SELECTIVE INVENTORY CONTROL

- To identify items, which bring significant benefit by proper management from among hundreds and thousands of items managed by an organisation
- Determine the importance of items and thus allows different levels of control based on the relative importance of items

Stock-Keeping Unit (SKU)

- Management decisions regarding inventories must ultimately be made at the level of an individual item or product
- The specific unit to be controlled will be called a stock-keeping unit
- A SKU will be defined as an item of stock that is completely specified as to functions, style, size, colour, and usually location

Examples:

- The same style shoes in two different sizes would constitute two different SKUs
- Each combination of size and grade of steel rod in raw stock constitutes a separate SKU
- An oil company must regard each segregation of crude as a separate SKU
- A tire manufacturer would normally treat the exactly same tire at two geographically remote locations as two distinct SKUs

ABC Analysis

- Classifies items based on the annual usage value (AUV)
- Identify a small percentage of items which account for most of the total inventory value

  **Basic Principle**

  20/80 - Rule

  Pareto’s Law – Vilfredo Pareto – Italian Economist

  “Few are vital’ and ‘many are trivial’

  AUV = Annual demand X Price

  **Pareto’s law applied to inventories**

  - The relationship between the percentage of items and the percentage of AUV follows a pattern

    - A – about 20 % of items account for about 80 % of the AUV
    - B - about 30 % of items account for about 15 % of the AUV
    - C - about 50 % of items account for about 5 % of the AUV

  **Steps in Making an ABC Analysis**

  1. Determine the annual usage for each item
  2. Calculate the AUV of each item
  3. List the items according to their AUV (descending order)
  4. Calculate the cumulative AUV and the cumulative percentage of items
  5. Examine the annual usage distribution and group the items into A, B, C based on percentage of AUV

  **Using ABC approach, there are two general rules to follow:**
• Have plenty of low-value items
• Use the money and control effort to reduce the inventory of high-value items

**Different Controls used with different classes**

• **A Items**: High priority – Tight control including complete accurate records, regular and frequent review by management, frequent review of demand forecast and close follow-up and expediting to reduce lead time
• **B Items**: Medium priority – Normal Control
• **C Items**: Lowest priority – Simplest possible control. Perhaps use a two-bin system or periodic review system. Order larger quantities and carry sufficient safety stock

An example:
A small firm inventories only ten items, but decide to setup an ABC inventory system with 20 % A items, 30 % B items, and 50 % C items. The company records provide the information shown below.

<table>
<thead>
<tr>
<th>Part No.</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Usage</td>
<td>1100</td>
<td>600</td>
<td>100</td>
<td>1300</td>
<td>100</td>
<td>10</td>
<td>100</td>
<td>1500</td>
<td>200</td>
<td>500</td>
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<tr>
<td>Unit Cost</td>
<td>20</td>
<td>400</td>
<td>40</td>
<td>10</td>
<td>600</td>
<td>250</td>
<td>20</td>
<td>20</td>
<td>20</td>
<td>10</td>
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<tr>
<td>AUV</td>
<td>22000</td>
<td>240000</td>
<td>4000</td>
<td>13000</td>
<td>60000</td>
<td>25000</td>
<td>20000</td>
<td>30000</td>
<td>40000</td>
<td>5000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part No.</th>
<th>AUV in Descending order</th>
<th>Cumulative AUV</th>
<th>Cumulative % AUV</th>
<th>Cumulative % of items</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>240000</td>
<td>240000</td>
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<td>A</td>
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<tr>
<td>5</td>
<td>60000</td>
<td>300000</td>
<td>78.43</td>
<td>20</td>
<td>A</td>
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<tr>
<td>8</td>
<td>30000</td>
<td>330000</td>
<td>86.27</td>
<td>30</td>
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<td>352000</td>
<td>92.03</td>
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<tr>
<td>4</td>
<td>13000</td>
<td>365000</td>
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<td>50</td>
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<tr>
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<td>5000</td>
<td>370000</td>
<td>96.73</td>
<td>60</td>
<td>C</td>
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<tr>
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<td>4000</td>
<td>374000</td>
<td>97.77</td>
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<td>100</td>
<td>C</td>
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</tbody>
</table>

Table: ABC Analysis

![Graphical Representation of ABC Analysis for the above Problem](image)
XYZ Analysis
- Based on the value of inventory undertaken during the closing of annual accounts
  - X – High value; Y – Medium value; Z – Low value

HML Analysis
- Items are classified according to the unit value as high, medium, and low. It is used to control the purchase value of items.

Movement Analysis (FSN Analysis)
- Check stock rotations and identifies the obsolescence of items. This is particularly useful for spare parts
  - Fast-, Slow- and Non-moving Analysis

Criticality criteria (VED Analysis)
  Vital, Essential and Desirable
- This is in the point view of operation particularly useful for spare parts control
- A vital equipment is one, which feeds a battery of equipments downstream

GOLF – Government-controlled, Ordinarily available in the open market, Locally available and Foreign imported purchase
SDE – Scarce item or single source item, Difficult to obtain or Easy to obtain as it is an off-the-shelf item.
SOS – seasonal and Off-seasonal

MUSIC – 3D (Multi-Unit Selective Inventory Control – Three Dimensional)
Three dimensions are finance, operations and lead-time of materials

<table>
<thead>
<tr>
<th>Critical</th>
<th>HCV</th>
<th>Non-Critical</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLT 1</td>
<td>SLT 2</td>
<td>LLT 5</td>
</tr>
<tr>
<td>LLT 3</td>
<td>SLT 4</td>
<td>LLT 7</td>
</tr>
</tbody>
</table>

HCV – High consumption value, LCV – Low consumption value
LLT – Long lead-time, SLT – Short lead-time