Dashboard Proposal

Introduction

We want to create a dashboard for inventory management. The database in question is "AdventureWorks2022", which is available from Microsoft as a sample.

Audience

We want to create this for inventory managers. They are responsible for keeping track of inventory levels, storage, optimizing stock delivery and reception, reordering resources, decision making in new purchases, documenting current stocks for others, evaluating suppliers and using ERP.

Requirements

The inventory managers deal with the following:

1. Stock: The current stock levels of each product.
2. Purchase: The demand and purchase orders for new materials.
3. Turnover: The usage of current stock.
4. Vendors: Assessing vendor relations, positive and negative.
5. Finances: Costs of running the warehouses and of purchasing new materials. Or most cost vs profit for each product.
6. Delays: The delivery times of purchased material. The delays in manufacturing compared to schedule.
7. Issues: The faulty materials which are rejected.

KPIs

For each of the above requirements let's identify what exact standalone metrics (also called KPIs) can help them.

1. Stock
   a. Total Stock: Quickly glance stock of all or one/some product.
   b. Total Capacity: Storage available at all locations or one/some locations.
   c. Average Sale Time: The amount of time passed until the next product was sold. (Need to export from inventory).

d. Average Manufacture Start Time: The amount of time passed until the next product is required for manufacture. (Need to export from inventory).

e. Average Manufacture End Time: The amount of time passed until the next product is completed. (Need to Import inventory).

f. Average Purchase Time: The amount of time passed until the next product is required. (Need to import in inventory).

g. Products Currently Being Manufactured: Expected products to become inventory soon.

h. Stock Exceed Safety Alert: If a product exceeds maximum stock level in inventory.

i. Expected Outbound Products: By need of production, or being sold.

j. Expected Incoming Products: By completion of production or being purchased.

k. Outbound/Inbound Ratio: The ratio of expected outbound items to expected incoming items

2. Purchase:
   a. Low Inventory Alert: If a product is below required levels in inventory, it needs to be ordered.
   b. Highest Bought Product: To know which material is critical for our manufacturing line.
   c. Lowest Bought Product: To know which product is low priority or rarely used.

3. Turnover:
   a. Inventory Turnover Rate: How efficiently the products are used or sold.
   b. Inventory Days Rate: How much time a product takes in our inventory before being used or sold.

4. Vendors:
   a. Most Used Vendor: Vendor we buy from most of the time.
   b. Least Used Vendor: Vendor we rarely buy from.

5. Finances:
   a. Cost of Product: To quickly glance the market price.
   b. Profit of Product: To quickly glance at one of the factors which determine product priority.
   c. Profit vs Cost of Product: To quickly glance at one of the factors which determine product priority.
   d. Profit vs Turnover Rate of Product: To quickly glance at one of the factors which determine product priority.
   e. Total Spending of Fiscal Year: Should be aligned with companies budgeting policies, but to keep track of spending amount vs remaining budget.

  f. Average Inventory Value: To assess the average value of all products.

6. Delays:
  a. Average Delivery Delay: The delay from expected shipping time.
  b. Average Manufacture Start Delay: Time to expect the product from leaving the inventory.
  c. Average Manufacture Complete Delay: Time to expect the product from coming in the inventory.

7. Issues:
  a. Total Rejection Rate: Rejected products to total bought ratio.
  b. Rejected To Stocked Ratio: Ratio of quantities being rejected or accepted.

Charts

1. Stock:
  a. Stock Over Time: The number of products in storage over a period of time.
  b. Change in Stock Over Time: Month over month or any other time value change in stock.
  c. Stocks % By Product (Quantity): The share of inventory quantity by products.
  d. Stocks % By Product (Volume): The share of inventory volume by products.
  e. Products By Manufacture Time: Time it takes to complete product.
  f. Manufacture Work Orders Over Time: Number of products started in a time period.
  g. Manufacture Work Complete Over Time: Number of products completed in a time period
  h. Stock Exceed Safety Alert by Product: List of all products that exceed the maximum stock level in inventory.
  i. Product Locations: Select a product and view all locations it is at.

2. Purchase:
  a. Low Inventory Alert by Product: List of all products that are below required levels in inventory, that need to be ordered.
  b. Purchases Over Time: Products bought in a time period.
  c. Purchases % By Product: Ratio of quantity of each product bought vs total products bought in a time period.
  d. Products By Price: List of all products by their price.
  e. Purchases By Vendor: Products bought from each vendor.

   f. Purchase By Vendors Over Time: Products bought categorized by vendors in a time period.

3. Turnover:
   a. Inventory Turnover Rate Over Time: How efficiently the products are used or sold.
   b. Inventory Days Rate Over Time: How much time a product takes in our inventory before being used or sold.
   c. Inventory Turnover Rate by Product: How efficiently the products are used or sold.
   d. Inventory Days Rate by Product: How much time a product takes in our inventory before being used or sold.

4. Vendors:
   a. Products By Vendors: List of all products by their vendors.
   b. Average Delivery Time by Vendor: The expected delivery time for each vendor.
   c. Total Change in Product Price by Vendor: Change in price since first purchase to latest for same product for each vendor.
   d. Change In Product Price by Vendor Over Time: For each purchase, change in price since last time, in a period of time.
   e. Max Purchase by Vendor: All purchases that were equal to vendors max quantity limit.
   f. Max Purchase by Vendor: All purchases that were equal to vendors max quantity limit.
   g. Min Purchase by Vendor: All purchases that were equal to minimum requirements by vendor.
   h. Max Purchase vs Need by Vendor: Total times purchases reached vendors max quantity limit for a product, against, total times product was used in manufacturing.
   i. Min Purchase vs Need by Vendor: Total times purchases were vendors minimum quantity limit for a product, against, total times product was used in manufacturing.

5. Finances:
   a. Purchase Spending Over Time: Total amount spent in purchases in a time period.
   b. Purchase Spending by Product: Total amount spent in purchases for each product.

      c.   Purchase Spending by Vendor: Total amount spent in purchases for each vendor.

6. Delays:
   a. Average Delivery Delay by Product: The delay from expected shipping time.
   b. Average Delivery Delay by Vendor: The delay from expected shipping time.
   c. Average Manufacture Start Delay Over Time: Delay to expect the product from leaving the inventory.
   d. Average Manufacture Start Delay by Product: Delay to expect the product from leaving the inventory.
   e. Average Manufacture Complete Delay Over Time: Delay to expect the product from coming in the inventory.
   f. Average Manufacture Complete Delay by Product: Delay to expect the product from coming in the inventory.

7. Issues:
   a. Rejections Over Time: Ratio of rejected products vs bought products in a time period.
   b. Rejections By Product: Ratio of rejected vs products bought.
   c. Rejections By Vendor: Ratio of rejected vs total products bought by a vendor.

We have more than enough material at this point to make a full report. However, we will focus on a dashboard for now. Maybe a report will be made on a later date. Now let's select the appropriate KPIs and charts we need for this dashboard and decide on what visual to use for each.

KPIs

1. Total Stock
2. Stock Exceed Safety Alert (Qty)
3. Average Purchase Time (Days)
4. Average Manufacture Start Time (Days)
5. Average Manufacture End Time (Days)
6. Inventory Turnover Rate*
7. Rejected To Stocked Ratio

Charts

1. Change in Stock Over Time
2. Manufacture Work Orders Over Time
3. Low Inventory Alert by Product
4. Inventory Turnover Rate Over Time

5. Change In Product Price by Vendor Over Time
6. Average Delivery Delay by Vendor
7. Product Locations