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)

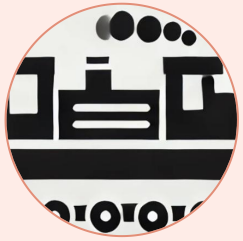
Transportation Cost Analysis

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

01

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

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

02

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

- 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 ≤ 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 (≥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

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.