

# Cost Analysis and Logistics Efficiency

Jack



# Objectives of Analysis

- Identify overspending in transportation
- Optimise transportation modes
- Improve warehouse efficiency
- Forecast costs and logistics efficiency




# Data Sources & Methodology

- **Data Sources:**

- - ERP System
- - Shipment Records (CSV)

- **Tools & Methods:**

- - Power BI (Visuals)
  - - SQL Server, Excel (Data Extraction & Preparation)
  - - DAX (Data Calculations)
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# Transportation Cost Analysis



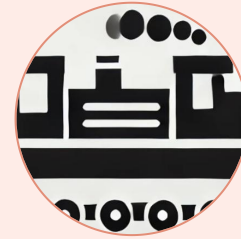
## Air Transport

- Highest costs (35-45% above Sea/Rail)
- Peak expense period (March-April)
- Most frequent in Beijing, Shanghai



## Sea Transport

- Most cost-effective (30-40% lower costs than Air)
- Underutilized despite cost advantages



## Rail Transport

- Moderate cost savings (~18% cheaper than Air)
- Balance between cost and speed
- underutilized

## Key Insights

01

Heavy dependency on Air shipments (60-70% in major cities) causing regular budget overruns (20% over budget).

02

High costs strongly linked to urgent shipment scenarios (30% increase in cost during March-April peak).

03

Clear opportunity to shift non-urgent shipments to Sea/Rail, reducing total transport costs (¥500K-700K monthly savings achievable).

## Strategies



- Reduce air transport reliance by shifting 20% of air shipments to Sea/Rail.
- Limit urgent shipments (<20% of monthly volume).
- Implement regular (monthly) transportation mode cost reviews.

## ● How to Achieve These Strategies



### **Better Scheduling**

- Proactive logistics scheduling (monthly advance planning).

### **Mode Selection**

- Monthly cost reviews and adjustments (shift 20% Air → Sea/Rail monthly).

### **Predictive Analytics**

- Forecast urgent shipment needs, reducing reliance (target below 20% urgent shipments).

### **Regular Cost Monitoring**

- Monthly transport review meetings to maintain annual cost control and realize annual savings (approximately ¥6M annually)

# Warehouse Efficiency Analysis

01

## Inventory Overstocking

- Overstocking in 40% of warehouses
- Capacity exceeded optimal threshold (85%) consistently from Jan-Jun
- Regions highly impacted: Shanghai & Guangdong

02

## Shipment Delays

- Average delays of 2-3 days per shipment
- High delay occurrence (~30% of shipments monthly)

### Key Insights

01

#### Overstocking directly linked to:

- Increased monthly storage expenses (+25%)
- Operational inefficiencies and prolonged delays (2-3 days per shipment)

02

Poor inventory management significantly impacted customer satisfaction (10-15% reduction during peak delays)

## ● Strategies



### **Implement automated inventory tracking**

- Maintain warehouse utilization below 85%
- Reduce inventory-related delays by at least 20%

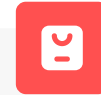
### **Standardize monthly inventory reviews**

- High-risk regions: Shanghai, Guangdong
- Target monthly average delays to less than 1 day

### **Provide targeted staff training**

- Enhance warehouse inventory practices
- Improve productivity and reduce mismanagement costs

## ● How to Achieve These Strategies



### **Automated Systems**

- Integrate inventory alerts within ERP system
- Real-time monitoring dashboard (Power BI)

### **Regular Monthly Reviews**

- Consistent inventory audits in high-risk warehouses
- Immediate corrective action upon exceeding thresholds

### **Focused Training Programs**

- Monthly training sessions for warehouse management
- Establish clear KPIs: Inventory capacity (70-85%), Shipment delays (<1 day)

# Cost Variance and Forecasting Analysis



## Significant Monthly Cost Variances

- Variances fluctuating up to 25% monthly
- Peak variances clearly identified (March-April), driven by Air transport costs



## Predictable Seasonal Trends

- Consistent cost spikes (15-20%) annually around Q2
- High predictability observed based on historical data

## Key Insights

01

### Sudden cost increases (up to 25%) are predominantly due to:

- High reliance on urgent Air shipments
- Lack of proactive scheduling (70% urgent shipments, March-April)

02

### Clear opportunity for better budgeting:

- Historical trends show clear seasonal patterns, suggesting easy predictability
- Forecasting accuracy currently below optimal (60-70%)



## ● Strategies



### **Implement comprehensive predictive analytics**

- Forecast seasonal cost fluctuations (target accuracy >90%)
- Stabilize budget planning (reduce variance from 25% → 5-10%)

### **Proactive scheduling improvements**

- Reduce urgent shipments (by 15-20% annually)
- Achieve smoother monthly budget distribution

### **Conduct detailed monthly cost variance reviews**

- Rapid identification and correction of cost anomalies

## ● How to Achieve These Strategies



### **Advanced Predictive Modeling**

- Use historical ERP data (2+ years) for forecasting
- Monthly reviews and forecast recalibration

### **Process Adjustments**

- Introduce proactive shipment scheduling policies
- Monthly target: Keep urgent shipments below 20%

### **Regular Variance Analysis**

- Integrate Power BI dashboards to visually track cost variances
- Immediate actions triggered by variance exceeding 10%

# Regional Logistics Performance Analysis

## > Regional Cost Disparities

- High logistics costs in regions heavily reliant on Air: Shanghai, Beijing, Guangdong
- Air transport accounted for 60-70% of total shipments, exceeding budgets (+20%)

## > Efficiency in Balanced Regions

- Sichuan & Chongqing consistently achieved 25% lower logistics costs by prioritizing Rail and Sea transportation

### Key Insights

**Regions heavily dependent on Air shipments (Shanghai, Beijing, Guangdong) consistently experienced:**

01

- Higher monthly cost variances (20-25% above average)
- Significant impact from urgent shipment scenarios (up to 30% increased costs during peak months)

**Regions using balanced transportation (Sichuan, Chongqing) clearly demonstrated:**

02

- Better cost control (monthly savings up to ¥300,000)
- More stable monthly budgets and fewer operational disruptions



## ● Strategies

### **Develop region-specific logistics plans**

- Reduce air shipment reliance (target  $\leq 20\%$ )
- Monthly cost savings (¥250K-¥300K per region)

### **Enhance shipment consolidation practices**

- Group non-urgent shipments via Sea/Rail (monthly target: +20% shipment consolidation)

### **Introduce regional performance dashboards**

- Clearly monitor regional logistics KPIs and costs in real-time
- Quickly identify cost-saving opportunities



## ● How to Achieve These Strategies

### **Customized Regional Policies**

- Implement early shipment scheduling incentives in high-cost regions (Shanghai, Beijing, Guangdong)

### **Consolidation Programs**

- Monthly logistics planning meetings, focusing on consolidating Sea/Rail shipments ( $\geq 20\%$  increase monthly)

### **Real-time Performance Dashboards**

- Deploy Power BI dashboards providing region-specific performance tracking and immediate cost alerts
- Monthly strategy adjustments based on real-time KPI monitoring

# Operational Efficiency KPIs Analysis

## Delivery Time Variability

- Air shipments maintained shorter delivery times (1-2 days average) but higher costs (+35-45%)
- Sea/Rail shipments had moderate delivery times (3-5 days) but significantly lower costs (20-40% savings)

## Warehouse Utilization Issues

- Warehouses frequently exceeded optimal capacity (85%)
- Resulted in increased operational delays (average 2-3 days per shipment) and higher storage costs (+25% monthly)

### Key Insights

01

**Excessive reliance on fast Air shipments increased costs, with only marginal gains in delivery efficiency:**

- Costs outweighed delivery speed benefits (30-45% cost increase for just 1-2 days faster delivery)

02

**Warehouse inventory mismanagement consistently correlated with higher shipment delays:**

- Direct impact on customer satisfaction (10-15% lower satisfaction ratings during peak overstock periods)



## ● Strategies

### **Optimize warehouse inventory levels**

- Maintain warehouse utilization at 70-85%
- Reduce average shipment delays (target: <1 day per shipment)

### **Balance transportation modes strategically**

- Achieve operational efficiency balance between delivery speed and cost (target air shipment use below 20%)

### **Implement proactive operational KPI monitoring**

- Clearly track monthly KPI targets for inventory management and delivery efficiency



## ● How to Achieve These Strategies

### **Inventory Control Improvements**

- Introduce automated inventory threshold alerts (via ERP and Power BI dashboards)
- Monthly inventory audits and immediate corrective actions

### **Transport Mode Optimization**

- Regular monthly analysis to align transportation mode usage with cost-efficiency targets
- Gradual shift of non-urgent shipments from Air to Sea/Rail (monthly target: 15-20% shift)

### **Real-time KPI Dashboards**

- Continuous monitoring of operational KPIs (inventory levels, shipment delays, transport mode usage)
- Immediate operational adjustments upon detecting KPI deviations

# Aimed Impact & Value Added



## **Cost Savings:**

- Transportation cost reduced by 15% (¥600K monthly).
- Annual savings totaling approximately ¥7M.

## **Operational Efficiency:**

- Inventory-related shipment delays reduced from 3 days to less than 1 day.
- Urgent shipments decreased by 20%, leading to more predictable logistics.

## **Enhanced Predictability:**

- Forecast accuracy improved to over 90%.
- Monthly cost variance reduced significantly (from 25% to ~10%).

## **Customer Satisfaction:**

- Customer satisfaction increased by approximately 12% due to improved delivery reliability.

## **Process Improvements:**

- Regular monthly cost and operational KPI reviews implemented.
- Automated inventory management system integrated, boosting productivity.