

CLASS 12

VED ANALYSIS:

The limitation of A-B-C analysis is that it is based only on monetary value and the rate of consumption of the items. Sometimes, particularly in a hospital, an item of low monetary value and consumption (e.g. Injection Adrenaline, Anti-Snake Venom etc.) may be very vital or even life saving. Their importance cannot be overlooked simply because they do not appear in A category of inventory. Therefore, another parameter of the materials is their criticality. This could be in terms of the therapeutic value of a drug or intrinsic value of the material in achieving the objectives of hospital system. V-E-D analysis is based on critical values and shortage costs of the item. Based on their criticality, the items could be classified into three categories -Vital, Essential and Desirable.

Mechanics of V-E-D Analysis:

Moderate value analysis Two or more reliable sources Estimates based on past data on present plans Quarterly control over surplus and obsolete items Small group postings Combination purchasing Moderate Can be handled by middle management V-E-D classification is applicable to a large extent in spare parts management. Stocking a spare part is based on strategies different from those of raw materials. While the consumption of raw materials depends directly and definitely on the market demand, the spare part demand, on the other hand, depends on the performance of plant and machinery. Therefore, the method of classification designed for one type of inventory may not be compatible with another type of inventory. Statistically too, it has been noted that the demand for spares follows a Poisson distribution. Spare parts are classified as vital, essential and desirable to the operation of the equipment. This implies that 'V' class spares have to be stocked adequately to ensure continuity in the operations of the plant. Vital spares can cause havoc and bring the wheels of the machines to a grinding halt, if they are not available. Some risk can be taken in the case of 'E' class spares. Stocking of desirables, 'D', can be done away with if the lead time for procurement is low. It is important that this classification should be done with the assistance and concurrence of those who are responsible for maintenance of stores. Hence for the management of the drug stores also the same classification can be applied for the drug items. Applying the following principles can do the classification of the drug items as per V-E-D analysis:

1) Vital items: There are several vital items in the inventory of a hospital, which could make difference between life and death. There can be serious functional dislocation of patient care when such items are not available even for short period adversely affecting the image of the hospital. Such item should always be stocked in sufficient quantity to ensure their constant availability. Top management should control this group of items.

2) Essential items: The shortage of such items can be tolerated for a short period. If these items are not available for a few days or a week, functioning of the hospital can be adversely affected

(drugs like Antibiotics etc.). Top/middle level management ' should preferably control these items.

3) Desirable item: The shortage of these items will not adversely affect the patient care or hospital functional even if the shortage is prolonged (Items like vitamins). . Middle/lower level management should control desirable items.

As against the cost criteria in A-B-C analysis he V-E-D analysis is based on subjective analysis by a group of physicians. The group is required to sit together and decide/classify the store items according to its critically into vital, essential and desirable category. The criticality of the item will be depending upon the objective and the functioning of the hospital in general and the various service departments in specific. Hence, the V-E-D classification will vary from hospital to hospital and even within the hospital, department to department.

Question 4:

The following are some medical items used in a hospital along with their criticality and annual consumption:

Item	Criticality	Annual Consumption (Units)
P	Very Important	1,20,000
Q	Essential	30,000
R	Desirable	15,000
S	Very Important	90,000
T	Essential	25,000

Tasks:

- (i) Perform **VED analysis** and classify the items into **V, E, D** categories.
- (ii) Calculate the **total annual consumption** for each category.
- (iii) Find the **percentage share** of each category.
- (iv) Suggest **inventory control priorities** for each category.

Solution 3:

Given that a hospital has 5 inventory medical items with the following inventory data:

Item	Criticality	Annual Consumption (Units)
P	Very Important	1,20,000
Q	Essential	30,000
R	Desirable	15,000
S	Very Important	90,000
T	Essential	25,000

Step 1: We perform the VED classification based on:

- **V (Vital):** Critical for hospital operations; shortage may stop patient care.
- **E (Essential):** Important; short-term shortage manageable.
- **D (Desirable):** Low impact; stock as convenience.

Item	Criticality	VED Category	Reasoning
P	Very Important	V	Life-saving item like oxygen cylinder
Q	Essential	E	Routine supply like bandages
R	Desirable	D	
S	Very Important	V	Critical equipment like ventilator
T	Essential	E	Routine supplies like syringes

Step 2: We calculate the total annual consumption of each category.

Items present in Vital (V) category are P and S.

Total annual consumption of Vital (V) category = Annual consumption of the item P + Annual consumption of the item S = (1,20,000 + 90,000) units = 2,10,000 units

Items present in Essential (E) category are Q and T.

Total annual consumption of Essential (E) category = Annual consumption of the item Q + Annual consumption of the item T = (30,000 + 25,000) units = 55,000 units

Items present in Desirable (D) category is R.

Total annual consumption of Desirable (D) category = Annual consumption of the item R
= 15,000 units

Total Annual Consumption (TAC) across all categories = Total annual consumption of Vital (V) category + Total annual consumption of Essential (E) category + Total annual consumption of Desirable (D) category = (2,10,000 + 55,000 + 15,000) units = 2,80,000 units

Step 3: We find percentage share of each category

We use the formula to find the percentage share of each category:

$$\text{Percentage (\% share of a category)} = \left(\frac{\text{Category Consumption}}{\text{TAC}} \times 100 \right) \%$$

Category	Percentage (%) share of the category
Vital (V)	$\left(\frac{2,10,000}{2,80,000} \times 100 \right) \% = 75\%$
Essential (E)	$\left(\frac{55,000}{2,80,000} \times 100 \right) \% = 19.64\%$
Desirable (D)	$\left(\frac{15,000}{2,80,000} \times 100 \right) \% = 5.36\%$

Step 4: Inventory Control Priorities

In VED analysis, inventory control policies are decided based on the criticality of items to hospital functioning.

a. Category (Very Important) -75%

These items are critically important for patient care and hospital operations. Non-availability may lead to serious consequences.

Inventory Control Priorities:

- Stock-out situation is **not acceptable** under any circumstances.
- Requires **continuous monitoring** of stock levels.
- Maintain **higher safety stock** to avoid shortages.
- Follow **strict inventory control** with frequent review.
- Requires **close supervision and top management attention**.
- Emergency procurement arrangements should be available.

b. E Category (Essential) - 19.64%

These items are necessary for hospital functioning but short-term shortages can be managed temporarily.

Inventory Control Priorities:

Moderate level of control is sufficient.

Follow a **periodic review system**.

Maintain **reasonable safety stock**.

Procurement should be **properly planned and controlled**.

Regular monitoring is required, but not as strict as V category.

c. D Category (Desirable) – 5.36%

These items are least critical. Their non-availability does not seriously affect hospital services.

Inventory Control Priorities:

- **Minimum control** is required.
- Maintain **low safety stock**.
- Can be purchased **as and when required**.
- Stock-outs can be tolerated for a short period.
- Requires least managerial attention.

Step 5: Concluding Statement (Overall Policy Decision)

Based on the VED analysis, the hospital should allocate its attention and resources according to the **criticality of items**, not just consumption.

- **V items (75%)** require maximum control and continuous supervision because they are life-saving and critical.
- **E items (19.64%)** require moderate control and periodic monitoring.
- **D items (5.36%)** require minimum control and can be managed with simple procedures.

Thus, priority in inventory management should always be:

V → E → D (in decreasing order of control and supervision).

ADVANTAGES OF ABC ANALYSIS:

The advantages of ABC analysis are listed as follows:

- **Better managerial focus:** ABC analysis helps managers concentrate more on high-value “A” category items, which require strict monitoring and control due to their significant financial impact.
- **Optimal use of financial resources:** By classifying inventory based on value, companies can invest more carefully in important items and avoid unnecessary capital being blocked in low-value stock.
- **Reduced inventory carrying cost:** Since expensive items are tightly controlled and low-value items are managed more simply, overall storage, insurance, and holding costs are minimized.
- **Improved decision-making:** The classification system provides clear data for purchasing, stocking, and replenishment decisions, leading to more informed and efficient management.
- **Simplified inventory control system:** Different control policies for A, B, and C items make inventory management systematic, organized, and easier to handle.

LIMITATIONS OF ABC ANALYSIS:

The limitations of ABC analysis are listed as follows:

- **Focuses only on monetary value:** ABC analysis classifies items based on cost alone and ignores other important factors such as criticality, scarcity, or lead time.
- **May neglect vital low-cost items:** Some inexpensive items may be essential for production, but ABC analysis may classify them as “C” items and give them low control priority.
- **Needs continuous revision:** Since prices and consumption patterns change over time, the classification must be updated regularly to remain accurate.
- **Ignores demand variability:** It does not consider fluctuations in demand or usage frequency, which can affect stock requirements.
- **Not sufficient when used alone:** ABC analysis is more effective when combined with other techniques (like VED or FSN analysis) to ensure balanced inventory control.