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# Supply Chain Management Strategies in Hospitals

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**ABSTRACT:** Now a day, the supply chain is one of the main supportive activities. It is a fact that if the supply chain doesn't work correctly, so the drugs doesn't arrive the hospital's patient, it cannot be developed the main activity of a hospital, offering healthcare. This thesis explores supply chain management practices that have been implemented, and have improved supply chains in industries outside of healthcare. The presented supply chain practices have been selected because they have the potential to improve efficiency, reduce costs and improve patient safety within hospitals. Due to the diverse nature of hospitals and a unique product profile, there is no "one size fits all" supply chain solution that can be implemented. Therefore, product specific characteristics are discussed that can be used by hospitals in order to develop segmentation policies. This article explores current supply chain management challenges and initiatives and identifies problems that affect supply chain management success in the Sagarshree Private Hospital. The main aim of this thesis to analyze the supply chain systems in Sagarshree Hospital. There will be analyzed the positive and negative aspects of system and try to contribute with improvements of them.

**KEYWORDS:** Supply Chain management, Healthcare Supply Chain management, Quality management.

## I. INTRODUCTION

### 1.1 Objectives

The current study aims at clarifying the impact of supply chain management on the quality of health services in hospitals in the Sagarshree private hospital sector from the supply chain officers' perspectives. More specifically, the objectives of the study are to:

- A) Identify the current status of supply chain in Sagarshree private hospital.
- B) Measure the effect of supply chain management dimensions (the relationship with suppliers, specifications, standards, delivery, and after-sales service) on the quality of health services dimensions (responsiveness, trust, and safety).
- C) To assess the availability and affordability of good quality and efficacious pharmaceutical products in the Sagarshree private hospital.
- D) To analyze the challenges and constraints that affects the distribution process of Sagarshree private hospital.
- E) Identification of appropriate Supply Chain Performance metrics and standards in Sagarshree private hospital.
- F) The broad objective of this study is to examine the current state of the supply chain regarding pharmaceutical products at Sagarshree Hospital. The specific objectives are to evaluate the Supply Chain Management practices at Sagarshree Hospital including only the pharmaceutical items or medical products.

The problems and prospects, at various stages, of the pharmaceutical supply chain are to be analyzed and appropriate recommendations are to be offered for improvement of the present system.

### 1.2 Significance of the study

There are two broad divisions of the healthcare industry today:

- a. Healthcare products manufacturing
- b. Healthcare services

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In healthcare services there are further the services such as consultation, exercise centre's, medical software, and medical insurance among others. Similarly in healthcare manufacturing there exist health equipment manufacturers, drug manufacturers. Healthcare and hospitals have always remained in the focus of government and private institutions.

### 1.3 Literature review

**Yao,man and minner** observed multi supplier inventory models in supply chain management. and discuss their contributions from different managerial perspectives.

**Santanu mandal** observed the influence of dynamic capabilities on hospital supplier collaboration and hospital supply chain management.

**Marynissen, joren and demeulemeester, erik** reviewed on integrated hospital scheduling problems. In these problems, patients need to sequentially visit multiple resource types in a hospital setting in order to receive full treatment. Therefore, each patient is assigned a specific path over a subset of the resources and each step of the path needs to be scheduled.

**Vries and Huijsman**, Focused on the critical issues concerning the performance of the healthcare organizations and the provision of quality services.

## II. SUPPLY CHAIN MANAGEMENT

Supply chain management is a set of approaches utilized to efficiently integrate suppliers, manufacturers, warehouses, and stores, so that merchandise is produced and distributed at the right quantities, to the right locations, and at the right time, in order to minimize system wide costs while satisfying service level requirements.

Supply chain is defined as the group of interconnected participating companies that add value to the transformed inputs from their source of origin to the end products or services that are demanded by the designated end consumers.(fig 1)

Supply chain management process

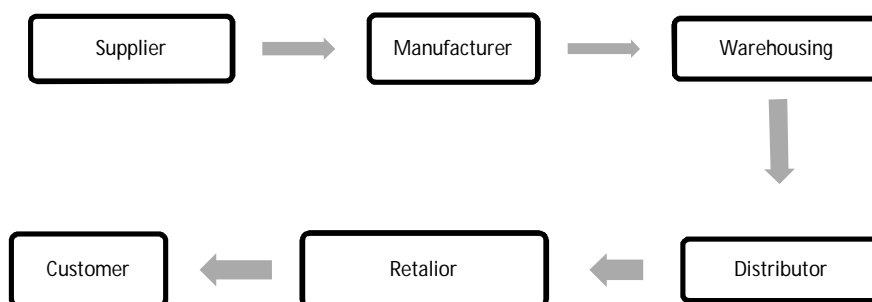


Fig 1 Supply chain management process

### Achieves

The right product + the right price + the right store + the right quantity + the right customer + the right time = higher profits

### 1 Effective supply chain management

Reduces cost, Improves quality, Increases productivity, Reduces cycle time, Improves organizational performance.

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## 2 Advantages and Objectives of supply chain management

<u>Advantages of supply chain management</u>	<u>Objectives of supply chain management</u>
<p>Strategic Advantage</p> <ul style="list-style-type: none"> <li>* Manufacturing is becoming more efficient</li> <li>* SCM offers opportunity for differentiation or cost reduction</li> </ul> <p>Globalization</p> <ul style="list-style-type: none"> <li>* Requires greater coordination of production and distribution</li> <li>* Increased risk of supply chain interruption</li> <li>* Increases need for robust and flexible supply chains</li> <li>* At the company level, supply chain management impacts</li> <li>* <b>COST</b> – For many products, 20% to 40% of total product costs are controllable logistics costs.</li> <li>* <b>SERVICE</b> – For many products, performance factors such as inventory availability and speed of delivery are critical to customer satisfaction.</li> </ul>	<p>Purchasing</p> <ul style="list-style-type: none"> <li>• Stable volume requirements</li> <li>• Flexible delivery time</li> <li>• Little variation in mix</li> <li>• Large quantities</li> </ul> <p>2. Manufacturing</p> <ul style="list-style-type: none"> <li>• Long run production</li> <li>• High quality</li> <li>• High productivity</li> <li>• Low production cost</li> </ul> <p>3. Warehousing</p> <ul style="list-style-type: none"> <li>• Low inventory</li> <li>• Reduced transportation costs</li> <li>• Quick replenishment capability</li> </ul> <p>4. Customers</p> <ul style="list-style-type: none"> <li>• Short order lead time</li> <li>• High in stock</li> <li>• Enormous variety of products</li> <li>• Low prices</li> </ul>

## 3 Hospital supply chain management

Health organizations encounter many challenges accompanied with new requirements, namely; customer dissatisfaction, increasing cost of the health services, competition and reducing the reimbursement for services. All of these factors force the health organizations to adopt a system that can meet these requirements, dealing with the continuous changes, technology changes, increase in the health services costing, increase in competitive position and gaining customers' satisfaction. There is an increasing need by private hospitals administrators to adopt supply chain management to promote the advancement of health care.

healthcare supply chain is different than other industries it is complex diverse and dynamic, increased complexity from the numerous companies and organizations involved each with multiple points of interaction, variability resulting from each physician/pharmacy their specific produce preferences.

### General hospital supply chain process (fig 2)

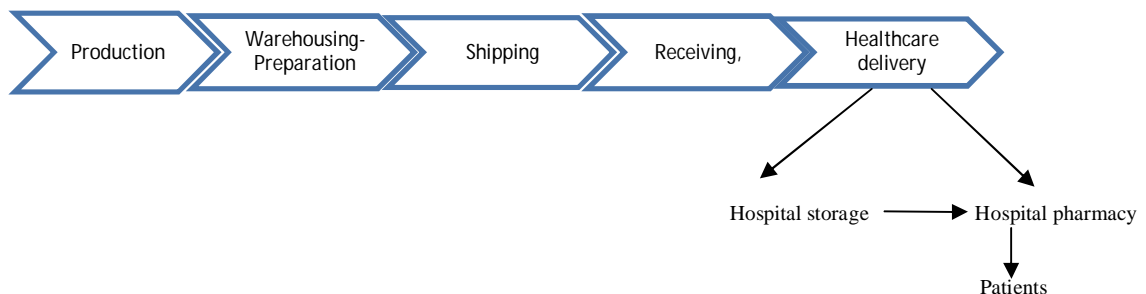


Figure 2 General Hospital Supply Chain Process

Healthcare supply chain and the major processes involved: Production, Warehousing-Preparation, Shipping, Receiving, and Healthcare delivery.

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**Production** The raw material is delivered to the production site and products are manufactured. Each packaging level of the manufactured products is assigned a global trade item number (GTIN). The products are marked with batch number and dates and the information is registered in order to achieve traceability in the next stage of the supply chain.

**Warehousing-Preparation** The products are received and stored at the warehouse. During the storage period physical inventories are carried out. Upon reception of an order from a customer the ordered products are picked and logistic units are created and made ready for shipping.

**Shipping** The logistic units are loaded onto the transport vehicle. The vehicle leaves the warehouse. When the logistic units are loaded onto the transport vehicle the identities (SSCC) are read and registered. Before the transport vehicle leaves the warehouse a dispatch advice is created and sent to the goods recipient.

**Receiving** The dispatch advice is received prior to the reception of goods. The goods are received and reconciled and the inventory records are updated when the transport vehicle arrives.

**Healthcare delivery** At a hospital there are many internal processes, all aiming at Providing care to the patients. Examples of such processes are performing surgical operations, sterilising surgical instruments, managing waste and taking stock. Products are identified by their global trade item number (GTIN) and lot/batch number or serial number and are recorded in the patient’s medical chart or records so as to ensure the complete safety and traceability of all events that take place during the patient’s stay. The healthcare supply chain generally consists of four main components :( fig3)

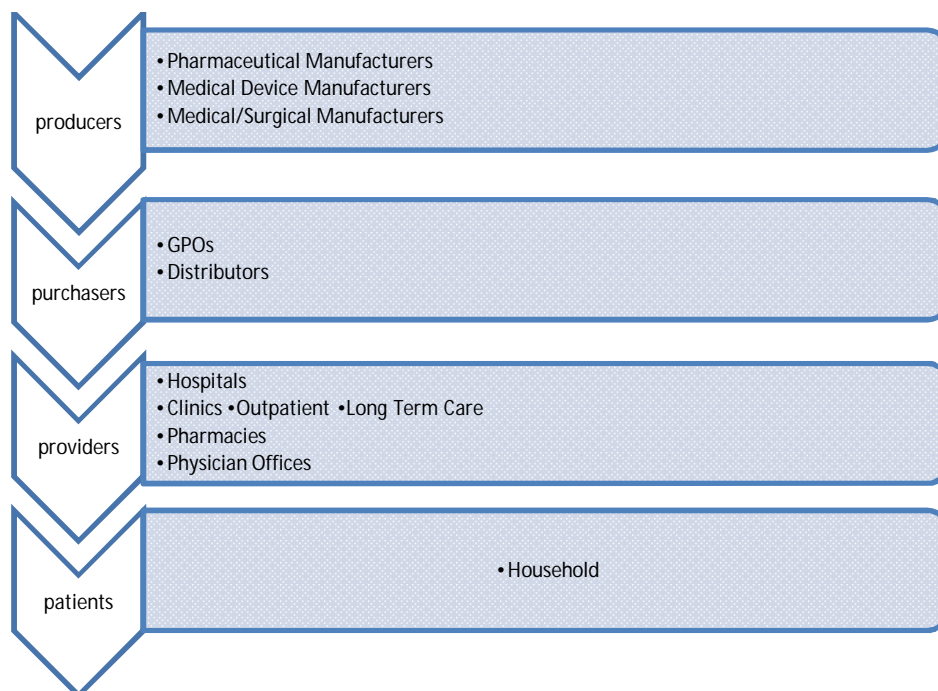


Figure 3 hospital supply chain management

Producers, Purchasers, Providers, and Patients (Burns, 2002). Producers produce products such as pharmaceuticals, medical devices and implants, and medical/surgical supplies that are necessary in the delivery of healthcare. Purchasers consist of group purchasing organizations (GPOs) and distributors who facilitate the payment for and shipment of goods from the producers to the providers. Providers may also purchase goods directly from the producers. Providers use the goods produced by producers to administer healthcare services to patients.

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The hospital supply chain includes four arenas. These are goods and services planning, procurement and contracting, materials management and working capital management. To set up an extraordinary supply chain, hospitals need to establish an integrated governance system, employ dynamic processes, and automate their IT systems.

<p>Distinct supply chains in hospitals</p> <ul style="list-style-type: none"> <li>Pharmaceutical</li> <li>Medical-Surgical Supplies</li> <li>Medical Devices</li> <li>Health Aids(bandage, syringe etc)</li> <li>Office Supplies</li> <li>Clothing Supplies</li> </ul>	<p>Participants in hospital supply chain cycle</p> <ul style="list-style-type: none"> <li>Manufacturers of drug ,and hospital medical supplies, medical equipment etc</li> <li>Distributors</li> <li>Medical service provisions</li> <li>Medical groups</li> <li>Insurance companies</li> <li>Government agencies</li> <li>Employers</li> <li>Government regulators</li> <li>Users of healthcare</li> </ul>
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### III. METHODOLOGY

This paper is based on the study of Sagarshree Hospitals Ltd., which is considered a representative of high end tertiary level hospitals in Sagar in terms of customer type, reputation, operation, performance, facilities, etc. In this research, empirical data was collected from material managers, directors, distributors, manufacturers, and GPO directors from Sagarshree hospital to identify implementation barriers for supply chain management practices and to discuss best practices for successful implementation.

### IV. SURVEY DEVELOPMENT

To assist with designing the questionnaire, a small group of material managers and hospital directors from a local regional hospital was asked for input on the questions in order to evaluate the ordering, comprehensiveness and completeness of questions, as well as to verify that the appropriate information would be obtained from those participating in the study. This small group of material managers and hospital directors also assisted in identifying the participants for this study. A total of 100 patients were selected at random in a time span of 5 days. The items in the questionnaire referred to the particulars of the patient such as age, sex, occupation, the concerned department, service particulars in the registration counter, concerned doctor in the respective department, the lab, and the medical stores.

### V. DATA ANALYSIS

The survey questionnaire consisted of closed-ended multiple choice questions. Which is a five point scale commonly used in survey questionnaires were respondents are asked to express their level of agreement with a given statement. In this study answers were given the following terms: **Excellent, Good, Average, Poor**. Though questions were closed-ended, a blank space was provided for some questions to capture additional explanation of answers.

### VI. RESULT

The study population consisted of 100 patients of different age group. Overall availability of services was very good regarding the seating arrangements in the outpatient department (100%) and the cleanliness of the outpatient department (100%). A total of 70% of the respondents were satisfied with the friendliness and courtesy of the staff. 70% of the respondents found the skill and competency by the pharmacy staff and doctor good. A total of 50% respondents found good quality and range of drugs, 26% found excellent quality, 22% found average quality available in the hospital pharmacy.

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The nature of prescription was either simple and easy or satisfactory in 88 % of the respondents. Instruction regarding medication usage by dispensing pharmacists was satisfactory in 80% of the respondents.

Time spent in the pharmacy was satisfactory in only 60% of the patients (average time = 11-15 min.). The cost of medicine was average for 48% of patients and high for 45% of the respondents. The OPD fee was average for 55% of patients and high for 48% of the respondents.

## VII. DISCUSSION

In this study, each step of the outpatient services assessment was made by the consumer on factors such as availability of services, clinical care, time, and cost of services. It was found to be satisfactory regarding the availability of services and clinical care. But when the Time spent in pharmacy was analyzed, it was considered that it was not significantly satisfactory. The costs of investigation were significantly average and high in 93% of the cases as assessed by the respondents. 82.8% of the respondents showed the approach of the doctor is personal.

In their study, 70% regarded the explanation of disease to the patient as satisfactory, 80.2% of the subjects were satisfied with the examination by the doctor, and it was simple and easy to understand in 60% of the cases. The examination by the doctor, and it was simple and easy to understand in 60% of the cases.

## VIII. CONCLUSION

This study suggests that areas such as inventory control, procurement processes, and relationships with vendors and physicians, will require more attention from material managers. Additionally, information sharing between healthcare providers and vendors should also be improved. According to the consumer's opinion, the study showed good results with respect to availability and clinical care. Recommendations regarding ways to reduce the time spent in the pharmacy and the cost of investigations are required to improve consumer satisfaction.

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