Inventory Optimization for the Consumer Products Industry

Introduction
How do you efficiently manage your working capital in the supply chain—in particular, capital that is tied up in inventory? What type of ERP systems do you have and are you complementing them with “global” inventory optimization capabilities? Have you optimally determined where, when and how much inventory you should hold for each product? How do you determine how much inventory to keep close to customers versus close to manufacturing facilities?

IBM offers an inventory optimization solution that can help consumer products companies who want to increase the efficiency of their inventory planning processes. This solution facilitates coordinated, integrated, multi-echelon inventory planning and provides insight into the optimal level of inventory needed to improve turns and service levels while freeing working capital. To enable successful outcomes, IBM has deep experience with enterprise resource planning (ERP), advanced planning and scheduling (APS) and supply chain management. In addition, we offer state-of-the-art mathematical algorithms and technology to help optimize inventory levels for the whole supply chain.
The typical inventory planning strategy for most of the industry is built on local planning practices. Each location in the supply chain—retail warehouses, local and regional distribution centers and even plants—conducts its own inventory planning, using planning practices established many years ago or individual and location-based metrics. The inventory planning strategies can range from generic coverage policies, differentiated coverage policies, “min-max” inventory to order-up-to levels. In today's competitive and demanding marketplace, this type of inventory planning leads to low inventory turns, inconsistent service levels and lack of understanding of the full picture.

Global, multi-echelon (Figure 1) inventory optimization strategically positions raw materials, semifinished and finished goods inventory to improve inventory turns, service levels and
cash flow and to free working capital. Individual islands of planning are replaced by enterprise optimization capabilities that look at the demand signals coming from retailers or point-of-sale data and set the inventory levels for each product in the supply chain. Consumer products companies can mitigate the risk of excess inventory resulting from “bullwhip effect” (the increase in demand variability in the supply chain from downstream to upstream). The result is coordinated inventory planning for the entire supply chain that reduces inventory and costs and speeds responsiveness to changing demands.

With a strong portfolio of solutions and services, this is the type of next-generation inventory planning that IBM offers consumer products companies.

**Inventory optimization from IBM: A phased approach at multiple levels**

IBM offers consumer products companies a global, multi-echelon, multiuser inventory optimization and planning process that complements existing ERP and APS systems. IBM’s in-depth understanding of the ERP landscape, planning gaps and multiple delivery capabilities are key enablers of success. Proven planning methodology adjusts inventory levels dynamically, improving inventory planning and service levels, which can lead to reduced inventory holding costs.

The IBM solution approaches the successful delivery in three phases:

1. Assess the current operating environment and goals and identify ROI using a small-scale modeling effort.
2. Develop the high-level design, factoring in architecture, workflow and operating environment.
3. Design and develop workflows and integration in detail, followed by testing, change management and go-live.

During the first phase, IBM will assess the current inventory planning practices, review the current processes and use inventory optimization technology to conduct a pilot study. Your ERP system provides the primary inputs and IBM technology makes “optimal” recommendations for the inventory requirements in your network. We also offer holistic insight into tradeoffs in the supply chain, such as desired service level versus inventory, proposed customer response time versus inventory and forecast error versus inventory, and we proactively recommend service levels by product and location.

Especially in the first phase of delivery, our emphasis on the strategic aspects of optimization will identify inventory drivers and return on investment. The strategic level evaluation can contribute to the high level design as IBM helps companies consider postponement, supplier sourcing, transportation options, make versus buy, central stocking and more. As the process moves towards the deployment and implementation phase, the same models developed in the earlier phases can be put into operational use with proper integration technology.

The state of the art inventory optimization can be seamlessly integrated with your ERP solution and the workflows enabled specifically for your organization, along with:

- User home-page with alerts and reports and a one-page view for planners
- Fill rate optimization
- Service levels
- Customer service
- Demand forecasting
- Configurable reporting for creating and saving reports
- Data maintenance and automated review
The components of the solution (Figure 2) include IBM ILOG® and SPSS® software, along with strategy and transformation, enterprise application integration and business analytics optimization services from IBM Global Business Services®.

**IBM ILOG Inventory and Product Flow Analyst**

IBM ILOG Inventory and Product Flow Analyst is an integrated solution for supply chain and inventory optimization that enables both strategic and tactical planning. It includes different optimization modules that you can use to address specific supply chain problems. Modules use a common database so users can quickly move from one module to another. Built-in integration capabilities make it possible to connect to other systems, such as your ERP or APS system. The modules include:

- **ILOG Inventory Analyst.** Powered by SAP NetWeaver, this module helps find the true and hidden drivers of inventory (such as forecast error, lead times, lot size and so on), so that companies can prioritize improvement opportunities based on overall inventory impact. It strategically positions raw materials, work in progress (WIP) and finished goods inventory throughout the supply chain to improve inventory turns and increase cash flows.
• **ILOG Product Flow Optimization.** The Product Optimization module helps businesses analyze transportation, warehousing, inventory carrying costs and service requirements to determine the optimal product delivery paths. Companies can view and export solution alternatives to tables and graphs for presentations and further analysis.

• **ILOG Demand Profiler.** This module analyzes historical data to create a demand forecast and forecast error.

The combination of these modules provides enterprise multi-echelon inventory optimization for integrated inventory planning in an existing ERP system and strategic multi-echelon inventory optimization to determine strategic shifts in inventory policies and practices.

In short, the IBM ILOG Inventory and Product Flow Analyst technology can help your consumer products company turn supply chains into drivers of profitability, efficiency and growth. You also get the answers to a broad range of business questions—from determining the right inventory policies and strategic positioning of inventory, to the ongoing setting of safety stocks and inventory levels in operational environments.

**IBM SPSS Modeler**

IBM SPSS Modeler is a powerful, versatile data and text analytics workbench that helps you build accurate predictive models quickly and intuitively without programming. Interactive “streams” visually map the data mining process, so users can interact with inventory information at any point and develop models quickly and confidently. These timesaving techniques lead to greater efficiency and accuracy and lower overhead costs.

SPSS Modeler can help your consumer products company discover patterns and trends in inventory management and planning more easily, using a unique visual interface supported by advanced analytics. Users model outcomes and understand what factors influence multiple levels of inventory so they can take advantage of opportunities and mitigate risks. Companies can choose from a complete range of advanced analytical functions, including state-of-the-art algorithms, automated data preparation and rich, interactive visualization capabilities.

For example, using IBM SPSS Modeler, a company can analyze historical data for all items in its inventory. It can then chart the demand “life cycle” for each item and generate demand forecasts. Based on these forecasts, analysts can apply simple planning rules to make decisions about what parts to stock and what parts to pull from the shelves in any given store.

**IBM Strategy and Transformation Services for inventory optimization**

IBM Strategy and Transformation combines IBM’s management consulting capabilities with executable strategies to enable client success, providing differentiation with technology-enabled transformation. Our expertise can help you plan and implement end-to-end inventory optimization, from strategy to implementation, and gain efficiency in cross-functional collaboration. As part of inventory optimization from IBM, we call on the experience of the IBM Supply Chain Strategy practice, which focuses on identifying and quantifying supply chain improvements and assisting clients in transforming their operations, from suppliers to ultimate customer, to enable strategic change and competitive advantage. In addition, IBM’s Supply Chain Strategy experience has allowed for the development of tools and templates to accelerate projects and reduce risk for our clients. These tools represent the combined experiences from significant number of leading supply chain strategy projects over the last several years.

Because inventory optimization requires significant change, we provide process and change management as part of our strategy and transformation services. Our consultants use leading edge
change strategies to manage business transformation and realize the value in major program implementations, such as global and multi-echelon inventory optimization. We also provide project management to facilitate the transformation, creating organizational design and governance plans that align individuals and teams.

**ERP and APS integration services for inventory optimization: IBM and SAP**

No one is a bigger systems integration partner with SAP than IBM. We have broad SAP application knowledge, both technical and functional, and a dense combination of competence centers, labs, sales support centers and briefing centers all dedicated to ensuring that our clients get the most out of their SAP application implementations. We also respect the fact that no two SAP application implementations are the same and that strategic business requirements drive unique twists. Our integration tools are designed for real-time, batch integration or both. We have installed thousands of SAP adaptors and our tools enable business users to change integration parameters while supporting SAP business services and models (Figure 3).

For the SAP integration needed for effective inventory optimization, we offer several alternatives. For companies that need to retrieve inventory data directly from their SAP implementations, we can either use Advanced Business Application Programming (ABAP) or SAP Process Integration. SAP Process Integration provides mapping and error handling using, which is faster and more robust—and offers better control. We can also use any middleware or ETL tools that our clients are comfortable with for the integration processes.

---

**Figure 3: How your data can be integrated with your ERP**
Business Analytics Optimization services for inventory optimization

Business Analytics Optimization services from IBM Global Business Services can help consumer products companies realize business optimization objectives faster with less risk and at a lower cost using an effective information strategy. Applied throughout the enterprise or deep in a business function, Business Analytics Optimization provides resolution that spans policy, analytics, business process, organization, applications and data.

With help from IBM experts, consumer products companies can improve inventory operations by tackling and solving their most complex inventory problems and creating unique predictive capabilities for intelligent inventory management decisions. IBM’s advanced innovative research in data analytics and optimization helps us establish a proactive versus reactive strategy for optimizing inventory. Our Business Analytics Optimization consultants can also provide strategies for improving inventory decision-making, productivity and efficiency in an environment where relevant, actionable, accurate and timely information is used to monitor and improve inventory management.

The benefits of inventory optimization from IBM

The combination of IBM inventory optimization software with services from IBM Global Business Services helps consumer products companies determine what product should be made where, when and how much. In addition, the solution can be used both strategically to answer high-level questions and tactically when integrated with an ERP system to set optimal inventory levels on an ongoing basis. For example, the solution can help your company not only accurately capture inventory requirements in current and future networks but also capture business rules that take into account service times and customer fill rates—all in the same process. Our scenario analysis capabilities can help you assess the impact of different networks on inventory levels and our experts can work with you to develop warehouse space requirements and identify possible bottlenecks. The result is optimized inventory levels at all tiers of your network.

Conclusion

Changing consumer behavior has resulted in the need for extensive product portfolios, faster time to market, reduced capital outlays and improved service levels. Combined with globalization and heightened supply chain complexity, consumer products companies face significant inventory planning challenges. Inventory optimization can help reduce inventory and working capital costs and speed responsiveness to changing demands by facilitating coordinated inventory planning for the entire supply chain.

IBM provides an inventory optimization solution that facilitates coordinated, multi-echelon inventory planning and provides recommendations for the optimal product flow to help improve inventory turns and service levels while freeing working capital. Our deep experience with ERP and APS systems and supply chain management, along with state-of-the-art mathematical algorithms and technology, enable us to provide positive financial results for our clients.
For more information
To learn more about the [enter the name of product or offering here], please contact your IBM marketing representative or IBM Business Partner, or visit the following website:
ibm.com/consumerproducts

Additionally, financing solutions from IBM Global Financing can enable effective cash management, protection from technology obsolescence, improved total cost of ownership and return on investment. Also, our Global Asset Recovery Services help address environmental concerns with new, more energy-efficient solutions. For more information on IBM Global Financing, visit: ibm.com/financing