**Activity-2**

1. **Demand Forecasting**: Predict the demand for a product in the next quarter based on historical data.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **Supplier Selection**: Classify suppliers as ‘preferred’, ‘regular’, or ‘unreliable’ based on on-time delivery rates and cost.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. **Optimal Order Quantity**: Determine the quantity of raw materials to order to minimize costs while meeting customer demand.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. **Inventory Replenishment Prediction**: Forecast when the next stock replenishment will be required for each product.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Inventory Management Scenarios:**

1. **Inventory Classification**: Segment products into A, B, and C categories based on their sales volume and value.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **Out-of-Stock Probability**: Predict whether a product will be out of stock in the next 30 days.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. **Excess Inventory Detection**: Identify products that tend to remain in inventory longer than usual.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. **Product Sales Prediction**: Forecast future sales of a specific product over the next month based on current trends.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Manufacturing Scenarios:**

1. **Production Output Forecasting**: Predict how many units a factory will produce in the next week.
   * **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   * **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. **Faulty Product Detection**: Classify products as ‘faulty’ or ‘non-faulty’ based on quality control sensor data.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Optimal Machine Settings**: Use past production data to determine optimal machine settings for different product types.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Factory Performance Clustering**: Group factories based on production efficiency, labor costs, and downtime to understand similarities and differences.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Order Management Scenarios:**

1. **Customer Order Classification**: Classify incoming orders based on priority: ‘urgent’, ‘regular’, or ‘low’.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Order Fulfillment Time Prediction**: Predict how long it will take to fulfill an order based on current backlog and resources.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Order Volume Clustering**: Group orders based on volume, type, and customer region to detect patterns in ordering behavior.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Supply Chain Analytics (Cross-functional Scenarios):**

1. **Supplier-Product Relationship**: Identify which products are frequently ordered together from the same supplier.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Transport Route Optimization**: Predict the fastest and most cost-effective delivery routes based on historical traffic and delivery data.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Shipment Delay Prediction**: Predict the likelihood that a shipment will be delayed based on weather, traffic, and supplier location.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Product Return Classification**: Classify returned products into different categories based on reasons for return (e.g., faulty, wrong order, damaged).

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Customer Buying Patterns**: Analyze buying behavior to discover associations between different products that are often purchased together.

* **Technique**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **Justification**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_