

A PROCESS FOR SUCCESS

STRATEGIES AND DIGITAL SOLUTIONS FOR MORE AGILE, RESILIENT PROCESS MANUFACTURING SUPPLY CHAINS



OUT WITH THE OLD, IN WITH THE NEW

Business shutdowns, staffing issues, supply chain disruptions, raw material shortages, wasted materials, customer sustainability demands, antiquated and siloed technology... These are just some of the challenges faced by a manufacturing sector still reeling from the disruptions of COVID-19. The goals of agility, flexibility, efficiency, productivity, and transparency seem elusive.

The business world is changing rapidly, and process manufacturers must evolve along with it. The old way of doing business using outdated technology – even paper-based orders in some cases – is not viable today. There's a pressing need for data sharing, collaboration, and connectivity that can't be accomplished with an ERP system or legacy software. In terms of impact, digital transformation is by far the biggest change agent, offering the means to react and keep current with a rapidly shifting regulatory and political ecosystem.

Success in process manufacturing is based on many factors, including producing the right quality products in the proper quantities at the right time and at the right price. It also requires

the proper data and real-time analysis to enable quick responses to the changing environment and targeted innovation. Rapid design is imperative to compete at the speed business moves today.

Supply chain traceability and transparency is also a concern. Without adequate insight into the sustainability of the supply chain, process manufacturers risk damaging their brand value, non-compliance penalties, loss of customers, and even litigation. The present and the future of process manufacturing rely on data, and infrastructure hasn't kept pace with management and analysis of the huge amount of information generated every day as ingredients move through the supply chain. A siloed system will just lead to more disruption – to overcome these obstacles and build resilience requires the right technology.

In this eBook, we'll look at three digital supply chain solutions that will help your process manufacturing business overcome today's challenges and move confidently into the future.



KEY CHALLENGES PROCESS MANUFACTURERS FACE TODAY

From raw materials to consumers' homes, a series of missing links, volatile conditions, and evolving market opportunities is fueling disruption across the entire process manufacturing supply chain.

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| Lack of skilled labor | <p>As more than 2.6 million baby boomers are expected to retire within the next decade, younger generations have shown less interest in manufacturing jobs. This is occurring at the same time 700,000 new jobs will be created in the manufacturing sector from organic growth alone.</p> | <p>US manufacturing is expected to have 2.1 million unfilled jobs by 2030.¹</p> |
| Supply chain and raw material volatility | <p>Availability of materials and the supply chain go hand in hand. Even small changes in customer demand can create a huge demand for raw materials at a time when international shipping has been a mess. Shipping containers are still stuck in places where they don't belong, shipping capacity has declined, and ports are still congested.</p> | <p>The average container spent 20% longer in transit than before the pandemic.¹ This is a huge supply chain challenge that will make meeting increased demand harder than ever.²</p> |
| Sustainability and transparency demands | <p>Consumers today want the information to identify brands that are committed to sustainability. This requires complete supply chain transparency as customers become increasingly aware of how environmental and social company behavior affects their well-being.</p> | <p>Almost one-third of consumers stopped purchasing brands or products due to sustainability concerns.³</p> |
| Waste | <p>Poor quality control and a lack of accurate demand forecasting lead to waste. Many process manufacturers don't have the ability to make complex, high-volume supply chain decisions because they lack data or the ability to apply it at scale. Waste is more than just what is thrown away – trucks go empty due to poor planning and excess raw materials take up space.</p> | <p>About 20% of every dollar spent in manufacturing (\$8 trillion) is wasted due to inefficiencies, especially in the supply chain.⁴</p> |

1. "Creating Pathways for Tomorrow's Workforce Today", Deloitte 2021
2. "2021 Supply Shortages: Year of Waiting Followed by Year of Anxiety", DW.com, December 2021
3. "Shifting Sands: Are Consumers Still Embracing Sustainability?", Deloitte, 2021
4. "Manufacturing Wastes 10% of the GWP Every Year. Here's Why", Forbes, October 2021



MANUFACTURING PLANNING AND OPTIMIZATION

It's all in the planning. Success comes from a single cohesive plan based in the realities of the supply chain that aligns financial, sales, production, procurement, and marketing information. The pandemic caused material shortages and delivery delays that, in turn, affected the downstream supply chain, creating a ripple effect that resulted in reduced service levels, revenue, and productivity.

This event also highlighted flaws in overall business planning for many process

manufacturers. There is, however, a silver lining: an opportunity to make your business more flexible and resilient while incorporating sustainability initiatives.

It's about balancing supply and demand with optimized capacity planning and detailed scheduling. The right manufacturing planning and optimization solution will help process manufacturers to:



Manage single and multi-period forecast consumption

Manage single and multi-period forecast consumption, demand netting against inventory, and time-phased safety stocks.



Update released orders

Update released manufacturing orders to allow planning logic to extend far beyond the capabilities of shop-order sequencing.



Manage shelf life

Manage shelf-life expiration of on-hand lots, planned production, and planned receipts of raw materials.



Save time

Decrease planning time by as much as 75%.



Optimize planning

Create multiple “what-if” simulations to achieve your objectives, then execute the best plan.



Anticipate issues

Anticipate problems and evaluate alternatives with realistic, constraint-based schedules and capacity plans that maximize throughput. Pinpoint capacity and material exceptions with easy-to-use visual tools.



Balance inventory with customer demand

Respect inventory goals while meeting customer service targets for on-time delivery and performance.

CHECKLIST

As you develop your manufacturing planning and optimization strategy, be sure your solution has these points covered:

- ✔ **Integrated business planning:** You want a solution that turns sales and operations planning and strategic planning into a formal, comprehensive process. Integrated business planning (IBP) will ensure resources and investments are deployed most effectively to achieve your business goals.
- ✔ **Synchronize supply and demand:** You need the ability to identify which customer orders will most affect profitability along with the capability to create plans that balance replenishment goals with capacity and distribution constraints. Then, assess these scenarios and changes through rapid net-change analysis.
- ✔ **Simplified manufacturing planning:** Your solution should enable you to define manufacturing plans that will meet your goals and rapidly create long-range capacity plans, create tactical master production schedules, and align supply plans with manufacturing.
- ✔ **Meet service goals cost-effectively:** You will need customer-specific forecasting capabilities, flexible “what-if” analysis, and time-phased inventory policies to gauge the cost of serving key accounts and adding new customers or markets.
- ✔ **Optimize distribution:** The right solution improves transportation operations by systematically balancing logistics strategies, customer service policies, carrier effectiveness, and inventory management goals to make sure each order is perfect.
- ✔ **Incorporate structured and unstructured data:** Your technology partner should offer the ability to leverage data from internal and external sources, so you can gain real-time insights into global supply chain conditions.

“OUR SUPPLY CHAIN TRANSFORMATION WITH LOGILITY IS A HUGE STEP FOR KELLY-MOORE. WE ALWAYS HAD THE VISION FOR OPTIMIZED DEMAND, INVENTORY, AND PRODUCTION PLANNING, AND NOW IT’S A REALITY DOWN TO THE MANUFACTURING LEVEL.”

CALVIN CHUN, DIRECTOR OF PLANNING, KELLY-MOORE PAINTS

DEMAND PLANNING AND OPTIMIZATION

More accurate demand forecasting drives more accurate downstream plans that boost profitability, satisfy customers, and synchronize supply chain partners. Early predictions are essential for organizations that want to stay stable and competitive. The usual forecasting models presume that historical data offers all of the information needed to predict patterns and trends, but with COVID-19, conventional wisdom flew out the window.

Demand shocks reverberated up and down the supply chain and amplified the volatility. These

constraints call for a shift in demand planning priorities to be able to create forecasts that are accurate enough to do reliable scenario planning for maximum and minimum demand.

A demand planning and optimization solution should synchronize activities that result in time gained, accuracy, and efficiency. Demand planning and optimization should align your high-level business planning with detailed product forecasting that enables you to boost service levels, shorten cycle times, reduce inventory investments, and improve profitability.



Superior visibility

Lower costs and increase product availability while improving profitability. Gain far-reaching insight into market needs with a multi-echelon demand plan.



Make better, faster decisions

By leveraging machine learning and advanced analytics, you can make faster decisions based on accurate information. You'll gain a rich understanding of the impact of events and predict the uplift of any promotions.



Improve customer satisfaction

Better demand forecasting drives more accurate downstream supply chain planning while giving a boost to customer service and enabling perfect orders.



Convert information into action

Drive efficient production scheduling and sourcing management to free up working capital.



Cut inventory costs

Eliminate redundant and expired inventory and decrease inventory carrying costs.

CHECKLIST

Your demand planning should improve forecast accuracy, decrease inventory costs, identify both risks and opportunities, and automate your planning. When seeking out a solution, make sure it ticks all of these boxes.

✔ **Advanced analytics that leverage artificial intelligence:** You want algorithmic optimization, simulations, scenarios, and other forms of advanced analytics. These provide new insights, automate planning, and reduce time spent, wasted inventory, and risk throughout your supply chain.

✔ **Predict demand across the product lifecycle:** Forecast demand for new products that lack historical sales figures and use attribute-based forecasting to generate launch profiles.

✔ **Self-selecting, self-correcting forecast models:** Machine learning algorithms automatically select the appropriate demand model to create the best possible forecast.

✔ **Profitability analysis:** Flexible analysis and reporting options help you accurately evaluate spending allocations and product profitability.

✔ **Automatic rankings and demand segregation:** Based on historical demand, historical forecasts, future forecasts, or forecast error, you want to be able to calculate

up to six different forms of ABC ranking analysis.

✔ **Aggregation/disaggregation:** Build forecasts from the bottom up by customer, item, or location, or work from the top down. Your solution should automatically apply proven mathematical models at each business level for realistic “consensus plans” that increase forecasting accuracy and minimize the impact of errors.

✔ **Multi-national support:** Costs and prices can be supplied in the currency of the home market as well as in local or regional currencies. This enables worldwide forecast, inventory, production, and transportation plans to roll up to higher levels of visibility.

✔ **Sophisticated simulation abilities:** Incorporate multiple business variables to simulate alternative marketing programs, analyze profitability, and refine forecasts. You also require the ability to collaborate with internal resources using a snapshot of a forecast simulation that you can annotate and share to drive a consensus forecast.

“WE HAVE ACHIEVED A MULTI-MILLION-DOLLAR INVENTORY REDUCTION, AND THE SAVINGS WE GAINED IN THE FIRST FOUR WEEKS FOLLOWING IMPLEMENTATION OF LOGILITY MORE THAN PAID FOR THE COST OF SOFTWARE AND IMPLEMENTATION.”

JOE TOCCI, SENIOR VP SUPPLY CHAIN, INTERTAPE POLYMER GROUP

INVENTORY PLANNING AND OPTIMIZATION

Process manufacturers, including companies in the rolled goods, woven goods, packaging, extrusion/injection molding, and specialty chemical sectors, have always faced challenges of overcapacity, pricing pressures, and global supply chain uncertainty. These uncertainties were magnified by the pandemic, leaving companies wondering what would happen next and what to do about it.

Raw materials became difficult to source. Specialty chemicals, in particular, had a 9.4% decline¹, which led to reduced operations and a scale-down by process manufacturers. That scale-down then led to shortages of ingredients used in fertilizers, medicines, and packaged products, among others.

There's light at the end of the logistical tunnel, however. Technology can enable the necessary

real-time insight and visibility to drive inventory optimization that minimizes costs, reduces risks, and optimizes customer service levels. You also gain the ability to increase efficiencies in a multi-echelon manufacturing and distribution environment, optimize production, reduce inventory, provide on-time deliveries at the lowest cost, accelerate replenishments, and satisfy regulatory requirements.

You want the ability to leverage the power of multi-echelon inventory optimization (MEIO) to understand the key drivers of excess inventory and put the right levels of stock at the right places to create the best balance between cost and service. This helps to eliminate top-down budgeting and reach the highest service levels possible with the minimum strategic inventory investment.



Synchronize multi-plant activity

Time-phased sourcing decisions allow you to coordinate and optimize multi-plant production.



Boost facility productivity

Optimize production within individual plants by automatically managing multi-stage capacity constraints, changeovers, safety requirements, and more.



Improve global inventory management

View inventory policies holistically across a multi-echelon network, ensuring maximum service at the lowest cost.



Monitor performance and reduce risk

Use performance management capabilities to help you focus on global supply chain priorities.



Understand true demand

Increase demand forecast accuracy by item, location, customer, and product group.

1. "Readers Choice 2020: Impact of COVID-19 on the Process Manufacturing Industry", Manufacturing Tomorrow, 2020

CHECKLIST

When considering an inventory optimization initiative, check these points to identify the right technology partner:

- ✔ **Innovation:** Ensure your solution provider harnesses the power of machine learning and artificial intelligence to drive automation and help your company accelerate market response.
- ✔ **Usability:** Choose a solution that will empower users across different areas of your business to automate routine analysis and deliver more value to the bottom line.
- ✔ **Tactical target setting:** When setting tactical inventory targets on an ongoing basis, make sure you can automatically characterize demand and uncertainty, both in lead time and demand signal.
- ✔ **Flexibility:** Some inventory cannot be statistically modeled. Make sure the solution you select can set smart inventory parameters for your most problematic SKUs as well as your fast movers.
- ✔ **Supply chain data management:** Leveraging your enterprise data for strategic and tactical analysis is a major consideration. Select a software provider who can simplify the process, leverage artificial intelligence to boost data quality, and offer a powerful integration platform with little or no customization required.
- ✔ **Risk aversion:** The right IO/MEIO approach can do more than deliver better service levels. It can also make your C-Level team happy by identifying and mitigating risk and freeing valuable working capital.
- ✔ **Strategic modeling:** Once tactical processes are in place, turn your efforts to year-over-year improvements. Leverage tactical and strategic planning capabilities to perform comprehensive analytics across your supply chain for ongoing business insight.



CAPITALIZE ON THE NOW, BUILD A MORE RESILIENT FUTURE

The complexity of the process manufacturing supply chain continues to grow. With the right technology, process manufacturers can become more flexible, agile, and resilient through digital transformation of four key areas:

- » **Manufacturing planning and optimization**
- » **Demand planning and optimization**
- » **Inventory planning and optimization**

Logility is uniquely positioned to help process manufacturing companies like yours rethink their supply chain strategies with the Logility® Digital Supply Chain Platform. The platform provides a comprehensive set of solutions that enable you to plan and execute your operating strategy based on a clear view of your global supply chain and potential emerging disruptions. Best of all, you can position your business to thrive in a climate of stricter regulatory burdens, increased demand for sustainability, and ever-evolving commerce expectations.

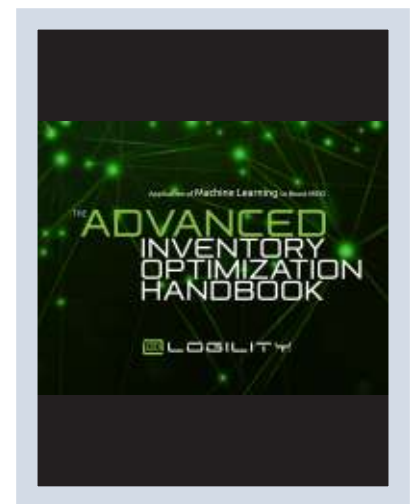
ADDITIONAL RESOURCES



2022 Planning Tip: Eight Methods to Improve Forecast Accuracy



A Digital Transformation Guide for Supply Chain Disruptions



The Advanced Inventory Optimization Handbook



ABOUT LOGILITY

Accelerating the sustainable digital supply chain, Logility helps companies seize new opportunities, sense and respond to changing market dynamics and more profitably manage their complex global businesses.

The Logility® Digital Supply Chain Platform leverages an innovative blend of artificial intelligence [AI] and advanced analytics to automate planning, accelerate cycle times, increase precision, improve operating performance, break down business silos and deliver greater visibility. Logility is a wholly owned subsidiary of American Software, Inc. [NASDAQ: AMSWA].

To learn how Logility can help you make smarter decisions faster, visit www.logility.com.

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