLOSS, 2001; LAMBERT *et al.*, 2001; RODRIGUEZ, 2005). To 33.3% of participants it “almost never” happens, what reflects the different speed of this sector in the changing process and the implementation of the logistics area.

Regarding the systematic evaluation of logistics performance and actions to enhance the logistics flows, 20% of executives claimed that it “always” happens; to 20% it “sometimes” happens; the sum of: “almost never”, “never” and “I don’t know” makes 60% of answers.

The first interviewee claims that regarding the performance, the logistics area “*is evaluated according to monthly management reports*”. I2 and I3 informed that it is “*through the system*”. I10 and I11 informed that it is “*through system*”. I15 says that “*evaluates the area demand in relation to the supply of the order*” and that “*lacks to evaluate ‘in the light’ of the internal customer*”.

When presenting “almost never”, “never” and “I don’t know” by 60% of the answers regarding logistics performance if it is evaluated systematically and improves the flows and when crossing with the results mentioned above, it is concluded that there is the feeling that the organizations have formalized the supply planning processes, it is not possible to identify if there is an alignment between the logistics guidelines and the organization, there is multidisciplinary participation and there is almost no monitoring of the results.

Asked about how logistics performance is evaluated, the following answers were given:

“*Through management report, that has the principal information*” (I3).

“*It was empirical until recently – feeling of frequent delays. With the introduction of goods registration and release form and the use of beeps, it was possible to control time during the process phases. Another official indicator is the size of local stocks, which reflects in uncertainty on supply system*” (I4).

“*Through the purchase of nonstandard medications; pharmaceutical evaluation indicators; dispensation delay indicators*” (I5). “*Management and emergency purchases report*” (I6).

“*It is evaluated according to the customer’s satisfaction, the goal is to supply 90% of the orders. The monitoring is done through system reports with the delivery of the request (inventory turnover, margin of inputs, amount purchased, level of service). The use of the system for decision making and other information. For example, I receive the information that input X will be altered. The hospital has*

*performed from 1 to 2 liver transplants since 2001, it started being a referral to SUS, and since then, it has been necessary to plan the materials and purchases programming, we went from a liver transplant per semester to 5 to 6” per month (I8). “A monthly report is sent to the board of directors, but the system closings are in a monthly or daily basis, so that daily decisions on planning are made” (I9). “Through the system” (I11).*

*“I am not aware of it, I am part of the group of indicators and that was not discussed” (I12).*

*“These indicators have been built, besides, on September first, we started using a new integrated system of hospital management that will contribute greatly to the use of logistics performance and supply indicators.” (I14).*

*“In the nursing area, we use the percentage of order, checking monthly the items consumption; items standardization (standardization group); the amount of items stuck in stock; inventory turnover. The nursing does not have any access to further data or indicators” (I15).*

*“There is no consumption assessment per department or clinic, there is no control over materials and medications per clinic” (I2).*

Regarding the method defined to measure the indicators, the executives who were interviewed said: *“through monthly indicators, we managed to take actions, among them, items without consumption, emergencies, breaking percentage” (I3).*

The organizations, which were studied, are in different phases of the systematic monitoring of the logistics performance implementation. Some indicators, which have been used, emerged from the interviews and observations.

During the visits, it was noticeable the concern of public organizations towards the development of the monitoring of the indicators related to supply logistics. One of the organizations developed some official documents such as the Good Practices Guide for Medications and Pharmaceutical Inputs Suppliers.

The organizations, which were studied, are in process of formalization of logistics actions planning in a diversified way, showing the approach to theoretical contribution of strategic view of logistics, which demands setting goals to be provided by the logistics services in the context of the health supply chain. However, it has to be considered the lack of monitoring, showing the presence of traditional logistics and the distance in relation to the organization’s positioning facing the new logistics/supply chain paradigm.

## **5. CLOSING REMARKS**

The characteristics of the traditional system are strongly rooted to the culture of many organizations, including the hospital ones, and they are most of the time part of the heritage of a classical approach to administration, which was focused on increasing productivity with the improvement of the working methods. The organizations, which were studied, have public nature, and face in the purchase and supply areas, the difficulties and delays still present in the models adopted by the public management practice.

The current public and private market environment points to the need of aligning both the systems of performance measurement and the organizations’ strategic objectives.

A measurement system is not restricted to measure only, but to establish indicators which can measure results, as well as monitor, conduct and induce the performance of the organization and principally support the decision-making processes in order to redirect the actions and consequently the organization.

The results of the research confirm that the researched organizations do not use, in fact, a model of logistics performance management. The hospital supply department is strategic, complex and has its own specific nature that need to be taken under consideration in the construction or adoption of performance indicators that observe its own given reality.

The proper management and monitoring of material resources is imperative for the success of the health services objectives. However, the patient and his or her needs must be highlighted, and it has to be understood that the patient is the main actor of the health service, and the management and monitoring of the logistics system in the hospital environment is an activity “through which” adequate care is provided.

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