RISK MANAGEMENT IN SUPPLY CHAIN (KD HOSPITAL)

Dissertation Submitted to

The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Pharmaceutical Management

By

Chandan Kumar

Under the Supervision and Guidance of

Dr. Ashok Peepliwal

2024

Academic Centre
A Unit of KD Hospital

CERTIFICATE

OF INTERNSHIP COMPLETION

This Is To certify That

Mr. CHANDAN KUMAR Has Completed

His Internship In The Department Of Supply Chain At Kd Hospital, Ahmedabad From 01/04/2024 To 15/06/2024 During His Internship He Has Demonstrated The Ability To Learn New Skills With Self-motiuation. We Wish Him ALL The Best For Future Endeauours.

Dr. Darshan Gurjar
Head Of The Department

Dr. Carima SauaLia
Chief Medical Administrator

Dr. Anuja Desai
Executiue Director

Appendix D: Declaration by Student

DECLARATION BY STUDENT

I hereby declare that this dissertation titled **Risk Management in Supply Chain** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma. Information derived from the published or unpublished work of others has been duly acknowledged in the text.

(Signature) Chandankumar.

Name of Student CHANDAN KUMAR

Date 10/7/24

IIHMR UNIVERSITY

Certificate

This is to certify that dissertation titled **"Risk Management in Supply Chain"** is a record of the research work undertaken by **Chandan Kumar** in partial fulfillment of the requirements for the award of the degree of MBA (Pharmaceutical Management) from the IIHMR University, Jaipur under my guidance and supervision and his approach to the research study has been sincere, scientific, and analytical.

Dr. Ashok Peepliwal
Professor
IIHMR University, Jaipur
Date: 11.07.2024

Dr. Manthan D Janodia
Professor
School Dean
IIHMR University, Jaipur
Date: 11.07.2024

DECLARATION BY STUDENT

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(Signature)

Name of Student: Chandan Kumar

Date: 01/07/2024

CERTIFICATE

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Abstract

Efficient inventory management is critical in ensuring uninterrupted healthcare services while minimizing costs in a single specialty hospital focused on maternity, women, and childcare. This study explores strategies to optimize inventory levels, reduce stock holding days, and enhance overall supply chain efficiency in such a specialized healthcare setting. The research employs a combination of VED (Vital, Essential, Desirable) and FSN (Fast-moving, Slow-moving, Non-moving) analysis to classify inventory items based on their criticality and usage frequency.

Objectives:

1. **Shorten Days of Inventory Holding:** Reduce Inventory Holding Days: Ensure the level of patient care and service delivery required but where possible ensure stock holding days are kept to under no longer than 10 days.
2. **Inventory Categorisation:** Use VED and FSN analysis to rank your inventory management tasks.
3. **Cost Management:** Reduce holding expenses, reduce stock levels
4. **Drive Operational Efficiency:** Streamline inventory processes to ensure faster delivery of lifesaving goods

Methodology:

- **VED Analysis**: Classify inventory items into Vital, Essential, and Desirable categories based on their importance in patient care.
- **FSN Analysis**: Categorize items into Fast-moving, Slow-moving, and Non-moving groups based on their consumption rates.
- **Data Collection**: Gather historical data on inventory usage, stock levels, and demand patterns.

- **Inventory Rationalization**: Set target inventory levels, reorder points, and safety stocks based on VED and FSN analysis.
- **Technology Integration**: Utilize inventory management software for real-time tracking, demand forecasting, and automated replenishment.

Results: After Implementation of VED and FSN analysis, there was a high decrease in the days on inventory turnover as most of the items remained at ideal levels to maintain service continuity. This enabled the hospital to save a significant amount of money by decreasing overstock and improving resource management Improved control over inventory, a more responsive process for replenishment and lower stockouts on mission-critical supplies improved operational efficiency.

Conclusion: Managing and classifying inventory items into strategic groups, followed by appropriate category-specific policies lead to effective item-wise optimisation under a single speciality maternity-women-childcare hospital setting. The combined use of VED and FSN analysis provides a robust framework for prioritizing inventory efforts, achieving cost efficiencies, and maintaining high standards of patient care. This approach can serve as a model for other specialized healthcare facilities aiming to enhance their inventory management practices.

Acknowledgement

I would like to express my sincere gratitude to the **Dr.(Prof.) Ashok Peepliwal**, being my mentor of **IIHMR University, Jaipur** who have contributed to the success for the **Dissertation topic**- "**Risk Management in Supply Chain) Hospital"**.

I am also thankful to **KD Hospitals** for sharing and working on hteir confidential data and in their hospital purchase data.

Special thanks to **Mr. Digambar Prasad, Supply Chain Manager, Purchase** for his invaluable assistance throughout the project.

I am grateful to my colleagues and friends for their encouragement and understanding during these endeavours.

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List of Abbreviations:

Sl No.	Abbreviations	Meaning
1	**SCM**	Supply Chain Management
2	**HSCM**	Hospital Supply Chain Management
3	**TAT**	Turn-Around Time
4	**ROL**	Re-Order Label
5	**MOQ**	Minimum Order Quantity
6	**EOQ**	Economic Order Quantity
7	**S&OP**	Sales and Operations
8	**KPIs**	Key Performance Indicators
9	**RFPs**	Request for Proposal
10	**RFQs**	Request for Quotation
11	**FDA**	Food and Drugs Administration
12	**EMA**	European Medicines Agency
13	**ABC**	Always, Better, Control- Inventory Control Techniques
14	**VED**	Vital, Essential and Desirable- Inventory Control Techniques
15	**FSN**	Fast, Slow and Non-Moving- Inventory Control Techniques
16	**JIT**	Just-In Time
17	**MIS**	Management Information System
18	**HMIS**	Hospital Management Information System
19	**ERP**	Enterprise Resource Planning
20	**IP**	In-Patient Pharmacy
21	**OP**	Out-Patient Pharmacy

Chapter 1

Introduction

Aim of the Study:

The aim of the study is to **Risk Management in Supply Chain in Hospital by reducing or downsizing the Risk in the Hospital Pharmacy by reducing the inventory holding days.**

In broader terms, the study aims to efficiently manage and optimize the pharmacy, warehouse, stores and inventory in a Single Speciality Hospital that covers both direct and indirect outcomes such as **Cost Reduction, Space Management, increase in operational efficiency of the pharmacy and ensuring compliance in the system.**

Objective of the Study:

The following study aims to bring both the direct and indirect benefits that can be achieved by properly or efficiently managing or by optimizing the **IP**

and OP Pharmacy in a Hospital through proper **Supply Chain Management Practices**.

Before entering a detailed discussion in the article regarding the topic about the methodology, results, findings and discussions, lets understand briefly **the Supply Chain Management Process and how its application is done in the healthcare sector, typically in a hospital setting to achieve the objectives stated above**.

The literature mentioned in the article has been taken and modified by the author from various articles, studies and real-life working experience from professionals involved in this field, and resources that are available both online (the internet sources) and offline (in form of existing books, research papers and journals, etc.)

Supply chain management (SCM) deals with a system of **procurement** (purchasing raw materials/components), operations management, logistics and marketing channels, through which raw materials can be developed into finished products and delivered to their end customers.

A narrower definition of supply chain management is the **"design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide logistics, synchronising supply with demand and measuring performance globally"**.
This can include the movement and storage of raw materials, work-in-process inventory, finished goods, and end to end order fulfilment from the point of origin to the point of consumption.
Interconnected, interrelated or interlinked networks, channels and node businesses combine in the provision of products and services required by end customers in a supply chain.

SCM is the broad range of activities required to plan, control and execute a product's flow from materials to production to distribution in the most economical way possible.
SCM encompasses the integrated planning and execution of processes required to optimize the flow of materials, information and capital in functions that broadly include

demand planning, sourcing, production, inventory management and logistics—or storage and transportation.

Supply chain management strives for an integrated, multidisciplinary, multimethod approach.

As discussed previously, our study aims to cover all the aspects of **Supply Chain Management** practices in a typical Hospital scenario including Procurement, Purchase, Logistics, Hospital Management Information System (HMIS), the concept of **Turn-Around Time (TAT)**, Lead Time, Vendor Management, Rate Contracts, Hospital Inventory Management and most importantly optimization of inventory to reduce cost and increase operational efficiency of the Hospital Pharmacy.

Topics to be covered in detail in Introduction:

1.Supply Chain Management and Hospital Supply Chain Management
2. Procurement and Purchase
3. Inventory Management and Inventory Control Techniques
4.Vendor/Supplier Management
5.Rate Contracts
6.Re-Order Label (ROL), Minimum Order Quantity (MOQ)/Economic Order Quantity(EOQ)
7.Management Information System (MIS) and Enterprise Resource Planning (ERP) Systems

1.1 Supply Chain Management:

As discussed previously, **supply chain management (SCM)** deals with a system of **procurement (purchasing raw materials/components), operations management, logistics and marketing channels, through which raw materials can be developed into finished products and delivered to their end customers**.
Definition of supply chain management can be stated as **it is the "design, planning, execution, control, and monitoring of supply chain activities with the objective of creating net value, building a competitive infrastructure, leveraging worldwide**

logistics, synchronizing supply with demand and measuring performance globally". This can include the movement and storage of raw materials, work-in-process inventory, finished goods, and end to end order fulfilment from the point of origin to the point of consumption. Interconnected, interrelated or interlinked networks, channels and node businesses combine in the provision of products and services required by end customers in a supply chain.

SCM is the broad range of activities required to plan, control and execute a product's flow from materials to production to distribution in the most economical way possible. SCM encompasses the integrated planning and execution of processes required to optimize the flow of materials, information and capital in functions that broadly include demand planning, sourcing, production, inventory management and logistics—or storage and transportation.

Origin of the term and definitions:

The term Supply Chain Management was first coined by **Keith Oliver**, a consultant at **Booz Allen Hamilton**, introduced the term "supply chain management" to the public domain in an interview for the **Financial Times**, in **1982**.

In 1983, **Witchcrafts Wyche** in Germany published for the first time the results of an implemented and so called "**Supply Chain Management project**", led by **Wolfgang Partsch**.

In the late 1990s, "supply chain management" (SCM) rose to prominence, and operations managers began to use it in their titles with increasing regularity.

Functions of Supply Chain Management:

The primary functions of SCM include:

1. **Planning**:
    - Demand forecasting
    - Supply planning
    - Inventory planning
    - Production planning
    - Sales and operations planning (S&OP)

2. **Sourcing**:
    - Management of Suppliers
    - Processes of Procurement
3. **Manufacturing**:
    - Scheduling Production
    - Quality controls
    - Facility Management
    - Management of Maintenance
4. **Logistics**:
    - Warehousing
    - Order fulfilment
    - Distribution management
5. **Inventory Management**:
    - Stock control
    - Optimization inventories.

1.1.2 Hospital Supply Chain Management (HSCM) is the process of effectively managing medications, medical supplies, and other products associated with healthcare to guarantee their availability at the appropriate time, location, and quantity.
These are HSCM's primary roles:

1. Demand Planning:
    - Demant forecasting.
2. **Procurement**:
    - Suppler selection and management process
3. **Inventory Management**:
    - Implementing management system
4. **Logistics and Distribution**:
    - Timing distribution department wise
    - warehousing and store management
5. **Vendor Management**:
    - Vender performance
6. **Compliance and Risk Management**:

- Adhering to healthcare regulations and standards
- Ensuring the safety and quality of medical supplies

7. **Technology Integration**:
    - Utilizing supply management software

    Barcode machine

8. **Cost Management**:
    1. Controlling procurement\
    2. Westage reduce

9. **Sustainability**:

    Adopting greenery supply chain management

    Reducing environmental wastage

10. **Performance Measurement**:
    3. Monitoring and performance
    4. Caring audit timely
    5. Continues improvement
    6. Ensuring practice in supply chain management

Figure: 1.0: Supply Chain Management Process

1.2 Procurement is the process of obtaining goods or services, typically for business purposes. It includes a wide range of duties, including identifying the needs, tracking

down and investigating vendors or suppliers, negotiating, handling contracts, processing orders, and maintaining connections with supplier management.

Figure: 1.2: Procurement Lifecycle

1.2.1 Hospital Procurement: Hospital procurement is the prices by which healthcare facilities acquire the goods and services requires to provides medical attention. These necessities the development of unique plan to ensure that the procurement process maintaining finance viability, comforts with regulatory and advance process.

Important elements of hospital acquisition consist of:

1. **Determining Needs:** Determine what medical supplies, equipment, drugs, and services are required based on patient care requirements and hospital operations. **2. Supplier Research and Qualification**: This involves identifying potential suppliers who meet the specific needs of a healthcare facility and assessing their dependability, quality standards, and compliance with regulatory regulations.

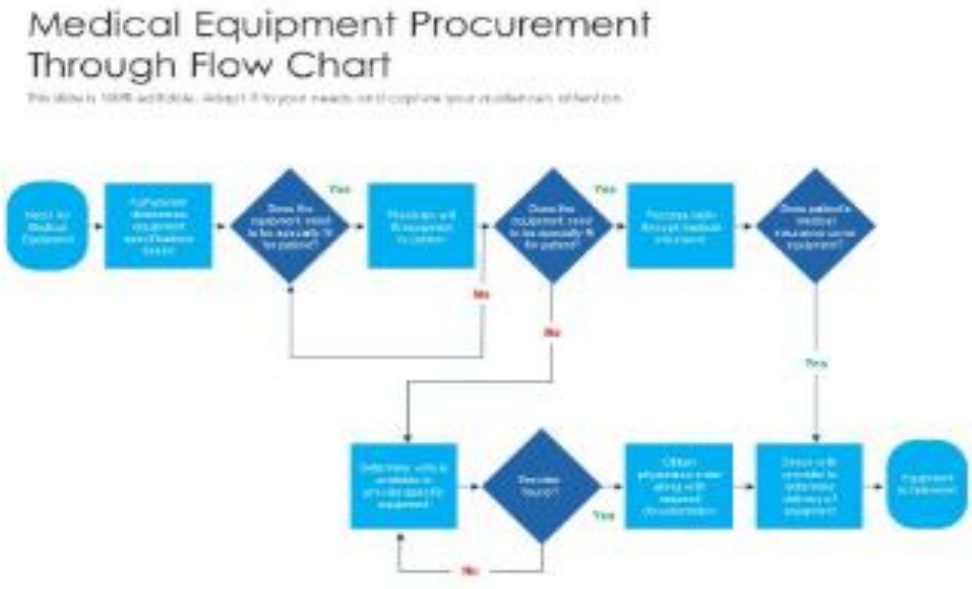


Figure:1.2.1: Hospital Medical Equipment Procurement

1.2.2 Purchase: The average medical facility Several crucial processes are involved in the purchase process and workflow for medications and medical equipment to guarantee the acquisition of compliant, high-quality, and reasonably priced goods. An example workflow for obtaining these elements is shown below.

Hospital Purchase Process Workflow

1. **Needs Assessment**

   Drugs: Based on patient needs, treatment protocols, and formulary changes, clinical personnel and the pharmacy department determine the necessary medications.

2. **Budget Approval**

   a. Department heads draft a budget request that includes an estimate of the price of the necessary medications and supplies.

3. **Request for Proposals (RFP) / Quotations (RFQ)**

   a. Draft and submit Requests for Proposals (RFPs)/RFQs to pre-approved vendors outlining the requirements for pharmaceuticals and equipment in terms of specifications, quantities, and delivery.

4. **Purchase Order Issuance**

   a. purchase orders and send them to the chosen vendors for the medications and medical supplies.

   2. Provide specifics such item descriptions, prices, quantities, delivery schedules, and shipping guidelines.

5. **pharmaceuticals:** As soon as the pharmaceuticals are delivered, inspect them for quality, expiration dates, and compliance with the order specifications.

6. **Inventory Management**

   a. Medicines: Update the pharmacy inventory system, making sure that stock rotation (FIFO: First In, First Out) and appropriate storage conditions (such as temperature control) are followed.

7. **Payment Processing:**

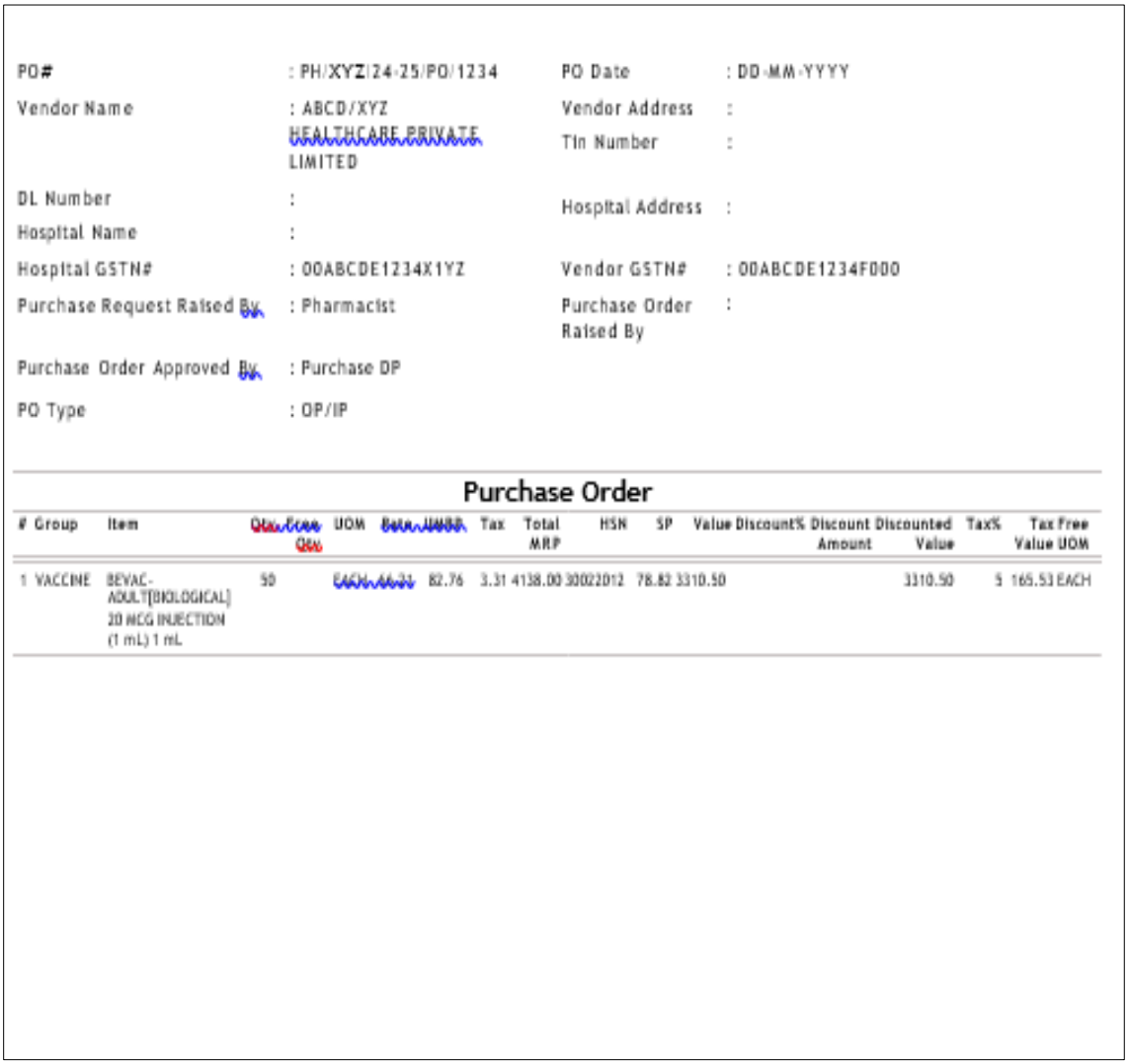
   a. Examine and process supplier invoices to make sure they line up with delivery records and purchase orders.

8. Post-**Purchase Evaluation**

   a. **Drugs**: The pharmacy department keeps an eye on how well the drugs are being used and handles any problems with the supplier as needed.
   b. Medical Equipment: The biomedical engineering team monitors the equipment's function and makes sure it is maintained in accordance with the manufacturer's recommendations.

9. **Supplier Performance Review:** Supplier performance is regularly assessed, considering variables including product quality, prompt delivery, issue response, and general dependability.

Figure: 1.2.2: A Typical Purchase Order Format



PO#	: PH/XYZ/24-25/PO/1234	PO Date	: DD-MM-YYYY
Vendor Name	: ABCD/XYZ HEALTHCARE PRIVATE LIMITED	Vendor Address TIn Number	: :
DL Number	:	Hospital Address	:
Hospital Name	:		
Hospital GSTN#	: 00ABCDE1234X1YZ	Vendor GSTN#	: 00ABCDE1234F000
Purchase Request Raised By	: Pharmacist	Purchase Order Raised By	:
Purchase Order Approved By	: Purchase DP		
PO Type	: OP/IP		

Purchase Order

#	Group	Item	Qty	Free Qty	UOM	Rate	UMRP	Tax	Total MRP	HSN	SP	Value	Discount%	Discount Amount	Discounted Value	Tax%	Tax Free Value	UOM
1	VACCINE	BEVAC-ADULT[BIOLOGICAL] 20 MCG INJECTION (1 mL) 1 mL	50		EACH	66.21	82.76	3.31	4138.00	30022012	78.82	3310.50			3310.50	5	165.53	EACH

1.3 Inventory Management and Inventory Control Techniques:

Effective inventory management is essential for maintaining high standards of patient care while optimizing operational efficiency. In a hospital setting, inventory management involves supervising the ordering, storage, and utilization of various supplies, medications, and medical equipment to ensure that the right items are available at the right time without overstocking or incurring unnecessary costs.

1.3 ABC, VED and FSN Analysis:

ABC, VED, and FSN analysis are inventory classification technique used in hospitals to manage and priority different types of inventories effectively. Each method has focus and helps.

1.3.1. ABC Analysis

1. Items that receive high consumption rates are prioritized in ABC analysis because it operates on the Pareto principle that suggests a small percentage of items consumes much of the rate. This method classifies inventory into three categories: This method classifies inventory into three categories:

1. **A Items**:

They are generally the more expensive items on an organization's inventory and have a major effect on established costs.

Normally, 25:75 convention implies that 10-20% of items contain 70-80% of the total inventory value.

They should be kept under close supervision, reviewed often, and records on them have to be spot-on.

- **B Items**:

  The moderate value of the items is not very significant in the overall expense of the inventory.

  Normally, it was observed that 20 to 30% of items contribute 15 to 25% of the total inventory cost.

  The degree of control required for them is moderate, and the frequency of their review should be rather high.

- **C Items**:
  1. Typically, 50-60% of items account for 5-10% of the inventory value.
  2. Require less control and infrequent review.

1.3.2 VED Analysis

VED analysis classifies inventory based on the criticality of items for patient care and hospital operations:

1. **Vital (V)**:
   - Items that are critical for patient care and hospital operations.
   - Any shortage can have serious consequences.
   - Require continuous availability and stringent control.
2. **Essential (E)**:
   - Items that are important but not critical.
   - Shortages can be managed temporarily but may affect patient care.

- Require regular monitoring and control.

3. **Desirable (D)**:
    - Items that are non-critical and have little impact on patient care if unavailable.
    - Can be stocked at lower levels and reviewed less frequently.

1.3.3 FSN Analysis

FSN analysis categorizes inventory based on the frequency of usage:

1. **Fast-moving (F)**:
    - Items that are consumed frequently and have a high usage rate.
2. **Slow-moving (S)**:
    - Require Replacement and close monitoring.
3. **Non-moving (N)**:
    - Items that are rarely used or have no usage over a specified period.
    - Require review for potential disposal or reduction in stock levels.

Implementing ABC, VED, and FSN Analysis

Data Collection:

a. Collect information concerning the demand, price, and importance of inventories.
b. Collect data on the intensity of technology use in the past, reports from usage analysis, and data from clinical and procurement departments.

2.Classification:

1.ABC Analysis: Multiply unit cost by the usage frequency for the year to get the annual consumption value of each item. Start from the top and sort down to the bottom according on consumption value and segregate into A, B and C groupings.

2.**VED Analysis:** Determine how essential the specific item is for the care of the patients and functionality of the healthcare facility. Categorize items into Accordion, Priority, and Luxurious.

3.FSN Analysis: Determine the extent and the frequency of use of the items during a set period. Broadly categorize them into moving fast, moving slow and moving none.

Table: 1.3: A Combined Inventory Control Analysis Approach

A Combined Analysis Approach				
Item	**ABC Category**	**VED Category**	**FSN Category**	**Control Strategy**
Item 1	A	V	F	Tight control, frequent review
Item 2	B	E	S	Regular monitoring
Item 3	C	D	N	Infrequent review, consider disposal

Tender evaluation in the context of hospital supply chain management involves a structured process to ensure that the procurement of medical supplies, equipment, and services is conducted in a transparent, fair, and efficient manner. This process aims to select the best vendor or supplier that can meet the hospital's requirements at the best value.

Generally, from a Hospital's point of view, **the Vendor that qualifies the Tender Evaluation process with agreeing to supply with Highest Product Quality and Highest Margin/Lowest Rate** is mainly awarded the contract and becomes **V1-Authorized Rate Contract (RC) Vendor in the Hospital formulary.**

1.4.1 Tender Evaluation Process for Hospital Supplies

1. **Preparation**:
    - The hospital needs to procure surgical gloves and other consumables.
    - Detailed specifications and quality standards are prepared, including requirements for material, size, sterility, and packaging.
2. **Issuing the Tender**:
    - An RFQ is published, outlining the requirements, evaluation criteria, and submission deadline.
3. **Receiving Bids**:
    - Multiple suppliers submit their bids before the deadline.
4. **Initial Screening**:
    - Bids are checked for completeness and compliance with mandatory criteria.

1.7.1.1Hospital Management Information System (HMIS)

Definition: HMIS is defined as a full, powerful system that will contain all the information of the hospital or healthcare institution and its relative departments. It concentrates on the effectiveness of clinical and administrative practices, the quality of the treatments offered to patients, and the organization of the healthcare services.

Key Functions:

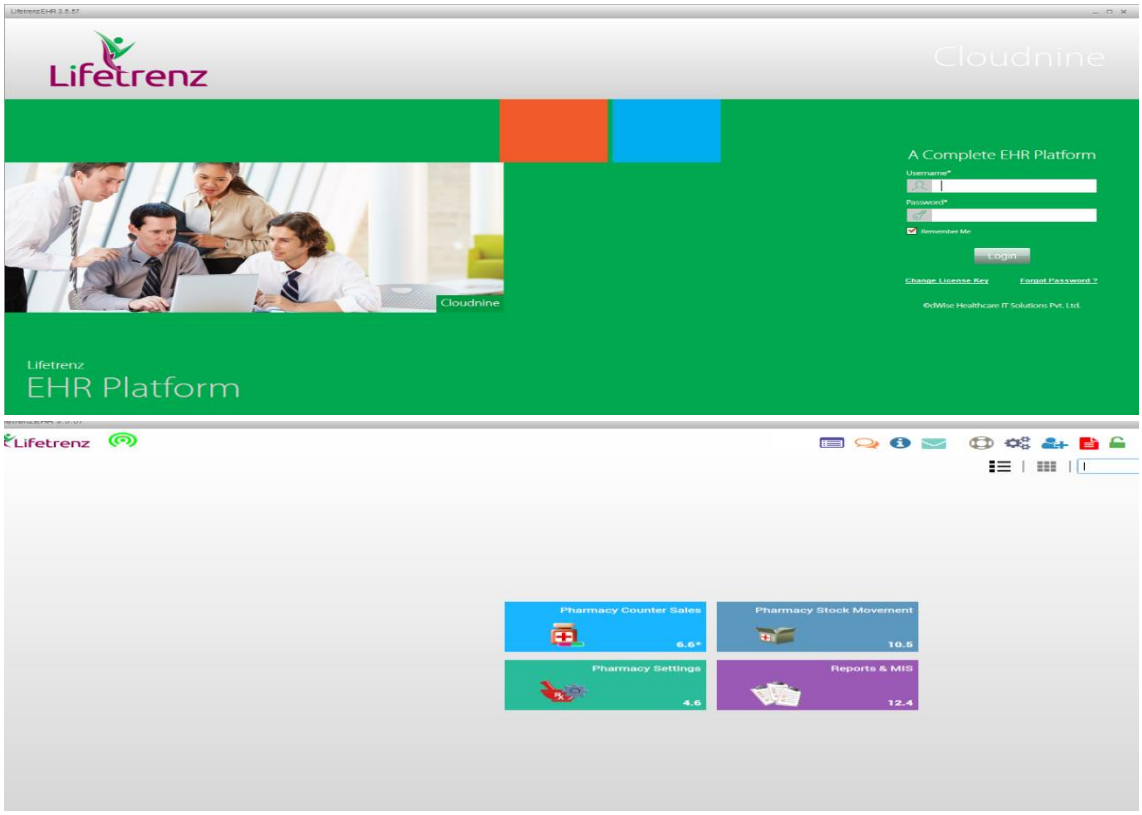
• **Patient Management:** It stores the patient's personal details, their past and present health conditions, the treatment to be offered to them and their appointments.

• **Clinical Support:** Offers computerized clinical encounter support templates, EHRs and dealing with images for medical treatment.

• **Billing and Finance:** Oversees billings, insurance, and collection; insurance claims; financing and collected revenues.

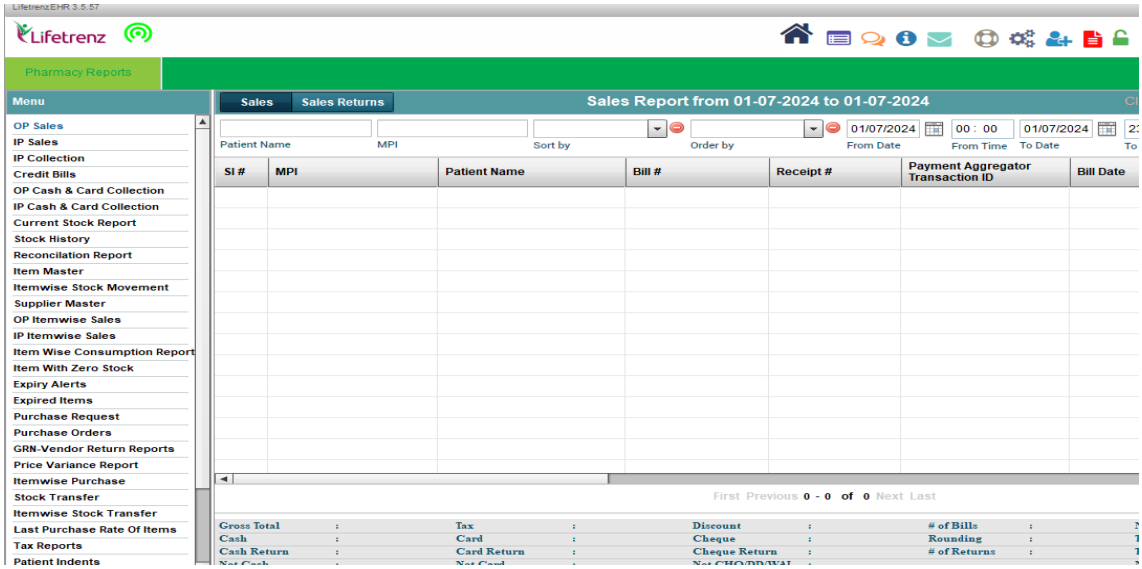
• **Inventory Management:** It is used in tracking of medical supplies, pharmaceuticals, medical equipment among other things, and stock control.

• **Quality Assurance:** It supervises the degree of conformance to health care laws, best practice, and patient protection measures.



1.7.2 Enterprise Resource Planning (ERP)

Definition: ERP is comprehensive else business application software that helps to accumulate data of the various corporate functions of an organization in an efficient approach. Importantly, ERP systems are not only limited to clinical care in a hospital's setting but encompass areas such as financial, supply chain, human resource, and many others.



Chapter 2

Review of Literature

Sl. No.	Title	Author	Features
1.	Promising research fields in supply chain risk management and supply chain resilience and the gaps concerning human factors	Pedro Senna, Augusto da Cunha Reis, Alexandre Castro, Ana Claudia Dias	This study was happened with the goal of conducting research to identify the human factors that impact to supply chain management and the systematic review and meta-analysis method were applied for this study. Mainly this study was included with minimum bias and at end of the study, it was discovered that human related risk and resilience factors were responsible for risk in supply chain management.

2.	Healthcare supply chain risk management in Rio de Janeiro, Brazil: What is the current situation?	Pedro Senna, Augusto da Cunha Reis, Igor Leão Santos, Ana Claudia Dias	The main goal of this research study was to investigate the supply chain risk management which is being applied in healthcare sector in Brazil. The four methods were followed for this research which were research design, case selection, data collection and data analysis with appropriate results. The result was discovered like the managers had empirical knowledge of risk and they could easily detect the hazardous risks but they did not have authority or proper manpower to implement the solutions which might be solved the risks related to supply chain.

Chapter 3

Methodology

Study Area – KD Hospital

Sample Size - 100

Inclusion – Database, Staffs of inventory and supply chain management.

Exclusion – Incomplete information regarding risk factors.

Data Collection – Primary and Secondary Data Collection.

Data Analysis Plan – The collected data was analyzed by using MS-Excel.

Research Questions - How can effective SCRM practices enhance a company's resilience against disruptions within the supply chain?

Our study specifically highlights the importance of VED and FSN Analysis in reducing or down-sizing the Inventory Stock Holding Days.

As discussed previously in the abstract, a different methodology has been developed to optimize the inventory by reducing or down-sizing inventory stock holding days.

A following methodology has been developed step by step :

(i) Identifying the No. of Drugs, Surgicals, Consumables used in the typical Pharmacy i.e Analysing the Item- Master of the Pharmacy

(ii) After a detailed analysis of the Pharmacy Item Masters, segmentation/classification is done to label the items as the Vitals, Essential and Desirable Category.

(iii) From the MIS Reports, Consumption pattern of each Item is shown to indicate their FSN Nature

(iv) After the FSN Nature of Items a further classification is done where both VED-FSN is made further sort out items.

(v) Then as per the Rate and MRP of Supply, the Purchase value is calculated, items having highest purchase value to lowest.

(vi) The Unit Consumption Report of up to last 3 months is taken into consideration.

The below excel sheet best describes the format of the study:

ITEM DETAILS		CONSUMPTION PATTERN								VED-FSN ANALYSIS		PURCHASE VALUE AND STOCK HOLDING							
Sl No.	Items	VED	Holding Q	Feb-24	Mar-24	Apr-24	Total	Per day	Movemer	FSN	VED-FSN	Unit Cost	Inventory	DOI on ba	Excess Stc	Holding V	Stock (Qty	Stock valu	Extra Stock val

Table:3.1: Excel Sheet for demonstrating the following method

3.1 Procedures-

(i) A total of 100 Items were taken as as Sample and after verifying consumption reports, Required, Not Required and Adequate or In-adequate stock was determined.

(ii) VED Item wise Labelling and 3 months consumption reports.

(iii) VED-FSN Analysis of Data

(iv) Whether Stock is Required, Not Required or Insufficient.

The following figure shows the data:-

ITEM DETAILS		CONSUMPTION PATTERN								ED-FSN ANALYSIS		PURCHASE AND STOCK HOLDING			
Sl No.	Items	VED	Holding	Feb	Mar	Apr	Total	Per day	Move	FSN	VED-FSN	Unit Cost	Inventory	DOI on ba	Excess Stc
1	FLUARIX TETRA 2024 S H[G] 1 UNIT PRE FILLED	Vitals	120	0	0	0	0	0	0	N	Vitals N	819	No Cons	3	Not Requi
2	CUROSURF[CHIESI] 240 MG INJ (3 mL)	Vitals	4	1	2	0	0	0	2	F	Vitals F	18004.94	No Cons	15	Not Requi
3	CONSUMABLES OTHERS (DBS)	Desired	144	204	189	114	507	16.9	3	F	Desired F	88.6	8.52071	7	-1.52071
4	PNEUBEVAX 14[BIOLOGICAL] 1 UNIT INJECTIO	Essenti	45	8	5	7	20	0.667	3	F	Essential F	1704	67.5	10	-57.5
5	GONAL-F[P&G] 300 I.U PFP (0.5 mL)	Vitals	16	9	1	0	0	0	2	F	Vitals F	3916.01	No Cons	15	Not Requi
6	SURGEON GOWN ECONOMY (MEDISAFE)	Desired	149	141	185	141	467	15.57	3	F	Desired F	66.5	9.571734	7	-2.57173
7	VAXIFLU-4[ZYDUS] 1 UNIT PFS (0.5 mL)	Vitals	125	14	6	9	29	0.967	3	F	Vitals F	546	129.3103	15	-114.31
8	MENOPUR[FERRING] 1200 IU INJECTION (1 vi	Vitals	2	0	0	0	0	0	0	N	Vitals N	27385.51	No Cons	3	Not Requi
9	GONAL-F[P&G] 450 I.U PFP (0.75 mL)	Vitals	9	5	0	1	0	0	2	F	Vitals F	5838.38	No Cons	15	Not Requi
10	BIVALENT ORAL POLIO[BHARAT] DROP (2 mL	Vitals	5367	186	177	134	497	16.57	3	F	Vitals F	8.83	323.9638	15	-308.964
11	VARIPED[MSD] 1350 PFU INJ (0.5 mL)	Desired	65	184	126	92	402	13.4	3	F	Desired F	1580.8	4.850746	7	2.149254
12	SYNFLORIX[GLAXO] 1 DOSE PFS (0.5 mL)	Essenti	38	10	13	7	30	1	3	F	Essential F	1313.64	38	10	-28
13	TEGADERM 8591 (3M)	Essenti	208	99	97	56	252	8.4	3	F	Essential F	287.6	24.7619	10	-14.7619
14	CETROTIDE[MERCK] 0.25 MG INJECTION (1 via	Vitals	26	12	4	0	0	0	2	F	Vitals F	1301.56	No Cons	15	Not Requi
15	FLUQUADRI[SANOFI] 1 DOSE PFS (0.5 mL)	Vitals	49	106	31	0	0	0	2	F	Vitals F	682.5	No Cons	15	Not Requi
16	GARDASIL[MSD] 1 UNIT PFS (0.5 mL)	Essenti	34	25	24	20	69	2.3	3	F	Essential F	2722.72	14.78261	10	-4.78261
17	PREMICATH 28G-1FR [1261.20] (VYGON)	Vitals	6	2	0	2	0	0	2	F	Vitals F	4893.12	No Cons	15	Not Requi
18	PARIETEX COMPOSITE MESH [PCO15FX] 15CN	Vitals	1	0	0	0	0	0	0	N	Vitals N	28116	No Cons	3	Not Requi
19	ROTAVAC 5D[BHARAT] 1 UNIT PFS (0.5 mL)	Desired	2	122	120	88	330	11	3	F	Desired F	470	0.181818	7	6.818182
20	TYPHIBEV[BIOLOGICAL] 25 MCG PFS (0.5 mL)	Vitals	79	20	24	26	70	2.333	3	F	Vitals F	631.54	33.85714	15	-18.8571
21	ANTI-D 150[BHARATH] 150 MCG PFS (1 mL)	Vitals	14	0	2	1	0	0	2	F	Vitals F	1984.83	No Cons	15	Not Requi
22	CUROSURF[CHIESI] 80 MG INJ (1.5 mL)	Vitals	3	1	0	0	0	0	1	S	Vitals S	9002.47	No Cons	7	Not Requi
23	IMMUNOREL[RELIANCE] 5 GRAM INFUSION (	Vitals	3	0	0	0	0	0	0	N	Vitals N	9000	No Cons	3	Not Requi
24	ANTI D 300[BHARATH] 300 MCG PFS (1 mL)	Vitals	9	4	0	9	0	0	2	F	Vitals F	2940.83	No Cons	15	Not Requi
25	NEW BORN BABY DRESS SINGLE (SV APPAREL	Essenti	108	36	78	55	169	5.633	3	F	Essential F	510	19.1716	10	-9.1716
26	GARDASIL 9[MSD] PFS (0.5 mL)	Essenti	9	7	7	3	17	0.567	3	F	Essential F	7898.8	15.88235	10	-5.88235
27	INFANT RESPIRATORY CARE SYSTEM [RT265]	Essenti	7	0	1	0	0	0	1	S	Essential S	3693.12	No Cons	5	Not Requi
28	OROFER S[EMCURE] 200 MG INJ (10 mL)	Vitals	117	14	9	4	27	0.9	3	F	Vitals F	249.04	130	15	-115
29	FOLISURGE[INTAS] 900 I.U INJECTION (1 vial)	Essenti	4	0	0	0	0	0	0	N	Essential F	6232.98	No Cons	2	Not Requi
30	POWD NAN EXCELLA PRO 2[NESTLE] 1 UNIT P	Essenti	42	5	8	2	15	0.5	3	F	Essential F	668.83	84	10	-74
31	ZYVAC T C V[ZYDUS] 1 UNIT PFS (0.5 mL)	Vitals	39	0	0	0	0	0	0	N	Vitals N	582.4	No Cons	3	Not Requi
32	APTAMIL PRETERM[DANONE] 1 UNIT POWDE	Essenti	45	4	1	1	6	0.2	3	F	Essential F	520.38	225	10	-215
33	DUROGESIC[JOHNSON] 25 MCG/HOUR PTCH	Vitals	34	3	1	7	11	0.367	3	F	Vitals F	690	92.72727	15	-77.7273
34	ROTATEQ[MSD] 1 DOSE TUBE (2 mL)	Desired	146	79	93	47	219	7.3	3	F	Desired F	653.16	20	7	-13
35	INOSYS CIRCUIT KIT [BC4110/6110/3110/2110	Vitals	3	0	0	0	0	0	0	N	Vitals N	6229.44	No Cons	3	Not Requi
36	FACE MASK N95 V-4420+ (VENUS)	Essenti	1741	60	79	61	200	6.667	3	F	Essential F	11	261.15	10	-251.15
37	MANFORCE CONDOMS 3'S (MANKINND)	Essenti	800	0	0	0	0	0	0	N	Essential F	22.8	No Cons	2	Not Requi
38	BAKRI POSTPARTUM BALLOON [J-SOS-10050	Vitals	2	0	0	0	0	0	0	N	Vitals N	8000	No Cons	3	Not Requi
39	DULCOFLEX[SANOFI] 10 MG SUPP (5 supposit	Desired	38	101	73	32	206	6.867	3	F	Desired F	27.63	5.533981	7	1.466019
40	BILIBLANKET PHOTOTHERAPY COVER [6600-0	Essenti	35	15	6	11	32	1.067	3	F	Essential F	636.48	32.8125	10	-22.8125
41	FOLICULIN HP[BHARATH] 150 I.U INJ (1 vial)	Vitals	26	0	0	0	0	0	0	N	Vitals N	585.88	No Cons	3	Not Requi
42	SUSTEN[SUN] 300 MG CAP (10 cap)	Vitals	489	90	30	0	0	0	2	F	Vitals F	28.93	No Cons	15	Not Requi
43	TOSIBAN 37.5 MG[ZUVENTUS] 7.5 MG/1 ML IN	Essenti	7	3	1	4	8	0.267	3	F	Essential F	3252.9	26.25	10	-16.25
44	FERONIA-FCM 500[ZUVENTUS] 500 MG INJEC	Essenti	10	0	6	10	0	0	2	F	Essential F	1387	No Cons	10	Not Requi
45	ORGALUTRAN[ORGANON] 0.25 MG PENFILL (	Vitals	10	5	0	0	0	0	1	S	Vitals S	1384	No Cons	7	Not Requi
46	INTRAOSSEOUS INFUSION NEEDLE 15G -ADJU	Essenti	9	0	0	0	0	0	0	N	Essential F	1533	No Cons	2	Not Requi
47	ET CATHETER WITH STYLET WALLACE	Essenti	7	0	0	0	0	0	0	N	Essential F	1950	No Cons	2	Not Requi
48	NOMOLINE HH ADULT/PEDIATRIC AIRWAY AD	Vitals	10	0	0	0	0	0	0	N	Vitals N	1350	No Cons	3	Not Requi
49	PAMPERS PREMIUM CARE PANTS BABY DIAPI	Essenti	6	0	0	0	0	0	0	N	Essential F	2248.4	No Cons	2	Not Requi
50	INFANRIX HEXA[GLAXO] PFS (0.5 mL)	Vitals	74	68	45	22	135	4.5	3	F	Vitals F	2074.8	16.44444	15	-1.44444

Figure:3.2: Data Collection

Chapter 4

Results and Discussions

This chapter presents the results of the study conducted. Results are commonly presented in the form of text, figures and tables, complete with data analysis.

The study conducted shows the following results:-

Findings:- A total of **100 Items** were taken as as **Sample** and after verifying consumption reports, Required, Not Required and Adequate or In-adequate stock was determined.

The following report shows the data:-

51	PORTEX EPIDURAL MINIPACK 18G [100/391/1	Essenti	13	2	6	3	11	0.367	3	F	Essential I	1380	35.45455	10	-25.4545
52	RD SET NEO PT SPO2 [NEONATAL-4004] (MAS	Vitals	17	1	7	5	13	0.433	3	F	Vitals F	1225	39.23077	15	-24.2308
53	NASONEX[MSD] 50 MCG NASAL SPRAY (120 M	Vitals	31	11	7	0	0	0	2	F	Vitals F	407.14	No Cons	15	Not Requ
54	VIREX I I 256[DIVERSEY] DISINFECTANT SOLU	Essenti	5	0	0	0	0	0	0	N	Essential I	2517.5	No Cons	2	Not Requ
55	VASOCLAMP [CORD CLAMP-2460] (POLYMED	Desired	151	114	19	44	177	5.9	3	F	Desired F	3.99	25.59322	7	-18.5932
56	GILSON PIPETTE TIPS INDIVIDUAL WRAPPED	Essenti	593	0	0	0	0	0	0	N	Essential I	20.59	No Cons	2	Not Requ
57	ZINCOVIT[APEX] DROP (15 mL)	Desired	109	62	52	35	149	4.967	3	F	Desired F	39.05	21.94631	7	-14.9463
58	UMBILICAL DOUBLE LUMEN CATHETER 3.5FR (	Vitals	14	2	2	2	6	0.2	3	F	Vitals F	1057.92	70	15	-55
59	INFANT BONNET 22-25CM [BC303-05] (FISHE	Vitals	9	0	0	1	0	0	1	S	Vitals S	1232.64	No Cons	7	Not Requ
60	TUBERVAC[SERUM] 1 MILLION UNITS INJ (1 m	Vitals	130	0	1	0	0	0	1	S	Vitals S	85	No Cons	7	Not Requ
61	NO CODING 1+ BLOOD GLUCOSE TEST STRIPS	Vitals	2101	0	0	0	0	0	0	N	Vitals N	5.25	No Cons	3	Not Requ
62	VALLEYLAB NEONATAL CAUTERY PLATE [E751	Vitals	5	0	0	1	0	0	1	S	Vitals S	2200	No Cons	7	Not Requ
63	Sample Cup - Pcs	Essenti	1	0	0	0	0	0	0	N	Essential I	10983	No Cons	2	Not Requ
64	SUSTEN[SUN] 200 MG INJ (2 mL)	Vitals	70	1	3	2	6	0.2	3	F	Vitals F	163.68	350	15	-335
65	SPINAL NEEDLE 27G WHITACRE [405128] (BD)	Vitals	40	0	5	8	0	0	2	F	Vitals F	273.02	No Cons	15	Not Requ
66	VICRYL 2-0 NW2317 (ETHICON)	Essenti	43	13	12	7	32	1.067	3	F	Essential I	332.69	40.3125	10	-30.3125
67	PRECURCELL PRP KIT (RECUES)	Essenti	6	3	2	0	0	0	2	F	Essential I	1750	No Cons	10	Not Requ
68	MOTIL[ANDRO] TAB (10 tab)	Essenti	290	0	0	130	0	0	1	S	Essential S	35.92	No Cons	5	Not Requ
69	ALTACEF INJ[GLENMARK] 1.5 GRAM INJ (1 via	Essenti	199	0	155	191	0	0	2	F	Essential I	52.25	No Cons	10	Not Requ
70	GESTOFIT SR[ALEMBIC] 300 MG TAB (10 tab)	Essenti	320	190	30	0	0	0	2	F	Essential I	32.44	No Cons	10	Not Requ
71	SURGICEL 2X3 1953 (ETHICON)	Vitals	15	4	3	5	12	0.4	3	F	Vitals F	1151.88	37.5	15	-22.5
72	TRUBARB 0,30CM [BSN0316U] (HEALTHIUM)	Vitals	6	0	0	0	0	0	0	N	Vitals N	1682.76	No Cons	3	Not Requ
73	NITRITE POWDER FREE NITRILE EXAMINATIO	Essenti	5300	0	200	0	0	0	1	S	Essential S	1.9	No Cons	5	Not Requ
74	OSSOPAN D[TTK] ORAL SUSP (200 mL)	Essenti	113	45	37	17	99	3.3	3	F	Essential I	123.63	34.24242	10	-24.2424
75	TEGADERM 1623 (3M)	Essenti	749	340	335	280	955	31.83	3	F	Essential I	22.89	23.5288	10	-13.5288
76	GONAL-F[P&G] 75 IU INJECTION (1 vial)	Vitals	9	14	4	0	0	0	2	F	Vitals F	1088.29	No Cons	15	Not Requ
77	DREAM-MA XT[HEALTHON] TAB (10 tab)	Essenti	150	40	0	120	0	0	2	F	Essential I	63.05	No Cons	10	Not Requ
78	APTAGROW VANILLA BIB[DANONE] 1 UNIT P	Essenti	21	0	1	1	0	0	2	F	Essential I	449.55	No Cons	10	Not Requ
79	GESTOFIT SR[ALEMBIC] 200 MG TAB (10 tab)	Essenti	410	120	30	0	0	0	2	F	Essential I	22.87	No Cons	10	Not Requ
80	POWD NEOLACT MMF PLUS[NEOLACTA] POV	Essenti	40	0	0	0	0	0	0	N	Essential I	232.96	No Cons	2	Not Requ
81	HUMOG HP[BHARATH] 150 I.U INJ (1 vial)	Vitals	29	8	1	3	12	0.4	3	F	Vitals F	401.85	72.5	15	-57.5
82	FIONA[MERIL] 20 MCG/24 HOUR IUD (1 devic	Essenti	8	0	3	0	0	0	1	S	Essential S	1128	No Cons	5	Not Requ
83	BABY BATH TUB (GOKIDZ)	Desired	40	75	9	44	128	4.267	3	F	Desired F	595	9.375	7	-2.375
84	EPICUTANEO CAVA CATHETER 24G-2FR [1284	Vitals	3	0	0	0	0	0	0	N	Vitals N	2975.04	No Cons	3	Not Requ
85	POWD NEOLACT MMF PLUS[NEOLACTA] POV	Essenti	20	0	0	0	0	0	0	N	Essential I	441.93	No Cons	2	Not Requ
86	SMOFLIPID 20%[FRESENIUS] INJ (100 mL)	Vitals	35	5	6	8	19	0.633	3	F	Vitals F	343.9	55.26316	15	-40.2632
87	POWD NAN PRO 2[NESTLE] POWDER (450 gra	Essenti	15	5	7	0	0	0	2	F	Essential I	578.3	No Cons	10	Not Requ
88	VENFLON PRO SAFETY IV CANNULA 22G [393	Vitals	163	49	44	31	124	4.133	3	F	Vitals F	84.91	39.43548	15	-24.4355
89	TOSIBAN 6.75 MG[ZUVENTUS] 7.5 MG/1 ML I	Essenti	8	0	0	1	0	0	1	S	Essential S	1071.53	No Cons	5	Not Requ
90	NORMOZ-DS[SUN] TAB (10 tab)	Essenti	310	110	90	0	0	0	2	F	Essential I	27.53	No Cons	10	Not Requ
91	BIOGLANDIN[UNITED] 500 MCG INJ (1 vial)	Essenti	2	0	1	0	0	0	1	S	Essential S	4214.22	No Cons	5	Not Requ
92	MOM CARE MATERNITY PAD 7'S (AKRUTI PRO	Essenti	120	0	0	0	0	0	0	N	Essential I	70	No Cons	2	Not Requ
93	DYDROBOON[MANKIND] 10 MG TAB (10 tab)	Essenti	350	0	0	90	0	0	1	S	Essential S	23.75	No Cons	5	Not Requ
94	NEOSEAL S [N421] (NEOTECH)	Vitals	88	0	0	0	0	0	0	N	Vitals N	94	No Cons	3	Not Requ
95	SIMILAC ADVANCE-1[ABBOTT] POWDER (400	Essenti	13	0	0	0	0	0	0	N	Essential I	632.37	No Cons	2	Not Requ
96	SODIUM CHLORIDE 0.9%[AMANTA] 0.9 %W/V	Essenti	1773	319	209	203	731	24.37	3	F	Essential I	5.37	72.76334	10	-62.7633
97	VARILRIX[GLAXO] 1 UNIT INJ (0.5 mL)	Desired	74	22	68	35	125	4.167	3	F	Desired F	1524.64	17.76	7	-10.76
98	FOLISURGE[INTAS] 300 I.U PFP (0.48 mL)	Vitals	17	9	7	12	28	0.933	3	F	Vitals F	2707.5	18.21429	15	-3.21429
99	NEONATAL PICC PLACEMENT KIT [80199.519]	Essenti	5	2	0	1	0	0	2	F	Essential I	1616.64	No Cons	10	Not Requ
100	UMBILICAL PLACEMENT PACK [80199.695] (V	Essenti	3	0	1	1	0	0	2	F	Essential I	2648.64	No Cons	10	Not Requ

Figure: 4.1: Data and Finding Report

4.1 Interpretation of Results- The above mentioned table shows the following results

(v) Item-wise VED-FSN Analysis

(vi) Consumption Based Purchase Value

(vii) Stock to be kept in hand, mapped as per VED-FSN Data

(viii) Whether Stock is Required, Not Required or Insufficient.

4.2 Results: From the tables and figures mentioned above, the following table shows the results:

Category	Fast	Slow	Non-Moving	Total
Vital	26	5	13	44
Essential	27	7	12	46
Desirable	10	0	0	10
Total	63	12	25	**100**

Table 4.1: Result Table

In the above mentioned excel sheet, the stock which is required or not can be mapped

ITEM DETAILS		CONSUMPTION PATTERN								ED-FSN ANALYSI		PURCHASE AND STOCK HOLDING			
Sl No.	Items	VED	Holdin	Feb	Mar	Apr	Total	Per day	Move	FSN	VED-FSN	Unit Cost	Inventory	DOI on ba	Excess Sto
1	FLUARIX TETRA 2024 S H[G] 1 UNIT PRE FILLE	Vitals	120	0	0	0	0	0	0	N	Vitals N	819	No Cons	3	Not Requi
2	CUROSURF[CHIESI] 240 MG INJ (3 mL)	Vitals	4	1	2	0	0	0	2	F	Vitals F	18004.94	No Cons	15	Not Requi
3	CONSUMABLES OTHERS (DBS)	Desired	144	204	189	114	507	16.9	3	F	Desired F	88.6	8.52071	7	-1.52071
4	PNEUBEVAX 14[BIOLOGICAL] 1 UNIT INJECTI	Essenti	45	8	5	7	20	0.667	3	F	Essential	1704	67.5	10	-57.5
5	GONAL-F[P&G] 300 I.U PFP (0.5 mL)	Vitals	16	9	1	0	0	0	2	F	Vitals F	3916.01	No Cons	15	Not Requi
6	SURGEON GOWN ECONOMY (MEDISAFE)	Desired	149	141	185	141	467	15.57	3	F	Desired F	66.5	9.571734	7	-2.57173
7	VAXIFLU-4[ZYDUS] 1 UNIT PFS (0.5 mL)	Vitals	125	14	6	9	29	0.967	3	F	Vitals F	546	129.3103	15	-114.31
8	MENOPUR[FERRING] 1200 IU INJECTION (1 vi	Vitals	2	0	0	0	0	0	0	N	Vitals N	27385.51	No Cons	3	Not Requi
9	GONAL-F[P&G] 450 I.U PFP (0.75 mL)	Vitals	9	5	0	1	0	0	2	F	Vitals F	5838.38	No Cons	15	Not Requi
10	BIVALENT ORAL POLIO[BHARAT] DROP (2 mL	Vitals	5367	186	177	134	497	16.57	3	F	Vitals F	8.83	323.9638	15	-308.964
11	VARIPED[MSD] 1350 PFU INJ (0.5 mL)	Desired	65	184	126	92	402	13.4	3	F	Desired F	1580.8	4.850746	7	2.149254
12	SYNFLORIX[GLAXO] 1 DOSE PFS (0.5 mL)	Essenti	38	10	13	7	30	1	3	F	Essential	1313.64	38	10	-28
13	TEGADERM 8591 (3M)	Essenti	208	99	97	56	252	8.4	3	F	Essential	287.6	24.7619	10	-14.7619
14	CETROTIDE[MERCK] 0.25 MG INJECTION (1 vi	Vitals	26	12	4	0	0	0	2	F	Vitals F	1301.56	No Cons	15	Not Requi
15	FLUQUADRI[SANOFI] 1 DOSE PFS (0.5 mL)	Vitals	49	106	31	0	0	0	2	F	Vitals F	682.5	No Cons	15	Not Requi
16	GARDASIL[MSD] 1 UNIT PFS (0.5 mL)	Essenti	34	25	24	20	69	2.3	3	F	Essential	2722.72	14.78261	10	-4.78261
17	PREMICATH 28G-1FR [1261.20] (VYGON)	Vitals	6	2	0	2	0	0	2	F	Vitals F	4893.12	No Cons	15	Not Requi
18	PARIETEX COMPOSITE MESH [PCO15FX] 15CM	Vitals	1	0	0	0	0	0	0	N	Vitals N	28116	No Cons	3	Not Requi
19	ROTAVAC 5D[BHARAT] 1 UNIT PFS (0.5 mL)	Desired	2	122	120	88	330	11	3	F	Desired F	470	0.181818	7	6.818182
20	TYPHIBEV[BIOLOGICAL] 25 MCG PFS (0.5 mL)	Vitals	79	20	24	26	70	2.333	3	F	Vitals F	631.54	33.85714	15	-18.8571
21	ANTI-D 150[BHARATH] 150 MCG PFS (1 mL)	Vitals	14	0	2	1	0	0	2	F	Vitals F	1984.83	No Cons	15	Not Requi
22	CUROSURF[CHIESI] 80 MG INJ (1.5 mL)	Vitals	3	1	0	0	0	0	1	S	Vitals S	9002.47	No Cons	7	Not Requi
23	IMMUNOREL[RELIANCE] 5 GRAM INFUSION (	Vitals	3	0	0	0	0	0	0	N	Vitals N	9000	No Cons	3	Not Requi
24	ANTI D 300[BHARATH] 300 MCG PFS (1 mL)	Vitals	9	4	0	9	0	0	2	F	Vitals F	2940.83	No Cons	15	Not Requi
25	NEW BORN BABY DRESS SINGLE (SV APPAREL	Essenti	108	36	78	55	169	5.633	3	F	Essential	510	19.1716	10	-9.1716
26	GARDASIL 9[MSD] PFS (0.5 mL)	Essenti	9	7	7	3	17	0.567	3	F	Essential	7898.8	15.88235	10	-5.88235
27	INFANT RESPIRATORY CARE SYSTEM [RT265]	Essenti	7	0	1	0	0	0	1	S	Essential S	3693.12	No Cons	5	Not Requi
28	OROFER S[EMCURE] 200 MG INJ (10 mL)	Vitals	117	14	9	4	27	0.9	3	F	Vitals F	249.04	130	15	-115
29	FOLISURGE[INTAS] 900 I.U INJECTION (1 vial)	Essenti	4	0	0	0	0	0	0	N	Essential	6232.98	No Cons	2	Not Requi
30	POWD NAN EXCELLA PRO 2[NESTLE] 1 UNIT P	Essenti	42	5	8	2	15	0.5	3	F	Essential	668.83	84	10	-74
31	ZYVAC T C V[ZYDUS] 1 UNIT PFS (0.5 mL)	Vitals	39	0	0	0	0	0	0	N	Vitals N	582.4	No Cons	3	Not Requi
32	APTAMIL PRETERM[DANONE] 1 UNIT POWDE	Essenti	45	4	1	1	6	0.2	3	F	Essential	520.38	225	10	-215
33	DUROGESIC[JOHNSON] 25 MCG/HOUR PTCH	Vitals	34	3	1	7	11	0.367	3	F	Vitals F	690	92.72727	15	-77.7273
34	ROTATEQ[MSD] 1 DOSE TUBE (2 mL)	Desired	146	79	93	47	219	7.3	3	F	Desired F	653.16	20	7	-13
35	INOSYS CIRCUIT KIT [BC4110/6110/3110/2110	Vitals	3	0	0	0	0	0	0	N	Vitals N	6229.44	No Cons	3	Not Requi
36	FACE MASK N95 V-4420+ (VENUS)	Essenti	1741	60	79	61	200	6.667	3	F	Essential	11	261.15	10	-251.15
37	MANFORCE CONDOMS 3'S (MANKINND)	Essenti	800	0	0	0	0	0	0	N	Essential	22.8	No Cons	2	Not Requi
38	BAKRI POSTPARTUM BALLOON [J-SOS-10050(	Vitals	2	0	0	0	0	0	0	N	Vitals N	8000	No Cons	3	Not Requi
39	DULCOFLEX[SANOFI] 10 MG SUPP (5 supposit	Desired	38	101	73	32	206	6.867	3	F	Desired F	27.63	5.533981	7	1.466019
40	BILIBLANKET PHOTOTHERAPY COVER [6600-0	Essenti	35	15	6	11	32	1.067	3	F	Essential	636.48	32.8125	10	-22.8125
41	FOLICULIN HP[BHARATH] 150 I.U INJ (1 vial)	Vitals	26	0	0	0	0	0	0	N	Vitals N	585.88	No Cons	3	Not Requi
42	SUSTEN[SUN] 300 MG CAP (10 cap)	Vitals	489	90	30	0	0	0	2	F	Vitals F	28.93	No Cons	15	Not Requi
43	TOSIBAN 37.5 MG[ZUVENTUS] 7.5 MG/1 ML IN	Essenti	7	3	1	4	8	0.267	3	F	Essential	3252.9	26.25	10	-16.25
44	FERONIA-FCM 500[ZUVENTUS] 500 MG INJEC	Essenti	10	0	6	10	0	0	2	F	Essential	1387	No Cons	10	Not Requi
45	ORGALUTRAN[ORGANON] 0.25 MG PENFILL (	Vitals	10	5	0	0	0	0	1	S	Vitals S	1384	No Cons	7	Not Requi
46	INTRAOSSEOUS INFUSION NEEDLE 15G -ADJU	Essenti	9	0	0	0	0	0	0	N	Essential	1533	No Cons	2	Not Requi
47	ET CATHETER WITH STYLET WALLACE	Essenti	7	0	0	0	0	0	0	N	Essential	1950	No Cons	2	Not Requi
48	NOMOLINE HH ADULT/PEDIATRIC AIRWAY AI	Vitals	10	0	0	0	0	0	0	N	Vitals N	1350	No Cons	3	Not Requi
49	PAMPERS PREMIUM CARE PANTS BABY DIAPI	Essenti	6	0	0	0	0	0	0	N	Essential	2248.4	No Cons	2	Not Requi
50	INFANRIX HEXA[GLAXO] PFS (0.5 mL)	Vitals	74	68	45	22	135	4.5	3	F	Vitals F	2074.8	16.44444	15	-1.44444

out and Inventory Days can be adjusted depending upon the above result table-

Figure:4.2: Result Table A

51	PORTEX EPIDURAL MINIPACK 18G [100/391/1	Essenti	13	2	6	3	11	0.367	3	F	Essential	1380	35.45455	10	-25.4545
52	RD SET NEO PT SPO2 [NEONATAL-4004] (MAS	Vitals	17	1	7	5	13	0.433	3	F	Vitals F	1225	39.23077	15	-24.2308
53	NASONEX[MSD] 50 MCG NASAL SPRAY (120 M	Vitals	31	11	7	0	0	0	2	F	Vitals F	407.14	No Cons	15	Not Requ
54	VIREX I I 256[DIVERSEY] DISINFECTANT SOLU	Essenti	5	0	0	0	0	0	0	N	Essential	2517.5	No Cons	2	Not Requ
55	VASOCLAMP [CORD CLAMP-2460] (POLYMED	Desired	151	114	19	44	177	5.9	3	F	Desired F	3.99	25.59322	7	-18.5932
56	GILSON PIPETTE TIPS INDIVIDUAL WRAPPED	Essenti	593	0	0	0	0	0	0	N	Essential	20.59	No Cons	2	Not Requ
57	ZINCOVIT[APEX] DROP (15 mL)	Desired	109	62	52	35	149	4.967	3	F	Desired F	39.05	21.94631	7	-14.9463
58	UMBILICAL DOUBLE LUMEN CATHETER 3.5FR (	Vitals	14	2	2	2	6	0.2	3	F	Vitals F	1057.92	70	15	-55
59	INFANT BONNET 22-25CM [BC303-05] (FISHE	Vitals	9	0	0	1	0	0	1	S	Vitals S	1232.64	No Cons	7	Not Requ
60	TUBERVAC[SERUM] 1 MILLION UNITS INJ (1 m	Vitals	130	0	1	0	0	0	1	S	Vitals S	85	No Cons	7	Not Requ
61	NO CODING 1+ BLOOD GLUCOSE TEST STRIPS	Vitals	2101	0	0	0	0	0	0	N	Vitals N	5.25	No Cons	3	Not Requ
62	VALLEYLAB NEONATAL CAUTERY PLATE [E751	Vitals	5	0	0	1	0	0	1	S	Vitals S	2200	No Cons	7	Not Requ
63	Sample Cup - Pcs	Essenti	1	0	0	0	0	0	0	N	Essential	10983	No Cons	2	Not Requ
64	SUSTEN[SUN] 200 MG INJ (2 mL)	Vitals	70	1	3	2	6	0.2	3	F	Vitals F	163.68	350	15	-335
65	SPINAL NEEDLE 27G WHITACRE [405128] (BD)	Vitals	40	0	5	8	0	0	2	F	Vitals F	273.02	No Cons	15	Not Requ
66	VICRYL 2-0 NW2317 (ETHICON)	Essenti	43	13	12	7	32	1.067	3	F	Essential	332.69	40.3125	10	-30.3125
67	PRECURCELL PRP KIT (RECUES)	Essenti	6	3	2	0	0	0	2	F	Essential	1750	No Cons	10	Not Requ
68	MOTIL[ANDRO] TAB (10 tab)	Essenti	290	0	0	130	0	0	1	S	Essential S	35.92	No Cons	5	Not Requ
69	ALTACEF INJ[GLENMARK] 1.5 GRAM INJ (1 via	Essenti	199	0	155	191	0	0	2	F	Essential	52.25	No Cons	10	Not Requ
70	GESTOFIT SR[ALEMBIC] 300 MG TAB (10 tab)	Essenti	320	190	30	0	0	0	2	F	Essential	32.44	No Cons	10	Not Requ
71	SURGICEL 2X3 1953 (ETHICON)	Vitals	15	4	3	5	12	0.4	3	F	Vitals F	1151.88	37.5	15	-22.5
72	TRUBARB 0,30CM [BSN0316U] (HEALTHIUM)	Vitals	6	0	0	0	0	0	0	N	Vitals N	1682.76	No Cons	3	Not Requ
73	NITRITE POWDER FREE NITRILE EXAMINATIO	Essenti	5300	0	200	0	0	0	1	S	Essential S	1.9	No Cons	5	Not Requ
74	OSSOPAN D[TTK] ORAL SUSP (200 mL)	Essenti	113	45	37	17	99	3.3	3	F	Essential	123.63	34.24242	10	-24.2424
75	TEGADERM 1623 (3M)	Essenti	749	340	335	280	955	31.83	3	F	Essential	22.89	23.5288	10	-13.5288
76	GONAL-F[P&G] 75 IU INJECTION (1 vial)	Vitals	9	14	4	0	0	0	2	F	Vitals F	1088.29	No Cons	15	Not Requ
77	DREAM-MA XT[HEALTHON] TAB (10 tab)	Essenti	150	40	0	120	0	0	2	F	Essential	63.05	No Cons	10	Not Requ
78	APTAGROW VANILLA BIB[DANONE] 1 UNIT P	Essenti	21	0	1	1	0	0	2	F	Essential	449.55	No Cons	10	Not Requ
79	GESTOFIT SR[ALEMBIC] 200 MG TAB (10 tab)	Essenti	410	120	30	0	0	0	2	F	Essential	22.87	No Cons	10	Not Requ
80	POWD NEOLACT MMF PLUS[NEOLACTA] POV	Essenti	40	0	0	0	0	0	0	N	Essential	232.96	No Cons	2	Not Requ
81	HUMOG HP[BHARATH] 150 I.U INJ (1 vial)	Vitals	29	8	1	3	12	0.4	3	F	Vitals F	401.85	72.5	15	-57.5
82	FIONA[MERIL] 20 MCG/24 HOUR IUD (1 devic	Essenti	8	0	3	0	0	0	1	S	Essential S	1128	No Cons	5	Not Requ
83	BABY BATH TUB (GOKIDZ)	Desired	40	75	9	44	128	4.267	3	F	Desired F	595	9.375	7	-2.375
84	EPICUTANEO CAVA CATHETER 24G-2FR [1284	Vitals	3	0	0	0	0	0	0	N	Vitals N	2975.04	No Cons	3	Not Requ
85	POWD NEOLACT MMF PLUS[NEOLACTA] POV	Essenti	20	0	0	0	0	0	0	N	Essential	441.93	No Cons	2	Not Requ
86	SMOFLIPID 20%[FRESENIUS] INJ (100 mL)	Vitals	35	5	6	8	19	0.633	3	F	Vitals F	343.9	55.26316	15	-40.2632
87	POWD NAN PRO 2[NESTLE] POWDER (450 gra	Essenti	15	5	7	0	0	0	2	F	Essential	578.3	No Cons	10	Not Requ
88	VENFLON PRO SAFETY IV CANNULA 22G [393	Vitals	163	49	44	31	124	4.133	3	F	Vitals F	84.91	39.43548	15	-24.4355
89	TOSIBAN 6.75 MG[ZUVENTUS] 7.5 MG/1 ML IN	Essenti	8	0	0	1	0	0	1	S	Essential S	1071.53	No Cons	5	Not Requ
90	NORMOZ-DS[SUN] TAB (10 tab)	Essenti	310	110	90	0	0	0	2	F	Essential	27.53	No Cons	10	Not Requ
91	BIOGLANDIN[UNITED] 500 MCG INJ (1 vial)	Essenti	2	0	1	0	0	0	1	S	Essential S	4214.22	No Cons	5	Not Requ
92	MOM CARE MATERNITY PAD 7'S (AKRUTI PRO	Essenti	120	0	0	0	0	0	0	N	Essential	70	No Cons	2	Not Requ
93	DYDROBOON[MANKIND] 10 MG TAB (10 tab)	Essenti	350	0	0	90	0	0	1	S	Essential S	23.75	No Cons	5	Not Requ
94	NEOSEAL S [N421] (NEOTECH)	Vitals	88	0	0	0	0	0	0	N	Vitals N	94	No Cons	3	Not Requ
95	SIMILAC ADVANCE-1[ABBOTT] POWDER (400	Essenti	13	0	0	0	0	0	0	N	Essential	632.37	No Cons	2	Not Requ
96	SODIUM CHLORIDE 0.9%[AMANTA] 0.9 %W/V	Essenti	1773	319	209	203	731	24.37	3	F	Essential	5.37	72.76334	10	-62.7633
97	VARILRIX[GLAXO] 1 UNIT INJ (0.5 mL)	Desired	74	22	68	35	125	4.167	3	F	Desired F	1524.64	17.76	7	-10.76
98	FOLISURGE[INTAS] 300 I.U PFP (0.48 mL)	Vitals	17	9	7	12	28	0.933	3	F	Vitals F	2707.5	18.21429	15	-3.21429
99	NEONATAL PICC PLACEMENT KIT [80199.519]	Essenti	5	2	0	1	0	0	2	F	Essential	1616.64	No Cons	10	Not Requ
100	UMBILICAL PLACEMENT PACK [80199.695] (V	Essenti	3	0	1	1	0	0	2	F	Essential	2648.64	No Cons	10	Not Requ

Figure 4.2: Result Table B

4.3 Discussions:

All the above tables and figures, finally conclude to results that:

(i) Around **25** line of items shows no consumption pattern and hence shows no movement, thus stock is not required.

(ii) Around **12** line of items, shows Slow Mvement, where consumption pattern is slow and can be ordered depending

upon the requirement, needed sometimes.

(iii) Around **63** line of items shows Fast Movement, which might be in regular use but with the help of VED-FSN Matrix, which items are of most requirement can be mapped out and their stock can be kept in hold for some more days in the inventory and rest can be retured to vendor and can be ordered when required.

(iv) These results and discussion can be applied to inventory for Optimization of Inventory

Chapter 5

Recommendations

Extending as an interpretation to the results shown above, the following inferences are discussed :

The comprehensive analysis conducted using VED (Vital, Essential, Desirable) and FSN (Fast-moving, Slow-moving, Non-moving) methodologies provided valuable insights into the inventory management practices of the hospital. The results indicate significant opportunities for optimization and cost savings. Here are the key findings:

5.1 Key Findings:

1. **Non-Moving Items**:
    - **25 line items** show no consumption pattern, indicating no movement.
    - **Action**: These items are identified as unnecessary for stock. Removing them from inventory can reduce holding costs and free up storage space.
2. **Slow-Moving Items**:
    - **12 line items** display slow movement patterns.
    - **Action**: These items can be ordered based on specific requirements rather than being stocked continuously. This approach reduces excess inventory and minimizes holding costs.
3. **Fast-Moving Items**:
    - **63 line items** are identified as fast-moving, regularly used in hospital operations.
    - **Action**: Through the VED-FSN matrix, the most critical items among these can be pinpointed. Critical items should be kept in sufficient stock to avoid shortages.

Overall Implications:

- **Inventory Optimization**:
    - The application of VED-FSN analysis effectively categorizes inventory item movement patterns.

      Cost Savings: Non-moving inventory takes up a lot of space and holding them comes at a price and by eliminating them from the facility, the hospital will save a lot on the same.

  Operational Efficiency:
    - Fast-moving critical items being kept in stock ensure uninterrupted healthcare services.

5.2 Conclusion: The result of this study supports that managing inventory with the help of strategic application of VED and FSN analysis improves the stock tremendously. Focusing on critical items in the hospital stock and replenishing the frequently moving stocks will be the key to reducing costs while maintaining completely ready status in case of increased levels for the healthcare facility. This effort can act as benchmarks for similar healthcare facilities desiring to enhance the inventory management methods and provide the highest possible standards of patient care.