



SNS COLLEGE OF TECHNOLOGY , COIMBATORE - 35



23BAE743 LOGISTICS AND SUPPLY CHAIN MANAGEMENT

UNIT 5 SCM Performance Drivers and Forecasting



Guess the Topic

Choosing the Right Forecasting Technique



Recap

Forecasting - Framework for a Forecast System



Choosing the Right Forecasting Technique in Logistics and Supply Chain Management

Accurate forecasting is a cornerstone of successful logistics and supply chain management. By accurately predicting future demand, companies can optimize inventory levels, streamline transportation processes, and ensure efficient allocation of resources. However, choosing the right forecasting technique can be a challenge, as various methods exist, each with its own strengths and weaknesses. This presentation will explore key forecasting techniques tailored for logistics and supply chain professionals.



Dr. K. Mohan Kumar/ASP/MBA



Qualitative Forecasting: Leveraging Expert Opinion

Qualitative forecasting relies on expert judgment and subjective opinions to predict future demand. This approach is often used when historical data is limited or unavailable, or when dealing with new products or rapidly changing market conditions.

1 Delphi Method

This method gathers insights from multiple experts through a structured survey process, iteratively refining predictions based on anonymous feedback. This helps minimize biases and groupthink.

2 Market Research

Conducting surveys, focus groups, or interviews with customers, suppliers, and industry experts can provide valuable insights into future demand trends. This helps understand market sentiments and emerging preferences.

Quantitative Forecasting: Data-Driven Predictions

Quantitative forecasting uses statistical methods and historical data to predict future demand. These methods rely on mathematical models and algorithms to identify patterns and trends in historical data, enabling predictions for future periods.

1

Moving Average

This method calculates the average demand over a specific period, smoothing out fluctuations and providing a stable prediction. This is effective for products with relatively stable demand patterns.

2

Exponential Smoothing

This technique assigns more weight to recent data points, making it more responsive to changes in demand patterns. This is ideal for products with volatile demand trends.

3

ARIMA Models

Autoregressive Integrated Moving Average (ARIMA) models are more complex statistical models that can capture seasonality and other complex patterns in demand data. These models require a greater understanding of time series analysis but can provide highly accurate predictions.

Choosing the Right Forecasting Technique: A Practical Approach

Selecting the appropriate forecasting technique for your specific logistics and supply chain needs is crucial for accurate predictions and efficient operations. The best approach involves considering various factors.

Data Availability

Do you have sufficient historical data to use quantitative forecasting methods? If not, qualitative methods may be more suitable.

Demand Volatility

Is demand for the product stable or volatile? Stable demand might be effectively predicted using simple moving averages, while volatile demand may necessitate more advanced methods like exponential smoothing or ARIMA models.

Lead Time

How long is the lead time for sourcing and delivering the product? Shorter lead times may require more frequent forecasting updates.

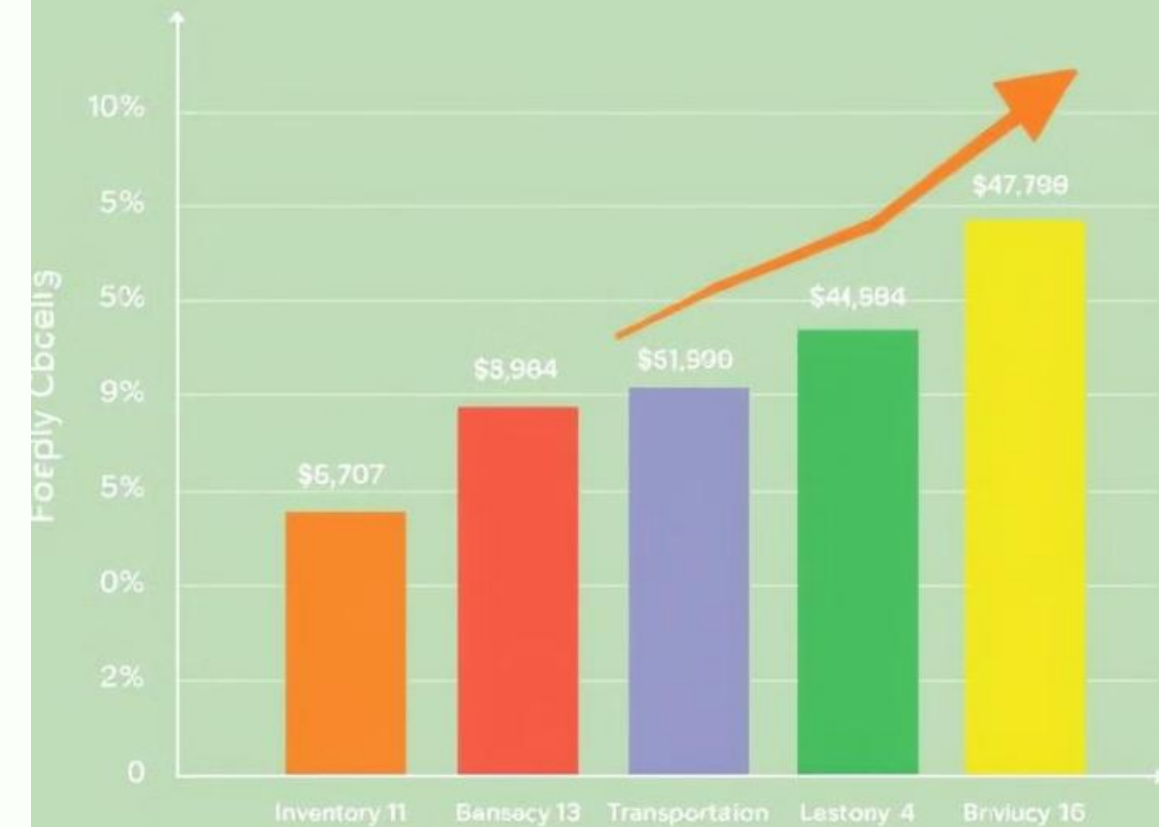
The Impact of Forecasting Accuracy on Supply Chain Performance

The accuracy of your forecasting methods directly impacts key supply chain metrics. Accurate predictions lead to more efficient inventory management, reduced transportation costs, and improved customer service levels.

Metric	Impact of Accurate Forecasting
Inventory Levels	Optimized inventory levels, reducing holding costs and minimizing stockouts.
Transportation Costs	Reduced transportation costs through efficient vehicle utilization and optimized routing.
Customer Service	Improved customer satisfaction through better on-time delivery and reduced lead times.

Impact of Forecasting Accuracy on Supply Chain Performance

Supply chain forecasting is critical for improving performance. Accurate predictions lead to more efficient inventory management, reduced transportation costs, and improved customer service levels.





Advanced Forecasting Techniques: Incorporating External Factors

Traditional forecasting methods often focus on historical demand patterns. However, for enhanced accuracy, incorporating external factors that can influence demand is essential.

1

Economic Indicators

Changes in GDP, inflation, and consumer spending can significantly impact demand. Monitoring these economic indicators provides valuable insights for forecasting.

2

Market Trends

Emerging consumer preferences, technological advancements, and competitive dynamics can influence demand patterns. Staying up-to-date on market trends is crucial for accurate forecasting.

3

Seasonal Variations

Demand for certain products often fluctuates with seasonal changes. Accounting for these seasonal patterns is critical for accurate forecasting.

The Role of Technology in Forecasting

Technology has revolutionized forecasting capabilities, providing powerful tools for data analysis, model development, and automated predictions.



Machine Learning

Machine learning algorithms can analyze vast datasets to identify complex patterns and trends, providing highly accurate forecasts and insights.



Cloud Computing

Cloud-based platforms provide scalable and cost-effective solutions for storing, processing, and analyzing large datasets, enabling sophisticated forecasting models.



Data Analytics Tools

Advanced data analytics tools allow for real-time monitoring of demand patterns, identifying anomalies, and providing actionable insights for forecasting.



Continuously Evaluating and Refining Forecasting Methods

Accurate forecasting requires a continuous process of evaluation and refinement. Regularly monitor forecast accuracy, identify areas for improvement, and adapt forecasting methods as needed.

Accuracy Metrics

Track key accuracy metrics like Mean Absolute Deviation (MAD) and Mean Absolute Percentage Error (MAPE) to assess the performance of your forecasting models.

Sensitivity Analysis

Conduct sensitivity analysis to understand how changes in input variables impact forecast results, identifying areas where model accuracy can be improved.

Regular Updates

Regularly update your forecasting models with new data and insights, ensuring that your predictions reflect the latest market conditions.

The Importance of Collaboration in Forecasting

Effective forecasting requires collaboration across different departments, including logistics, sales, and marketing. This ensures that all relevant perspectives are considered and that the forecast aligns with company goals.



Sales and Marketing Insights

Sales and marketing teams can provide valuable insights into market trends, customer preferences, and upcoming promotions, which can be incorporated into the forecast.



Logistics Expertise

Logistics professionals can contribute their knowledge of supply chain constraints, lead times, and transportation costs, helping to refine the forecast and ensure feasibility.

Dr. K. Mohan Kumar/ASP/MBA



Thank You

Dr. K. Mohan Kumar/ASP/MBA