Forecasting Excellence and Multi-Echelon Inventory Optimization Strategies Training Course



09 - 13 Nov 2026

Rome

5800 € (Per Person)

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Course Introduction / Overview:

This comprehensive training course provides professionals with the advanced knowledge and practical skills needed to navigate the complexities of modern supply chain planning. The global market's increasing volatility, coupled with intense customer demand, makes advanced demand forecasting and strategic inventory optimization essential for sustainable business success. This course moves far beyond basic historical analysis, focusing instead on cutting-edge techniques like predictive analytics, demand sensing, and demand shaping to create highly accurate, probabilistic forecasts. Participants will learn to design and implement Multi-Echelon Inventory Optimization (MEIO) models, a critical strategy for managing stock holistically across the entire distribution network, from raw materials to the point of sale. The curriculum integrates established academic frameworks, such as those discussed by renowned scholar Colin Lewis in his foundational work, Demand Forecasting and Inventory Control, with contemporary applications of machine learning and big data for supply chain resilience. Through this detailed and practical approach, BIG BEN Training Center commits to equipping participants with the expertise to minimize stockouts, reduce working capital tied up in inventory, and significantly enhance customer service levels, ultimately achieving superior supply chain cost reduction and operational efficiency. The goal is to transform supply chain management from a reactive function into a proactive, value-driving engine for the organization.

Target Audience / This training course is suitable for:

- Supply Chain Managers and Directors.
- Demand Planning and Forecasting Analysts.
- Inventor and Warehouse Managers.
- Logistics and Distribution Professionals.
- Operations and Production Planning Specialists.
- Financial Analysts involved in working capital and inventory valuation.
- Procurement and Sourcing Managers.
- Sales and Operations Planning (S&OP) Process Owners.

Target Sectors and Industries:

- Fast-Moving Consumer Goods (FMCG) and Consumer Packaged Goods (CPG) facing high demand volatility.
- Manufacturing and Automotive industries dealing with complex materials and long lead times.
- Retail and E-commerce sectors require granular, high-velocity forecasts and real-time inventory visibility.
- Pharmaceutical and Healthcare industries managing perishable goods and critical service levels.
- Technology and Electronics companies with short product lifecycles and component obsolescence challenges.
- Government Agencies and equivalents, including defense logistics and public utility supply management.
- Third-Party Logistics (3PL) providers and Distribution Network Operators.

Target Organizations Departments:

- Supply Chain Management Department.
- Demand Planning and Forecasting Department.
- Inventory Control and Warehouse Operations Department.
- Sales and Operations Planning (S&OP) Office.
- Finance and Working Capital Management Department.
- Procurement and Purchasing Department.
- Information Technology and Data Analytics Department.

Course Offerings:

By the end of this course, the participants will have able to:

- Apply advanced time- series and causal forecasting techniques to generate highly accurate and granular demand predictions.
- Integrate demand sensing using real-time data sources to adjust forecasts dynamically and capture short-term market shifts.
- Develop and execute demand shaping strategies, like promotional optimization and dynamic pricing, to align supply with business goals.
- Design and implement a Multi-Echelon Inventory Optimization (MEIO) model to strategically position safety stock and cycle stock across the supply network.
- Calculate optimal Economic Order Quantity (EOQ), reorder points, and target service levels while balancing cost reduction and customer satisfaction.
- Utilize machine learning and predictive analytics for enhanced decision-making in inventory placement and risk mitigation.
- Measure and report key inventory KPIs and forecast accuracy metrics to drive continuous improvement in supply chain performance.

Course Methodology:

This highly interactive and practical training course, delivered by BIG BEN Training Center, employs a blended methodology designed to facilitate deep learning and immediate application of advanced concepts. The approach integrates formal lectures on theoretical frameworks, such as probabilistic forecasting and the mathematics of inventory optimization, with extensive practical case studies and real-world simulations. Participants will engage in teamwork exercises to model complex supply chains, apply Multi-Echelon Inventory Optimization (MEIO) principles, and conduct scenario analysis to test inventory strategies under various market conditions, including supply disruptions and high demand volatility. A significant portion of the course is dedicated to hands-on data analysis using common tools, allowing participants to directly apply advanced forecasting techniques and calculate optimal safety stock levels. The program promotes an open-forum environment for interactive sessions and peer-to-peer learning, where participants can share specific industry challenges. Continuous feedback is provided on analytical assignments and group projects to ensure every participant master's the skills required for superior supply chain cost reduction and achieving high customer service levels. This methodology ensures the transition from theoretical understanding to practical expertise in the use of big data for demand and inventory planning.

Course Agenda (Course Units):

Unit One: Foundations of Advanced Demand Planning and Forecasting

- The strategic role of demand forecasting in supply chain management and working capital.
- Differentiating between traditional and advanced, probabilistic forecasting models.
- Data cleansing, pre-processing, and the use of big data for superior forecast inputs.
- Exploring advanced time series models, including ARIMA and sophisticated exponential smoothing.
- Measuring and analyzing forecast accuracy metrics, including bias, MAD, and MAPE.
- The integration of qualitative forecasting methods, such as the Delphi technique and expert consensus.
- Introduction to the impact of AI and machine learning on demand prediction.

Unit Two: Demand Sensing, Shaping, and Collaborative Planning

- Leveraging real-time Point-of-Sale (POS) data and external variables for demand sensing.
- Techniques for short-term forecast adjustments and real-time demand sensing systems.
- Understanding and implementing demand shaping levers, including pricing, promotions, and product mix management.
- Developing a robust Sales and Operations Planning (S&OP) process for organizational alignment.
- Collaborative Planning, Forecasting, and Replenishment (CPFR) models and their implementation.
- Managing product lifecycles, from new product introduction to end-of-life forecasting.
- Scenario analysis and sensitivity testing to prepare for supply and demand volatility.

Unit Three: Inventory Optimization Fundamentals and Strategic Control

- Understanding inventory costs: holding, ordering, stockout, and obsolescence costs.
- Core inventory control models: fixed order quantity (FOQ) and fixed period models.
- Calculating the Economic Order Quantity (EOQ) and its limitations in modern supply chains.
- The critical role of safety stock is mitigating demand and lead time variability.
- Advanced methods for calculating service levels and setting targeted safety stock thresholds.
- Inventory classification techniques: ABC, XYZ, and multi-criteria segmentation.
- Strategies for minimizing obsolescence and managing slow-moving or intermittent demand.

Unit Four: Multi-Echelon Inventory Optimization (MEIO) in Practice

- Introduction to the concept of Multi-Echelon Inventory Optimization (MEIO).
- Mapping the entire supply network and defining echelons: manufacturing, distribution centers, and retail points.
- The difference between single-echelon and MEIO approaches to inventory optimization.
- Calculating the optimal inventory placement and quantity across multiple tiers to achieve supply chain cost reduction.
- Designing centralized vs. decentralized inventory strategies using MEIO.
- Impact of lead time variability and transit stock on multi-echelon planning.
- Practical steps for selecting and implementing MEIO software and tools.

Unit Five: Advanced Analytics, AI, and Continuous Improvement

- Applying predictive analytics and machine learning algorithms (e.g., Random Forest, Neural Networks) for demand forecasting.
- Using big data to incorporate macro-economic indicators and social media sentiment into forecasts.
- Developing inventory KPIs and dashboards for performance monitoring and risk identification.
- Identifying root causes of forecast errors and implementing a continuous forecasting excellence improvement process.
- Leveraging simulation and digital twin technology for inventory optimization testing.
- Building a resilient supply chain through flexible inventory policies and risk mitigation.
- The future of supply chain management: integrating AI-driven demand planning and autonomous inventory control.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

To what extent should an organization sacrifice short-term inventory cost reduction for the long-term structural resilience gained by implementing a complex Multi-Echelon Inventory Optimization (MEIO) system under conditions of unpredictable geopolitical risk?

What unique qualities does this course offer compared to other courses?

This Forecasting Excellence and Multi-Echelon Inventory Optimization Strategies Training Course is unique because it holistically connects advanced predictive science with strategic network-wide inventory placement, moving beyond simple siloed stock management. Most programs focus only on classic forecasting techniques or single-location inventory control, but this course integrates the two, teaching participants how to transition from traditional time-series models to dynamic, real-time demand sensing and demand shaping. The core differentiator is the deep dive into Multi-Echelon Inventory Optimization (MEIO), a crucial and sophisticated framework for achieving genuine supply chain cost reduction and higher service levels simultaneously. We equip participants to use modern predictive analytics not just to guess what will sell, but to architect where safety stock and cycle stock should be positioned across the entire value chain. The course's emphasis is on practical, implementable frameworks, not generic tool demonstrations, ensuring that a participant can immediately apply inventory optimization strategies to their organization's big data environment. This advanced focus on MEIO and the integration of AI principles for forecasting excellence makes the curriculum distinctly forward-looking and academically rigorous, delivered through the professional lens of BIG BEN Training Center.