



Inventory Planning and Optimization Solutions

e-Book 2
Inventory Planning Critical
to Success

A Valogix
e-Book Series

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In today's economy, companies are focused on how they can reduce their investment in inventory and associated costs, while improving their customer service. Signs of an improving economy are slowly starting to show. Although companies have been dropping their inventory levels at drastic rates, consumer confidence and spending are beginning to show signs of life. Companies now have the opportunity to not only help our economy rebound but improve their competitive advantage as long as they are well-prepared.

Customers will demand more of their suppliers to provide affordable products at the exact moment they want them. How can you effectively insure you have what your customers need when they need it? With the dramatic growth of e-Commerce companies have an even bigger dilemma managing multiple sources of demand. Forecasting and demand planning applications can do more than help provide visibility into what lies ahead. These solutions can increase value propositions critical to thriving in a competitive industry in the short and longer term.

In any industry, compelling value propositions add up to hallmarks of success. In wholesale distribution, leading value propositions include reliability, customer service and pricing. And as markets fluctuate, retailers and manufacturers count on distributors to supply goods rapidly and cost-effectively. But when they aren't able to provide immediate value, distributors can find that customer patience wears thin quickly.

So what gets in the way of providing value? Most frequently it's the inability to balance stock levels with service levels. Hold onto too much inventory, and you end up paying for items that collect dust in the warehouse. Stock too little inventory and you won't be able to keep up with customer requests. Sometimes wholesale distributors end up with *both* problems: holding excess stock of items customers don't need.

That's where today's advanced inventory planning & optimization solutions come in. With these solutions, companies can more easily amplify value propositions—while cutting unnecessary operational costs. Today, proper inventory management will literally turn current and future inventory into cash by:

- * Planning and optimizing all items at all locations, ultimately eliminating backorders and over-stocks from the picture
- * Reallocating employee labor from difficult spreadsheets and multi-channel inventory software to increase productivity and further grow business

You have survived one of the toughest economic periods in recent history. In some cases, you survived by holding off investing in much needed hardware and software. Now is the time to surpass surviving and start thriving in 2012 and beyond.

The economy is beginning to improve and customers are coming back. Yes, they may be spending less and are lower in number, but they are coming back. Without question, your customers are evaluating their current position and needs. It's your job to figure out how to improve your inventory right at this moment. Ask yourself these questions:

- Are you ready to better manage your inventory to meet the new demand patterns?
- Is your inventory in balance with the inevitable changes in demand?
- What will happen if you don't invest in more modern tools to manage your inventory?
- How much money and sales will you lose if you don't forecast & plan accurately?
- Are you still manually planning your inventory with spreadsheets and reports?

Your greatest challenge is finding out how to grow and increase profitability while maintaining or even reducing costs. This is where the power of companies such as Valogix can step in and show you how a proven technology can pay for itself in a matter of months. Valogix offers some of the most affordable true optimization products available and provides you with inventory planning solutions that:

- are fast and easy-to-use, with a fast return on investment
- automate all your inventory forecasting, planning and replenishment processes
- optimize to drive costs down while improving your ability to meet more customer orders the first time for less money than ever before

Need more proof? Here is what a current customer said about managing inventory today with Valogix Inventory Planner:

"In today's markets, it is imperative that we monitor and control our inventories as tightly as possible. If we don't, we'll miss major opportunities in the future. Valogix has helped us significantly reduce our costs and improve our productivity, giving us the ability to prepare for whatever comes our way."

Dave Richards, CIO Pacific Steel & Recycling



Waiting to Invest in Inventory Planning Software is Costing You More Than You Think

Investing in smart solutions that improve your inventory planning is an important business decision. Sometimes the concept of spending money to save money is very hard to accept. There are no guarantees the investment will pay off, so there is some level of risk involved. But, is it any riskier to do nothing? To maintain the status quo? Yes and even more so as you risk losing customers and possibly your business.

We know you work hard every day. You may have other software or IT projects planned. You may think your inventory is under control, but can you be sure? You may be waiting for the economy to improve. It's now been several years since the downturn how much longer can you afford to wait?

By putting off using advanced inventory planning and optimization solutions, you are missing out on the opportunity to free up CASH. Cash right now, that's at hand sitting in your inventory. As an example, based on an inventory value of \$1,000,000 and an average inventory reduction and productivity gains of approximately 20% - 30%, as much as \$200,000 to \$300,000 in positive cash flow can be realized. That is anywhere from \$16,666 to \$25,000 per month.

If your inventory investment is \$5,000,000 a 20% reduction means a \$1,000,000 savings. When you calculate the monthly savings it equates to 19% of the total inventory reduction. This is a combination of reduced cost of money, insurance, warehouse cost, personnel, etc. That's \$15,833 every month and in the first year adds almost \$190,000 to your bottom line.

Advanced inventory planning and optimization software not only automates the entire planning process, it dramatically increases the positive cash flow of a company. By smartly reducing inventory investment, reducing stockouts, decreasing expedited shipping costs, and reducing planning time all contribute to more available cash. Add to that increased sales and productivity and the gains will also lead to an improved competitive advantage.

Waiting costs you thousands of dollars every day, disrupts your business and antagonizes customers and employees. Review some of the customer case studies which clearly demonstrate the power of advanced planning and optimization. Why wait? It doesn't get any easier or better than this.



Why Not to Invest in Inventory Management & Planning Software

Most small and midsize businesses that produce or distribute products have, at best, rudimentary software for managing their role as supply chain participants. Robert Anderson, SMB analyst and research director at Gartner, the leading resource for unbiased industry analyses, views supply chain management as an area where a well-targeted solution scaled to SMBs' unique requirements can quickly provide returns that justify the investment.

Noting that few SMBs have embraced supply chain planning and optimization capabilities, Anderson believes that as the economy improves and order rates increase, supply chains will have to become much more competitive, doing a better overall job of meeting demand while reducing waste and inefficiency. There are many reasons or excuses for not upgrading to a modern, easy to use advanced inventory tool.

Which Category do you fall in?

- Internal effort to implement, meaning it will take too much time and effort
- We will be able to manage our inventory effectively without an advanced inventory solution into the foreseeable future
- Cost of software and services
- We are too small
- Solutions are too complicated
- All of the above

Today's flexible technology provides solutions that will work for any size business, are automated and very easy to use. With Software-as-a-Service (SaaS) cost is no longer an issue.

Or do you believe you have a good process in place using one or several or all of the following:

- Spreadsheets
- Accounting Applications
- Multiple disparate applications
- Legacy applications
- Home-grown applications
- Forecasting stand-alone package

There is a saying "you don't know what you don't know." So, how do you find out what's right for your business? You may think your inventory is under control, but can you be sure? By putting off using an advanced inventory planning and optimization solution, you are missing out on the opportunity to free up money and resources. Advanced inventory planning and optimization software not only automates the entire planning process, it dramatically increases the positive cash flow of a company.

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There are a lot of inventory planning solutions available from some basic, some more advanced. Many are designed for large enterprise companies as they cost hundreds of thousands of dollars and are highly complex. Some so complex a math or science degree is required just to operate the system. Others at the low end may be just point solutions for just forecasting, as an example, or offer individual modules you need to buy separately.

Many of these solutions include a forecasting capability either their own or from an included third-party provider. They usually also offer min and max levels, safety stock and replenishment calculations. Most require you to manually set replenishment levels and have you select the appropriate forecast method. There is a lot of manual work and time to implement and maintain them.

How many offer real genuine inventory optimization and why is this important? There are many reasons why inventory optimization is critical for conducting business in today's ever challenging economic climate.

First is the cost of carrying, holding and managing an inventory. The costs for most items are steadily increasing, real estate costs and taxes are up and shipping costs are through the roof. Inventory optimization provides a great approach to a balanced inventory to meet expected demand, while reducing costs and better controlling spend for purchases. Planning in a timelier manner reduces the need for expediting orders in from vendors, which in-turn reduces the need for expediting shipments to customers.

Secondly, optimization dramatically improves the financial performance of an inventory because buying and stocking are more in-line with expected customer demand. It helps to reduce and almost eliminate the future build-up of excess inventory and dead stock.

Third, there are too many known and unknown variables that can affect your inventory and subsequent customer service levels to manage properly. Just forecasting and planning your inventory leaves you wide-open to problems in meeting both your financial goals and customer expectations. Trying to plan with spreadsheets is even a worse situation that will eventually lead you to higher costs and lower service producing a higher level of customer dissatisfaction and lost business.

- Setting the re-ordering parameters (e.g., Safety Stock or Min/Max levels) manually is an extremely tedious activity. Hence, it tends to be done infrequently, and does not adjust to changed demand factors. Valuable buyer/planner time should not be taken up by such activity.
- Optimization of the re-ordering (replenishment) parameters can lead to dramatic cost savings. Computers can do it frequently, so the results dynamically reflect demand changes.

Optimization Theory Overview

Optimization techniques are used to find a set of design parameters, $x = \{x_1, x_2, \dots, x_n\}$, that can in some way be defined as optimal. In a simple case this might be the minimization or maximization of some system characteristic that is dependent on x . In a more advanced formulation the objective function, $f(x)$, to be minimized or maximized, might be subject to constraints in the form of equality constraints, $G_i(x) = 0$ ($i = 1, \dots, m_e$); inequality constraints, $G_i(x) \leq 0$ ($i = m_e + 1, \dots, m$); and/or parameter bounds, x_l, x_u .

A General Problem (GP) description is stated as subject to where x is the vector of length n design parameters, $f(x)$ is the objective function, which returns a scalar value, and the vector function $G(x)$ returns a vector of length m containing the values of the equality and inequality constraints evaluated at x .

An efficient and accurate solution to this problem depends not only on the size of the problem in terms of the number of constraints and design variables but also on characteristics of the objective function and constraints. When both the objective function and the constraints are linear functions of the design variable, the problem is known as a Linear Programming (LP) problem. Quadratic Programming (QP) concerns the minimization or maximization of a quadratic objective function that is linearly constrained. For both the LP and QP problems, reliable solution procedures are readily available. More difficult to solve is the Nonlinear Programming (NP) problem in which the objective function and constraints can be nonlinear functions of the design variables. A solution of the NP problem generally requires an iterative procedure to establish a direction of search at each major iteration. This is usually achieved by the solution of an LP, a QP, or an unconstrained sub-problem.

Basically, what inventory optimization does is balance the investment in an inventory with the fill-rate (service level) goals of a company. There are also financial considerations, constraints that can also be applied in the development of the algorithm. These highly complex algorithms work behind the scene so as not to confuse the user or make them fearful of using optimization to help manage their inventory.

We have determined that you can dramatically improve the effectiveness of the optimization algorithms by adding heuristics into the overall process equation. Heuristic refers to experience-based techniques for problem solving, learning, and discovery. Heuristic methods are used to speed up the process of finding a satisfactory solution, where an exhaustive search is impractical.

Valogix' optimization process defines the optimal stocking quantity (SQ) for every item at every location. Plus, it goes one step further and not only calculates the SQ to reach the service level goal, but an enhanced algorithm actually calculates the full coverage SQ as well. This full coverage SQ is based on the probability of stocking out and determines how best to avoid that situation.



How many solutions do you know that can do all this, forecasting, planning, replenishments and optimization at an affordable price? Best of all, you can get these solutions for either on-site deployment or in the Cloud in a SaaS model.

The customer results of using Valogix inventory planning show they achieve:

- Reduced inventory by 20% to 40% or more usually within 6 months or less
- Reduced expediting and emergency shipments by 35% or more
- Improved productivity by reducing planning time by 60% to 80% or more
- Controlled and reduced replenishment spending by 15% or more
- Improved service levels by having the right items available when your customers want them by 5% to 15% or greater
- Reduced stockouts by 15% - 30% or higher
- Increased sales of 15% to 15% or more
- Reduction in cost of goods by 5% to 10% due to improved vendor relations

Make sure you review the inventory solutions carefully and find out if they include true inventory optimization algorithms. You owe it to yourself, your company and your customers to choose the right solution to help solve your inventory planning needs affordably.

Want to learn more? Contact Valogix today for your free inventory analysis to see how much you could be saving.

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