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# DEVELOPMENT AND IMPLEMENTATION OF A SUPPLY CHAIN MANAGEMENT SYSTEM FOR OSPITAL NG SAMPALOC

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**ABSTRACT**

Software-Defined Wide Area This study aims to develop and implement an enhanced supply chain management system for Ospital ng Sampaloc to improve operational efficiency and optimize resource allocation. A comprehensive evaluation of the current system was conducted to identify its strengths, weaknesses, and areas for improvement. The research focused on inventory accuracy, order processing efficiency, user satisfaction, and cost-effectiveness. Data were gathered using a mixed- methods approach, including surveys, interviews, and document analysis. Hospital staff involved in the supply chain process participated in the study, selected through purposive and convenience sampling based on specific criteria. Findings revealed that although the existing system is relatively user-friendly and cost-efficient, significant issues exist in inventory management and order accuracy, resulting in procurement delays and inefficiencies. Moreover, the lack of integration with other hospital departments hampers communication and coordination. To address these challenges, the study recommends automating real-time inventory tracking, optimizing order processing workflows, and providing comprehensive training for staff. A more integrated system involving collaboration across departments is also suggested to enhance decision-making and resource distribution. By implementing these improvements, Ospital ng Sampaloc is expected to streamline its supply chain operations, reduce inefficiencies, and improve the quality of healthcare services provided to patients.

**Keywords**: Supply Chain Management, Hospital, Operational Efficiency, Inventory, Information System

## 1. INTRODUCTION

The complex nature of the sustainability agenda has seen many companies and other institutions embrace more systematized approaches to the challenges. This encompasses, among many, the formal establishment of environmental and sustainability management systems and a holistic awareness of the entire value chain. These systems coordinate the use of suitable evaluation tools, guarantee a cleaner manufacturing process, prioritize social and environmental aspects, and keep proper control over the cost and quality of suppliers and raw materials. For high-performance levels to be attained and sustained and ultimately customer happiness and loyalty, pertinent parts of corporate operations should be monitored. It promotes process and activity coordination across marketing, sales, product design, finance, and information technology.

All tasks include sourcing, procurement, production, and logistics management, including manufacturing operation; planning, and control. This includes coordination and cooperation with channel partners-suppliers, middlemen, outside service providers, and customers. These days, supply chain management is considered to carry out more significant potential in reducing the cost and enhancing performance in healthcare businesses. Bvuchete et al. (2022) discuss that in developing nations, health systems are still fragmented, especially components such as public supply chain and procurement systems, often resulting in medicine stock- outs at last-mile health facilities. Information technology, corporate resource planning systems, and specially designed supply chain management systems all facilitate supply chain management to a considerable extent. Globalization and intense competition are pressurizing Supply Chain Management (SCM) systems to be more and more important. They indicate a paradigm shift in the nature in which business units operate today when cooperation between firms operating in a networking environment seems to be more profitable and pertinent than conflict. Thus, according to the analysis and

review of SCM systems in the health sector, it becomes evident that this is an area of research that holds very high practical values in actual life today.

One of the most notable effects of the new SCMS is an increase in operational efficiency. The present manual methods are prone to mistakes, delays, and inefficiencies, all of which impede the hospital's capacity to function effectively. By automating important operations such as inventory tracking, processing, and replenishment, the new system reduces the possibility of human mistakes while also ensuring that medical supplies are accessible on time. Real-time inventory tracking will allow the hospital's administrative personnel to continually check stock levels, minimizing the need for reactive, last-minute replenishing. This will streamline processes and allow the hospital to focus on its primary objective of providing effective and timely patient care.

## 2. IMPLEMENTATION METHOD

The development followed the Software Development Life Cycle (SDLC),

starting with planning and requirements gathering. Data collection included surveys, interviews, and document reviews involving hospital staff. The system was designed with a three-tier architecture (Presentation, Business Logic, Data Access) and developed using role-based access for admin, employee and supplier functions. Real-time tracking, analytics, and alerts were implemented.
Statistical analysis used weighted mean and percentage to evaluate staff responses on system usability, familiarity, and effectiveness.

### 2.1. Data Collection Techniques

The following data-gathering methods were used:
Surveys and Questionnaires: Collects information on inventory levels, storage methods, and supply monitoring from hospital staff.

Interviews: Conducted with IT staff, medical professionals, and administrators to gain insights into the current inventory practices and potential areas for improvement.

Document Analysis: Existing hospital records, tracking sheets, and supply documentation were analyzed to identify inefficiencies and support system design.

### 2.2. Data Sources

Primary Data: Collected directly from hospital staff through surveys and interviews.
Secondary Data: Derived from hospital records and relevant documents concerning inventory systems and procedures.

### 2.3. Data Analysis Methods

Descriptive and inferential statistics were used to interpret data. Tools included:

Percentage=(F/N)*100 P = Percentage
F = Frequency for each category N = Total number of respondents 100 = Constant multiplier

Weighted Mean= ∑(f x w) /N
WM=Weighted Mean
∑= Summation Symbol
f = Frequency of each response option
w=Weight assigned to each response option
N=Total number of respondents
(sum of all frequencies)

## 3. RESULTSAND DISCUSSIONS

The supply chain management system improved inventory visibility and accuracy through real-time updates and automated alerts. The survey results showed high user satisfaction and ease of use. However, respondents also identified the need for additional training and integration with other hospital departments. Performance testing confirmed the system could handle concurrent users efficiently. The use of advanced analytics supports better decision making and proactive inventory management. The implementation significantly reduced instances of stockouts and over-ordering.

**Table 1. Familiarity with the SCMS**

| Items | Responses | | | | | Mean |
|---|---|---|---|---|---|---|
| | NI | F | G | VG | E | |
| 1. How familiar are you with supply chain management processes? | 1 | 6 | 3 | 6 | 4 | 4.0 |
| 2. How satisfied are you with the supply chain management system? | 0 | 4 | 6 | 7 | 3 | 4.0 |
| 3. How would you rate the overall ease of use of your organization's SCM processes? | 0 | 5 | 4 | 7 | 4 | 4.0 |
| 4. How would you rate the accuracy of inventory management in your organization? | 0 | 5 | 5 | 6 | 4 | 4.0 |
| 5. How cost-effective are your current supply chain operations? | 0 | 4 | 6 | 6 | 4 | 4.0 |

**Table 2. Satisfaction**

| Items | Responses | | | | | Mean |
|---|---|---|---|---|---|---|
| | SA | A | N | D | SD | |
| The current supply chain management system in our organization is efficient and meets our needs | 2 | 8 | 8 | 0 | 2 | 3.4 |
| We have effective communication and collaboration with our suppliers. | 2 | 10 | 4 | 2 | 2 | 3.4 |
| Our supply chain management system practices effectively prevent stockouts and overstocking. | 2 | 10 | 6 | 2 | 0 | 3.6 |
| Our supply chain management practices significantly contribute to user satisfaction. | 0 | 14 | 3 | 3 | 0 | 3.55 |
| Our organization effectively utilizes technology to enhance supply chain management. | 4 | 9 | 6 | 1 | 0 | 3.8 |

**Table 3. Accuracy**

| Items | Responses | | | | | Mean |
|---|---|---|---|---|---|---|
| | VA | A | N | U | VU | |
| How aware are you of inventory management practices within the supply chain, such as demand forecasting, safety stock, and reorder points? | 4 | 9 | 7 | 0 | 0 | 3.85 |
| How aware are you of sustainability practices in supply chain management, such as reducing carbon footprint, ethical sourcing, and waste reduction? | 5 | 7 | 7 | 1 | 0 | 3.8 |
| How familiar are you with technologies commonly used in supply chain management, such as ERP (Enterprise Resource Planning) or WMS (Warehouse Management Systems)? | 3 | 9 | 6 | 2 | 0 | 3.65 |
| How would you rate your general knowledge of supply chain management concepts and processes? | 4 | 9 | 7 | 0 | 0 | 3.85 |
| How aware are you of using automation and artificial intelligence in supply chain management? | 1 | 9 | 10 | 0 | 0 | 3.55 |

## 4. CONCLUSION

The accuracy of inventory management is a significant issue, along with the need for a more efficient order processing system and enhanced user training. The findings suggest that the hospital staff's strong familiarity with supply chain management (SCM) processes will facilitate the adoption of an improved system. Furthermore, while the current system is largely cost-effective, optimizing certain operations could lead to greater cost savings and efficiency.

Given these findings, it can be concluded that implementing an upgraded supply chain management system will significantly improve hospital operations and enhance supply management accuracy.

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