



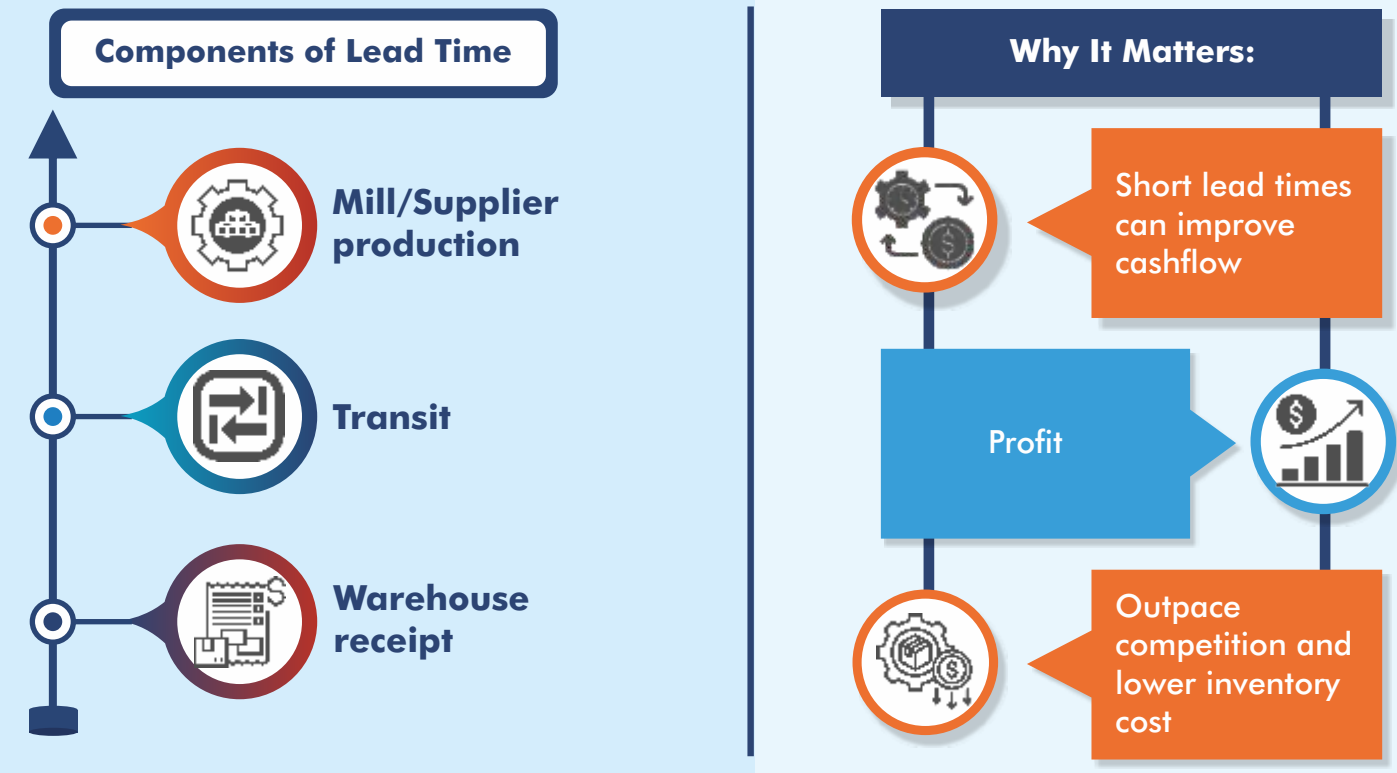
**eMoksha**  
A DATA SCIENCE COMPANY

# A Practical Handbook- **Predicting Lead Time** for **Steel Distribution**



Key Concepts

**Definition:** Time taken from placing an order to receiving steel.



What Data to Collect

Order Data:

1

- Order placement date and time.
- Delivery date.
- Order quantities.

Transit Data:

2

- Shipping methods
- Days to delivery per shipper

Supplier Data:

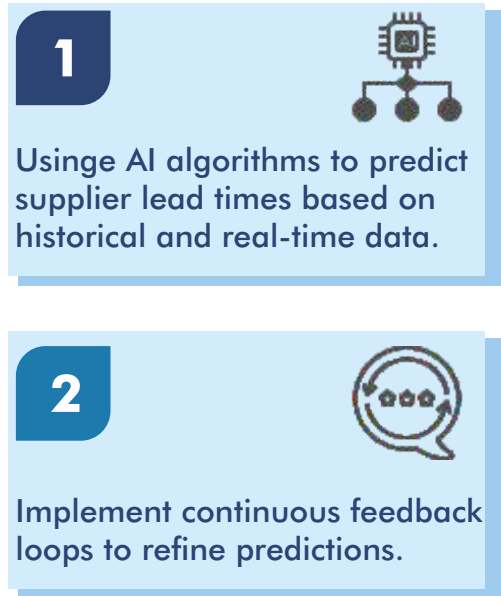
3

- Average delivery time per supplier
- Delivery times across suppliers

Reality Check

- ➔ Do you track days from order to delivery for all suppliers?
- ➔ Is your customer order, supplier order and shipment data connected?
- ➔ Are you recording the cause of delays (e.g., shipper vs. supplier)?

Approach



Key Models for Lead Time Prediction

1. Linear Regression:

- Best to use when 1-2 suppliers/mills and few independent factors involved such as transit time to ship steel

2. Time Series Analysis (ARIMA):

- Best to use when repeating patterns in lead time  
Example: Delays experienced during high-demand months

3. Random Forest/Gradient Boosting:

- Best to use when multiple suppliers and complexity involved such as weather disruptions

4. Monte Carlo Simulation:

- Best to quantify multiple scenarios such as worst case vs best-case lead time scenarios and impact on business



Chapter 4 Tools for Lead Time Prediction

Data Collection Tools



- 1

Steel ERP system, QuickBooks tailored for small steel distributors.
- 2

Warehouse Management Systems



Analytics and Modeling Tools

1. Excel for Basic Modeling:





- Ideal for small businesses starting out.
- Add-ins: Solver for optimization and trend analysis.

2. Python/R for Advanced Predictive Models:



- Libraries:
  - Statsmodels for ARIMA /time series.

3. Cloud-Based AI Tools:



- Google AutoML, AWS Forecaster

Chapter5 Steps for Implementation



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