

Supply Chain Intelligence Dashboard Blueprint

TAB 1: Executive Overview

Purpose: High-level KPIs for C-level executives

Key Metrics Cards (Top Row)

1. Total Inventory Value
 - o Current: `SUM(Total_Inventory_Value_USD)`
 - o Target vs Actual gauge
 - o Trend sparkline (last 12 weeks)
2. Overall Fill Rate
 - o Formula: $(\text{Total_SKUs} - \text{Out_of_Stock_Count}) / \text{Total_SKUs} * 100$
 - o Color: Green >95%, Yellow 90-95%, Red <90%
3. Average Days of Inventory
 - o Target: 30-45 days optimal
 - o Alert if >60 days (excess) or <15 days (stockout risk)
4. Stockout Risk SKUs
 - o Count of SKUs with `Stockout_Risk_Score >= 75`
 - o Drill-down to list
5. Annual Carrying Cost
 - o `SUM(Annual_Carrying_Cost_USD)`
 - o % of Total Inventory Value

Visualizations

Chart 1: Inventory Health Heatmap (Left Side)

- X-axis: Warehouse Location
- Y-axis: Category
- Color: Warehouse Health Score (0-100)
- Size: Total Inventory Value
- Tool: Databricks Heatmap or Plotly

Chart 2: ABC Pareto Analysis (Center)

- Combo chart: Bars (Inventory Value) + Line (Cumulative %)
- Show 80/20 rule markers
- Color code: A (Blue), B (Green), C (Gray)

Chart 3: Daily Stockout Alert Trend (Right Side)

- Line chart showing last 30 days
- Y-axis: Count of High Risk SKUs
- Threshold line at acceptable level
- Annotations for spike dates

Table: Top 10 Critical Items (Bottom)

- Columns: SKU, Category, Warehouse, Risk Score, Days Until Expiry, Action Required
- Sorted by `Stockout_Risk_Score DESC`
- Conditional formatting

TAB 2: Warehouse Operations

Purpose: Warehouse managers to optimize operations

Layout: Grid Format (2x2)

Top Left: Warehouse Performance Scorecard

- Table with columns:
 - o Warehouse Location
 - o Health Score (0-100) with color coding
 - o Fill Rate %
 - o Service Level %
 - o High Risk SKUs
 - o Excess Inventory SKUs
- Sparkline for trend
- Filter by warehouse

Top Right: Geographic Distribution Map

- Map of Indonesia showing warehouse locations
- Bubble size = Inventory Value
- Color = Health Score
- Tooltips with key metrics

Bottom Left: Inventory Aging Distribution

- Stacked bar chart by warehouse
- Categories: 0-30 days, 31-60, 61-90, 90+ days

- % of total inventory in each bucket
- Drill-down to SKU level

Bottom Right: Turnover Ratio by Warehouse

- Bar chart comparing actual vs target turnover
- Target line at optimal ratio (6-12x annually)
- Color: Green (optimal), Yellow (acceptable), Red (poor)

Filters

- Date Range Selector
- Warehouse Multi-select
- Category Multi-select

TAB 3: Category & Product Analytics

Purpose: Category managers and demand planners

Section 1: Category Performance Matrix

Visualization: 2x2 Matrix (BCG-style)

- X-axis: Inventory Turnover Ratio
- Y-axis: Forecast Accuracy %
- Bubble size: Category Value
- Quadrants:
 - Top Right: Stars (High accuracy, High turnover)
 - Top Left: Question Marks (High accuracy, Low turnover)
 - Bottom Right: Cash Cows (Low accuracy, High turnover)
 - Bottom Left: Dogs (Low accuracy, Low turnover)

Section 2: ABC Analysis Deep Dive

Table with Tabs:

- Tab A: Class A Items (Top 80% value)
- Tab B: Class B Items (15% value)
- Tab C: Class C Items (5% value)

Columns:

- SKU ID, Name, Category
- Inventory Value, Cumulative %
- Days of Inventory
- Turnover Ratio
- Recommended Action
- Optimal Reorder Quantity

Section 3: Excess & Dead Stock Analysis

Dual Pie Charts:

- Left: Excess Inventory by Category (Days_of_Inventory > 90)
- Right: Dead Stock by Category (Avg_Daily_Sales < 0.5)
- Click to filter tables below

Action Table:

- SKU details with clearance recommendations
- Estimated loss if written off
- Markdown % suggestions

TAB 4: Supplier Performance

Purpose: Procurement team to manage supplier relationships

Top Section: Supplier Scorecard Table

Columns:

1. Supplier Name
2. Performance Score (0-100) with grade
3. SKUs Supplied
4. Total Supply Value
5. On-Time Delivery %
6. Avg Lead Time
7. Quality Issues %
8. Trend indicator ($\uparrow\downarrow\rightarrow$)

Sort by: Performance Score DESC **Filters:** Grade (A/B/C/D), Minimum SKU count

Middle Section: Supplier Comparison Charts

Left: On-Time Delivery Trends

- Line chart: Last 6 months
- Multiple lines for top 5 suppliers
- Target line at 95%

Right: Lead Time vs Quality

- Scatter plot
- X-axis: Avg Lead Time (days)
- Y-axis: Quality Issue Score
- Bubble size: Supply Value
- Ideal quadrant: Low lead time, Low quality issues

Bottom Section: Risk Analysis

Table: Suppliers Needing Attention

- Filter: Performance Score < 75 OR OnTime % < 90
- Columns: Supplier, Issues Identified, Impact (SKUs at risk), Recommended Action
- Email alert functionality

TAB 5: Predictive Analytics & Alerts

Purpose: AI-driven insights and early warning system

Section 1: Alert Dashboard (Top)

Critical Alerts Panel:

- ● Critical: Immediate action (Expiry in 7 days, Out of stock)
- ● High: Action needed (Expiry in 30 days, High stockout risk)
- ● Medium: Monitor (Low turnover, Forecast deviation)

Table Format:

- Alert Type, SKU, Category, Warehouse, Days to Action, Recommended Response
- Filter by severity
- "Acknowledge" button

Section 2: Demand Forecast Accuracy

Visualization: Actual vs Forecast Comparison

- Dual-axis line chart
- X-axis: Time (last 90 days)
- Y-axis Left: Actual Daily Sales
- Y-axis Right: Forecasted Demand
- Shaded area showing confidence interval
- MAPE (Mean Absolute Percentage Error) displayed

Section 3: ML Insights Panel

Insight 1: Reorder Recommendations

- Table showing SKUs below reorder point
- Columns: SKU, Current Stock, Optimal Reorder Qty, Supplier, Est. Cost
- "Create PO" button integration

Insight 2: Markdown Opportunities

- SKUs with >90 days inventory + low churn
- Suggested markdown % to clear in 30 days
- Estimated revenue vs. carrying cost savings

Insight 3: Seasonal Patterns

- Heatmap calendar showing demand patterns
- Category-wise seasonality index
- Upcoming peak periods highlighted

Technical Implementation Guide

Step 1: Create Databricks SQL Queries

-- Query 1: Executive KPIs

```
SELECT
  SUM(Total_Inventory_Value_USD) as Total_Value,
  AVG(Warehouse_Health_Score) as Avg_Health,
  SUM(CASE WHEN Stockout_Risk_Score >= 75 THEN 1 ELSE 0 END) as High_Risk_Count
FROM supply_chain_db.gold_sku_health;
```

-- Query 2: Warehouse Performance

```
SELECT * FROM supply_chain_db.gold_warehouse_kpi
ORDER BY Warehouse_Health_Score DESC;
```

-- Query 3: Category Contribution

```
SELECT * FROM supply_chain_db.gold_category_performance
ORDER BY Category_Value DESC;
```

-- Query 4: Critical Expiry Items

```
SELECT SKU_ID, SKU_Name, Category, Warehouse_Location,
  Days_Until_Expiry, Expiry_Risk
```

```
FROM supply_chain_db.gold_sku_health  
WHERE Expiry_Risk IN ('Critical', 'High')  
ORDER BY Days_Until_Expiry ASC;
```

-- Query 5: Supplier Rankings

```
SELECT * FROM supply_chain_db.gold_supplier_scorecard  
ORDER BY Supplier_Performance_Score DESC;
```

Step 2: Build Dashboard in Databricks SQL

1. Go to SQL > Dashboards > Create Dashboard
2. Add widgets for each visualization
3. Set refresh schedule (e.g., hourly)
4. Configure filters as parameters

Step 3: Visualization Mapping

Visualization Type	Databricks Widget	Configuration
KPI Cards	Counter	Show trend, color thresholds
Pareto Chart	Combo Chart	Bar + Line, dual axis
Heatmap	Heatmap	X=Warehouse, Y=Category, Color=Score
Table	Table	Conditional formatting, sorting
Map	Marker Map	Lat/Long from warehouse data
Trend Line	Line Chart	Time series, multiple metrics
Scatter Plot	Scatter	X/Y axes, bubble size
Alerts	Funnel	Priority levels

Step 4: Add Interactivity

- **Filters:** Date range, warehouse, category dropdowns
- **Drill-downs:** Click warehouse → see SKU details
- **Tooltips:** Hover for detailed metrics
- **Actions:** "Acknowledge Alert", "Create PO" buttons

Key Performance Indicators (KPIs) Summary

Financial KPIs

- Total Inventory Value
- Fill Rate %
- Days of Inventory (DOI)
- High-Risk SKUs
- Annual Carrying Cost
- Avg Warehouse Health Score
- Stockout Alert Trend
- ABC Class A Contribution
- Excess Inventory %
- Dead Stock Value
- Supplier Performance Score
- On-Time Delivery %
- Avg Supplier Lead Time
- Forecast Accuracy (MAPE)
- Expiring Soon SKUs
- AI Reorder Recommendations