Gartner’s Cost Optimization Playbook for Supply Chain Strategy and Planning Leaders

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Cost optimization is embedded in every successful supply chain strategy. Supply chain leaders can use this research to enable delivery of efficient target customer outcomes by making design and operating trade-offs regarding supply network, organization structure and process capability investments.

Key Challenges

- Many supply chain leadership teams see cost optimization as nonstrategic, resulting in complacency, which leads to unpreparedness when strategies fall short of target financial outcomes.
- Failure to apply comprehensive cost optimization to supply chain strategy limits available options and the potential impact that leadership actions can have in response to market realities.
- Imposed austerity within individual cost centers and functions is easier to execute than comprehensive cost optimization but has less sustainable impact, creates internal conflicts and ultimately puts business outcomes at risk.

Recommendations

To maximize the impact of cost optimization, supply chain strategy and planning leaders should:

- Implement planning decisions and improvements that lead to cost-optimized product supply and customer outcomes.
- Make design changes to organizations, networks and products that strengthen alignment with demand to deliver outcomes with reduced waste and risk.
- Embed efficiency in organization values and management practices and invest in operating capabilities that deliver competitive advantage by cost optimization of supply chain strategy.
Introduction
Supply chain has become increasingly recognized as a competitive differentiator for leading companies (see “The Gartner Supply Chain Top 25 for 2018”). Yet cost management is still a core responsibility that supply chain leaders must find a way to balance with the need to support growth and service objectives. Figure 1 (from a recent Gartner member survey) shows that cost optimization ranked fifth out of 16 key initiative choices, roughly equivalent to innovation and customer collaboration.
While cost optimization is listed in Figure 1 as a separate initiative from the development of strategy and improvement of planning, an alternative view is to consider cost optimization as an essential element of any strategy or operating plan.

Gartner defines cost optimization as a business-focused continuous discipline to drive spending and cost reduction while maximizing business value.

Supply chain plays a central role in cost optimization for the business owing to its ability to extend its influence beyond functional silos and financial reporting conventions to facilitate conscious trade-offs in the configuration and operation of supply networks as well as organizational structure.
and investment in process capabilities. The comprehensive nature of supply chain cost optimization is illustrated in Figure 2.

Figure 2. Gartner’s Framework for Supply Chain Cost Optimization

The themes illustrated in Figure 2 can and should be applied to any supply chain strategy, with priorities and specific tactics varying based on the details of the business, products and market dynamics.

- Strategy roles will ensure that “cost optimization values and practices” are cultivated across the organization while working with business leaders on the “design of products and networks for efficient supply” and with operating functions to prioritize “investments in efficient operating capabilities.”

- Planning roles will take ownership for the development of “integrated planning for optimized balance” while also orchestrating tactically from supplier management through demand fulfillment to enable efficient customer outcomes.
This research provides supply chain leaders responsible for strategy and planning with an aligned role-based analysis of actions that can be taken within the framework of Figure 2. Some of these actions will contribute to immediate cost savings while others will establish a foundation for the development of strategy and investment in capabilities that ensure sustainable cost competitiveness.

Analysis
Planning and strategy roles enable efficient operations by aligning individual operating functions to deliver reliable targeted customer outcomes. Networks, organizations and incentives are configured to minimize waste in the delivery of outcomes. Resources are allocated and initiatives are prioritized to ensure that supply chain capabilities maximize and maintain cost competitiveness as part of supporting business strategies.

Figure 3 provides an overview of a cost optimization playbook with specific focus on actions to be taken by strategy and planning roles to enable and synchronize efficient outcomes across all supply chain operating functions. The playbook is organized into three layers: plan better, reconfigure for reduced waste and transform for increased cost competitiveness.
Figure 3. Cost Optimization Playbook for Strategy and Planning Roles

<table>
<thead>
<tr>
<th>Action Category</th>
<th>Time Frame</th>
<th>Decision Complexity and Execution Difficulty</th>
<th>Systems, Data and Analytics</th>
<th>Summary of Actions</th>
</tr>
</thead>
</table>
| PLAN BETTER      | Short Term (weeks/months) | Increase awareness, provide visibility and reduce waste, basic planning and scheduling for efficient operations. | Simple planning models, reporting and analytics | ▪ Optimize Supply Quantities, Timing and Sequences.  
▪ Maximize the Use of Lower-Cost Capacity and Supply.  
▪ Reduce Demand Plan Error to Control Inventory Cost.  
▪ Protect Inventory Value and Manage Obsolescence Risk. |
| RECONFIGURE     | Midterm (quarters) | Organization alignment and decision complexity, sunk cost constraints, change sensitivities and notice periods. | Use models to evaluate design trade-offs | ▪ Rightsize the Product Supply Network to Optimize Capacity Cost.  
▪ Align Organizational Structure for Cost Optimization.  
▪ Design Products and Manage Complexity for Efficient Supply. |
| TRANSFORM        | Long Term (quarters/years) | Investment of resources required with midterm to long-term adoption of new operating tools, systems and practices. | Operating technologies that improve decision and execution speed and precision | ▪ Create Management Systems and Organizational Practices That Drive Cost Optimization.  
▪ Invest in Digital Operating Capabilities for Faster and More Precise Execution.  
▪ Transform Supply Planning to Agile, Optimized Network Orchestration.  
▪ Develop and Leverage Advanced Analytics Capabilities. |

Source: Gartner (September 2018)

Improve Operating Efficiency Through Better Planning Decisions

As Figure 4 shows, business planning and supply planning are the two leading areas for capability investments. These investments are essential to maximizing value from functional capabilities in sourcing, logistics, manufacturing and fulfillment. Analytics is an inherent part of planning, leveraging both predictive modeling for better demand forecasts and prescriptive models to define optimized supply and inventory plans.
Figure 4. Business and Supply Planning Are High Priorities for Capability Investment

Planning Has Been the Leading Investment Area for Supply Chain Improvement

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Top Investment</th>
<th>2nd</th>
<th>3rd</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvements in business planning capabilities such as S&amp;OP/IBP and new product introduction</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Upgraded supply planning and inventory optimization models</td>
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<tr>
<td>Improve customer service including order-to-cash process, complaint management and collaboration programs</td>
<td></td>
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<td></td>
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<tr>
<td>Upgraded demand management capabilities including forecasting, sensing and shaping</td>
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</tr>
<tr>
<td>Improve sourcing, procurement and supplier management capabilities</td>
<td></td>
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<tr>
<td>Improve logistics capabilities</td>
<td></td>
<td></td>
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<tr>
<td>Improve manufacturing flexibility and/or responsiveness</td>
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<td></td>
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<tr>
<td>Development of supply chain strategy and alignment with performance metrics</td>
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</tbody>
</table>

Percentage of Respondents

Base: All respondents, n = 238
Q: In which of the following supply chain initiatives did your organization invest the most over the past 12 to 18 months?
ID: 352238

Source: Gartner (September 2018)

Optimize Supply Quantities, Sequences and Timing

Supply planning is an enabling capability that ensures that the right levels of capacity and materials are available so that efficient outcomes are achieved. The fundamental questions in supply planning are “how much?” and “when?”

Order sizes determine the quantities of parts and raw materials to receive with each supplier delivery or how many finished goods to produce in each batch or campaign run. Supply order quantities impact manufacturing and distribution unit costs, using cycle stock inventory to leverage economies of scale for freight, capacity and other cost drivers.
Planning leaders must begin their cost optimization efforts by determining supply quantities that meet service goals while balancing functional operating efficiency with working capital economics. This exercise will stimulate important organizational discussion about the imputed cost of inventory and opportunity losses, which are not measured in cost centers or reported on financial statements. Companies trying to simultaneously reduce both cost and inventory will face the need to make choices.

Once optimal supply quantities are determined, operational planning and scheduling activities must be aligned with supply lead times and operating cycle times to determine a more precise answer to the second part of the supply questions, which is “when?” For simple replenishments of parts, raw materials or finished goods, reorder point algorithms combine a safety stock (or safety time) factor with expected demand during the supply lead time to determine precise timing for the next supply order. Replenishment scheduling may be complicated by warehouses and factories with loading or receiving dock constraints that require appointment scheduling of inbound deliveries and outbound shipments.

One of the biggest challenges and opportunities for many supply chain organizations remains the transition from replenishment decisions based on human judgment to decisions enabled by demand and inventory analytics. In addition to the potential savings in overhead cost, this shift represents an opportunity for better visibility from deeper process integration and faster, more precise decisions based on analytics that cannot be tuned and improved until they are implemented without the presence of human bias.

Additional constraints and interdependencies make production planning and scheduling more complex than replenishment decisions. For example, if multiple product items share the same equipment capacity, the quantities and timing of each item cannot be determined independently of one another. Advance cost modeling of sequence-dependent changeovers is required, with quantities and timing dynamically adjusted to control inventory and maintain service level. Increased manufacturing agility, enabled by shorter changeover times and other operating costs, provides
responsiveness that enables high service levels with lower inventory but requires moderating functional focus on capacity utilization.

Related research:

“Toolkit: Optimize Production Quantity to Balance Manufacturing Performance With Inventory Cost”

“Supply Chain Leaders Must Consider Opportunity Costs and Risk of Loss to Optimize Inventory”

“Toolkit: Apply Inventory Analysis to Build Intelligence”

“Gartner’s Top Actions for Supply Chain Inventory Reduction”

“Supply Chain Brief: Use Touchless Replenishment as a Vision to Drive Inventory Analytics Value”

Maximize the Use of Lower-Cost Capacity and Supply Sources

Production capacity planning enables the development of feasible master production schedules (MPS) that fulfill demand while optimizing the use of labor and equipment. Production capacity planning has evolved into supply planning in order to synchronize material supply, manufacturing operations and product distribution across complex interdependent multisite networks. Supply plan models determine demand allocations that optimize the use of total network capacity, including those of suppliers and external service providers.

Decision support for supply planning can range from simple capacity planning spreadsheets and ERP-based MRP functionality to configured supply network optimization models. Variables include the complexity of the supply network, the value of optimization for improved decisions and the readiness of the organization to leverage and maintain advanced modeling.

Supply network planning scenarios under consideration may include some of the following options:

- Balancing demand across capacity in a way that fully utilizes lowest-cost material and capacity sources first, using higher cost sources to balance supply with demand. Consideration of network economics (such as tariffs, taxes and global freight) provides analysis of total network economics within which functional cost drivers such as annual rebates and overtime labor costs can be put into proper perspective.

- Using make-to-stock (MTS) models based on demand forecasts to fully utilize capacity and short-order lead times versus postponed operating models that maintain capacity buffers to fulfill orders with a different balance between unit supply cost, order lead times and finished goods inventory levels and obsolescence risk.

- Anticipating inventory stock builds that allow maximization of lowest-cost capacity in advance of a peak demand event as alternatives to using higher cost capacity from secondary or external capacity options to avoid the need for anticipation inventory.

These same principles can be applied to distribution and material planning where the use of remote supply sources and freight modes with longer lead times and lower transportation costs (sea or rail)
are prioritized over more responsive modes (air and truck). While long supply lead times require higher structural in-transit inventory, it can be feasible (and optimal) if serving predictable demand that enables firm advance supply commitments at an acceptable risk of excess inventory obsolescence.

**Related research:**

“Apply Three Principles for Supply and Inventory Planning Success”

“Key Considerations for Optimizing Commodities in Your Supply Chain”

“Operationalize Inventory Reduction Targets With Integrated Supply Plan Proposals”

“Supply Chain Brief: Overproduction to Absorb Fixed Costs Must Be Governed as Anticipation Inventory”

“Integrate Network Optimization With Transportation Modeling to Enhance Your Distribution Strategy”

“Bring Procurement and Suppliers Into S&OP to Improve Service and Reduce Cost”

**Reduce Demand Plan Error to Control Inventory Cost**

While reducing forecast errors helps reduce required safety stock costs, identifying and addressing demand planning bias represent the most immediate priorities in the S&OP process. Companies across many industries confront multiple sources of error forces that drive demand planning bias. These include financially driven sales targets and aggressive optimism regarding new products, promotions and account opportunities.

The combination of positive demand plan bias with long supply lead times creates the potential for excess supply commitments that become inventory, which both increases working capital costs that may take months to correct and involves increased obsolescence risk. These deviations defeat the most-well-intentioned efforts for diligent supply and inventory planning and require constant vigilance to detect the risk of oversupply. The solution is to create an S&OP process in which supply planning can identify and escalate risks of oversupply to frame them as situational decisions requiring business intervention.

**Related research:**

“Tackle Forecast Bias by Driving True Accountability Into S&OP Decision Making”

“How to Create an Effective S&OP That Drives Results”

“Range-Based Demand Planning: Accuracy Trumps Precision”

“Aggregate Your Forecast Across Different Time Horizons to Improve Long-Term Forecast Accuracy”
Protect Inventory Value and Manage Excess Inventory Risk

Supply chain leaders have some basic responsibilities for protecting inventory and mitigating the risk of inventory loss. These begin with warehouse selection and management systems to protect company assets from fire, theft and other losses. Transactional controls ensure monitor for fraud and ensure accurate balance sheet reporting. These are usually stipulated as part of financial controls policies, which supply chain leaders have accountability to fulfill and demonstrate compliance through process audits and metrics.

Nearly every supply chain operating at regional or global scale is confronted with constraints, complexity, volatility and uncertainty. Plans are based on best estimates, and execution will involve some level of waste and nonconformance to achieve target outcomes. This includes aging and obsolete inventory, which range from median levels of 0.2% to 1% of revenue depending on the industry. Inventory obsolescence and write-off losses must be evaluated within a broader context of value. Distressed selling to minimize obsolete inventory can impact brand image and depress commodity market prices.

Delivering competitive outcomes requires choices that include balancing the cost and risk of inventory losses and the impact to market margins and opportunity losses from service failure. Supply and inventory planning roles contribute to the balancing and mitigation of risk through the ongoing monitoring, reporting and mitigation of excess and aging inventory.

Specific tactics to manage inventory risk may include some of the following:

- Ensure that proper batch or lot dating enables custom reporting against defined thresholds for inventory risk in the business (considering the product, market and financial context).
- While proper stock rotation is a warehouse management responsibility, supply planning roles should validate that stock rotation occurs as part of any investigation into recurring problems with inventory aging.
- While decisions about inventory disposition and balance sheet adjustments must be made by finance and product management roles, supply and inventory planning roles must fulfill their responsibilities under established policies with a combination of diplomacy and assertiveness. If decision makers fail to engage and respond, aged inventory status with obsolescence risk should be documented in a clear and timely manner. Judgment (and supervisory support) is required when considering such other alternatives as management escalation or autonomous actions, depending on the level of risk and other organizational dynamics.
Related research:

“Toolkit: Prototype for Inventory Health Assessment”

Reconfigure Networks, Organizations and Product Portfolios to Reduce Waste and Risk

Applying design principles to reduce waste and risk can deliver cost optimization value across midterm to long-term time horizons. This includes reconfiguration to align organization structures and incentives, supply networks and product platforms or portfolios to deliver more efficient outcomes to customers. Long-range demand scenarios, constraint analysis and cost models are all inputs to these design exercises. They require conscious choices that balance the avoidance of excess capacity to limit fixed costs with the need for capacity buffers to capture upside opportunities and mitigate the impact of variability or supply disruptions.

Rightsize the Product Supply Network to Optimize Capacity Cost

Optimization of the product supply network (including inbound supply, production assets and contract manufacturers) considers long-term demand scenarios, fixed capacity and variable operating costs for owned and outsourced capacity and service requirements such as order lead times and quantities. Careful analysis of the network variables supports strategic business trade-offs to balance the financial leverage of maximizing capacity with the need for capacity buffers that provide resilience against disruptions or flexibility to respond to opportunity.

Design considerations include the following best practices:

- Optimize the product supply network for overall performance rather than individual functional cost efficiency. For example, employ site selection strategies to optimize for total landed costs rather than lowest manufacturing costs. Include evaluation of trade-offs between inventory carrying costs (including storage capacity) against freight costs to optimize for the lowest total landed cost.

- Apply supply chain analytics to evaluate design scenario options for the evaluation and mitigation of risk exposure within the network. For example, predictive analytics can calculate, based on leading indicators, the value at risk of a potential disruptive event, run simulation to compare and choose from possible scenarios to minimize the need for costly mitigation actions. Analytics might identify a high risk associated with a sole supplier and recommend dual sourcing strategies to avoid costly corrective actions in the event of supply disruption (again, like expedited transportation, overtime at factories or price premiums for materials from other suppliers after the disruption occurs).

- Identify opportunities to reroute material flow more directly and consolidate inventory stocking points or entire warehouse locations to reduce both fixed and handling costs. Account for any trade-offs involving higher transportation freight costs while considering the benefits of increased network responsiveness and the costs and risks avoided by pooling slower-moving items.
Take a comprehensive approach to designing for new products to optimize based on total cost-to-serve, including consideration of logistics costs in addition to manufacturing and raw material supply.

Balance the cost benefits of a “one size fits all” supply chain against the value and additional complexity of defining supply chain segments with characteristics that deliver distinct target outcomes and designing segments of the network to meet these target objectives.

Adopt formal design approaches to such advanced strategies as postponement and distributed retail order management for unified commerce. These require the optimal alignment of network capacity in addition to the adoption of planning and operating tactics.

Align supply network design principles with brand strategies and corporate initiatives such as sustainability and corporate social responsibility. This strengthens strategic alignment of design choices by reinforcing enterprise values for the protection of scarce resources in addition to quantifiable cost benefits and risk mitigation associated with design choices.

**Related research:**

“Break Down Supply Chain Silos and Optimize Your Network for Increased Efficiency”

“Evaluate These Factors in a Global Manufacturing Site Selection Activity”

“Integrate Network Optimization With Transportation Modeling to Enhance Your Distribution Strategy”

“Designing an Environmentally Sustainable Supply Chain Network”

“Build Agile Network Design Capabilities for Unified Commerce Success in Retail”

“Design Resilience Into Your Supply Chain With Scenario Planning to Weather the Unexpected”

**Align Organizational Structure for Cost Optimization**

Waste and risk can result from a lack of coordination between decisions across isolated functions and supply chain stakeholders. For example, while planners and schedulers within individual sites, business units or geographies make decisions to achieve local results, total network outcome may be suboptimized or achieved with more capacity, inventory and other resources than required. One of the core reasons for restructuring your supply chain organization — be it planning, procurement or logistics — is to improve the speed and effectiveness of decision making, leading to more efficient and reliable outcomes that minimize total cost. How does this work?

First, by shifting reporting relationships away from local, regional or other functional leaders (for example, by moving planning out of sales), you change the decision filters those employees apply on a daily basis. With new reporting relationships comes the opportunity to make decisions with different perspectives on goals and outcomes. Those decision filters in supply chain tend to focus on overall system cost reduction goals rather than on the optimization of one individual event, cost element or functional metric.
Second, the new reporting relationship often leads to an increase in overall expertise and skill development. For example, a demand planner within the sales organization may have little to no expertise in forecasting and analysis — it is just one of many tasks he or she performs. Once aligned to a planning discipline, however, the demand planner can develop expertise in demand analysis and statistical forecasting while also collaborating with sales to include market intelligence in the demand plan. This greater level of expertise leads to a more comprehensive approach for deeper insights, better decision making and improved overall results.

Third, reorganization can include an “aggregation” of resources that provides opportunities to leverage scale by consolidating functional activity to a regional or global level. In addition to the potential for FTE reduction, there are also opportunities to increase functional effectiveness. Back-filling for absent employees and creation of hiring and training standards are more easily accomplished. These changes require careful consideration of the balance between efficiency, responsiveness and local relationships. However, a regionally consolidated function can more easily apply advanced technology-enabled capabilities that deliver consistent results across all locations and align to support cost optimization across the broader supply chain organization.

Related research:

“Four Design Principles for Successful Supply Chain Organization Design”

“Supply Chain Brief: The Case for Expanding Supply Chain Span of Control”

“Toolkit: Gartner’s Reference Guide to Supply Chain Organizational Models”

“Supply Chain Brief: Centralizing the Consumer Products Customer Service Center for Cost Reduction and Improved Capability”

Design Products and Manage Complexity for Efficient Supply

Market demand for increased product and service choice is leading to a proliferation of portfolio options, resulting in higher complexity that constrains supply networks. This extends the time to market for new products and increases the cost to support established products. SKU proliferation also drives higher forecast error as demand is spread across more items. This contributes to a bullwhip effect that impacts warehouse inventory, manufacturing efficiency and supplier performance.

Approaches to managing complexity for a balance between market choice and supply chain cost optimization include the following:

- The first approach is to analyze the value of SKUs such as with SKU density analysis. This entails plotting out the cumulative revenue or margin contribution of products in descending order to identify the critical few that represent the majority of contribution. One CP company plots SKU health on a quadrant, based on various quantitative and qualitative characteristics such as profit, volume, value, velocity, substitutability and strategic importance. Based on which quadrant area the SKU falls into, appropriate actions are taken. Some SKUs are discontinued, others are monitored over time to leverage the sales they can generate, others are exploited and
the rest are refreshed or renovated to improve portfolio productivity and reduce complexity cost. This analysis is completed at regular intervals synchronized with the business planning and innovation cycle to govern portfolio productivity.

- Once it is clear how products are differentiated for competitiveness in the market, design approaches can be employed to provide that differentiation cost-effectively. Design reuse of components, ingredients, platforms and processes is an effective approach. Black & Decker was one of the earliest pioneers for driving the discipline of reusing standard parts and platforms, which led to an 85% reduction in labor costs. Lenovo targeted less productive items through increased use of shared platforms and components. As a result, the high-tech giant could reduce unique components by about 40% while increasing revenue by a comparable amount in just over a year. Metrics are used to measure reuse and raise alerts if it appears to be out of control.

- Metrics are also key to ensuring that innovation continues to drive growth with new products. 3M measures new product contribution to revenue. It has regularly seen one-third or more of revenue come from new products as measured by its New Product Vitality Index, which measures the percentage of 3M total sales coming from products launched in the past five years.

Related research:

“Measure Reuse in Product Design and Development to Optimize Supply Chain Performance”

“Lenovo’s Journey to Optimize Product Complexity”

“Portfolio Complexity Management Must Be a Priority for Chief Supply Chain Officers”


“Toolkit: Quantifying the Cost of SKU Complexity”

Invest in Organization and Process Transformation That Drives Value and Operating Efficiency

Efficient growth is rewarding but challenging for a surprising number of reasons. Only 60 of the 729 companies with 20 years of complete financial information in a 2017 CEB (now Gartner) study had mastered the balance between cost and risk management and invested successfully in transformative growth. They had grown profitably longer and faster than their industry peers — not just because of a superior approach to cost management but also because of a superior approach to investment. In fact, efficient growth leaders on an average operate with over 10% higher selling, general and administrative (SG&A) costs as a percentage of revenue. This higher cost reflects their decision to create the organizational capacity needed to pursue higher-risk investments with confidence (see “Executive Guidance for Q2 2017: Growth Without Limits”).
The actions described in this section involve longer time horizons and reflect conscious choice by leadership to allocate resources to the development of organizational capabilities that enable permanent and sustainable transformation to a lower-cost operating capability.

Create Management Systems and Organizational Practices That Drive Continuous Efficiency Improvement

Operations consume a significant portion of the organization’s capacity, so who is looking at the bigger picture to design cost competitiveness into the supply chain? While optimizing costs at the operational level is important, supply chains need to design processes, systems and governance mechanisms to embed cost optimization in the fabric of the organization.

Start by looking at who has the time and capability to look at the big picture around cost. Many companies have implemented centers of excellence specifically aimed at focusing resources to find opportunity, design solutions and deploy those solutions into operations. Others use these central groups to deploy lean or Six Sigma methodology across their sites. In this case, the central group is driving a shift in culture and capability around cost, empowering the sites with methodology to systemically improve cost on their own. Without these groups focused on changing the nature of process, system and capability, cost reduction can end up being tactical and short term with little actual payback.

Designing practices to reduce cost will only work if the right management systems (including processes and incentives) are in place. For example:

- Which governing group (executive committee, transformation committee, etc.) has the remit for balancing the approach for cost reduction with growth and service?
- To what extent are other governing committees (capital expense, IT) aligned with the goals and strategies of cost reduction?

The supply chain leadership team has the responsibility to create prioritization and alignment around cost optimization strategy and initiatives, providing clear guidance to the organization. They must then align the goals and incentives of various teams so that they understand what “success” looks like when it comes to balancing cost reduction with such other elements of the business strategy as growth and sustainability.

Finally, the governance group responsible for cost-reduction strategies must constantly track, monitor and realign the approach. Success can only be achieved if the leadership team is actively guiding the supply chain and providing direction and feedback.

Related research:

“Best Practices in Organizing Supply Chain Centers of Excellence”

“Creating a Governance Approach for Supply Chain”

“How to Assess Trade-Offs Between Sustainability and Operational Goals in the Hierarchy of Supply Chain Metrics”
Invest in Digital Operating Capabilities for Faster and More Precise Execution

A combination of mature and emerging digital technologies is enabling supply chains to deliver top- and bottom-line benefits. Supply chains are being redesigned to deliver products and services through new digital channels where customers expect immediate and personalized service. European retailer Argos is one example where the supply chain redesign, integration to digital channels and improved supply chain visibility led to direct home deliveries nearly doubling while removing over $126 million of inventory. Mass customization is faster and more cost-effective using the digital capabilities of 3D printing. Align Technology, maker of Invisalign dental braces, produces over 175,000 unique dental braces every day using 3D printed customized molds to make each set of braces. 3DP is also reducing product complexity. On GE Aviation’s new Advanced Turboprop (ATP) engine, 35% of the engine’s parts are 3D printed, helping to reduce what would have been 855 separate components to 12 parts.

Automation and advanced decision making are being enabled by digital. Western Digital digitalized its manufacturing and planning processes to balance customer service level, inventory and cost to serve. Its lights-off manufacturing facility uses automation and intelligence to reduce costs by 30% while achieving greater than Six Sigma quality. By using supply chain analytics, it achieved more than $22 million savings per year in capacity optimization. Some digital technologies are still just emerging, but early pilots show the potential to optimize costs. Rio Tinto has a vision for the “mine of the future,” where it aims to create an autonomous mine. The use of autonomous trucks alone will save Rio Tinto over $100 million a year. Maersk Shipping is piloting blockchain. According to the company, a container moving from East Africa to Europe could require stamps and approvals from as many as 30 people, totaling more than 200 interactions by the time it reaches its destination. By using blockchain, Maersk can eliminate most or all the paperwork, making the shipping process faster and more accurate.

Related research:

“Take a Strategic View of 3D Printing to Maximize Its Value Within Your Supply Chain”

“Guide to Aligning Digital Business and the Digital Supply Chain”

“High-Tech Manufacturing Supply Chainnovator Finalists 2017: Making the Case for Supply Chain Digitalization”

“Retail Supply Chainnovators 2017: Argos Wins for Delivering Rapid, Convenient Fulfillment to Consumers”

“Supply Chain Brief: Is the Use of Blockchain in Transportation Hype or Reality?”

“Industry Vision: Manufacturers Will Become Solution Partners in a Digital Business Ecosystem”

Transform Supply Planning to Agile, Optimized Network Orchestration

Supply planning acts as an orchestrating function for the synchronization of supply decisions across sourcing, manufacturing and distribution. Supply network constraints, particularly supply and
manufacturing lead times, create the need for careful synchronization of decisions from midterm capacity, material and inventory planning through detailed production, material and distribution scheduling.

- Midterm supply network planning must enable constrained modeling and scenario evaluation to enable effective business decisions regarding capacity and material commitments, optimized demand shaping, risk mitigation and event management.

- Operational planning time horizons and scheduling “frozen zones” must be adjusted to coordinate decisions and account for numerous product characteristics and operating constraints for the right balance between agile service, operating efficiency and inventory risk balancing.

While the concept of postponement strategy is well-understood, enablement of postponed operations is not trivial. Most postponement strategies result in extended order lead times (Gartner metrics benchmarks indicate an increase of about 20 days). Advanced high-tech configure-to-order (CTO) operators can deliver within two to four days, enabled by robust capacity and material planning combined with deep integration between order management and assembly scheduling. The support of complex configured product portfolios and integrated solutions requires this level of integration and enablement to achieve the requisite combination of scalability and late-stage customization.

- Midterm supply planning must maintain a capacity buffer rather than attempt to optimize plans based on full-capacity operation. Supply and inventory plans for raw material, parts and components must be established in place of finished goods supply and inventory plans.

- Production and distribution scheduling must be integrated with the operational demand signal, with a shorter frozen zone that allows firm orders to be scheduled within competitive lead times. Customer service requires improved operating visibility to facilitate order-promising-based scheduling details and “capable to promise” analytics.

The convergence of separate supply planning and functional scheduling to synchronized supply orchestrations has ramifications for organization structures, technology selection, model configuration and the alignment of incentives. Planning and scheduling solutions must provide integration for extended visibility and satisfactory user interface that enables planning and scheduling productivity with an emphasis on exception management. Performance metrics must be modified to put greater emphasis on service levels and total inventory while relaxing traditional incentives that use finished goods inventory to drive full-capacity utilization for minimize unit supply cost. Planning organizations will dedicate increased emphasis on model maintenance and master data management to leverage the power of analytics for complex decisions that are beyond the capability of human judgment and speed.

**Related research:**

“Supply Chain Brief: Life Science Inventory Reduction Does Not Have to Jeopardize Patient Outcome”

“Converging Supply Chain Planning With Transportation Planning Provides Efficiency Opportunities”
“2017 Strategic Roadmap for Chemical Product Supply Orchestration”

“Algorithmic SCP Redefines Planning Organization, Talent and Processes”

“Augment and Automate Supply Chain Decision Making With Advanced Analytics and Artificial Intelligence”

“Current Use Cases for Machine Learning in Supply Chain Planning Solutions”

“How Existing and New Technology Can Help Drive the Digitization of Supply Chain Planning”

**Develop and Leverage Advanced Analytics Capabilities**

Investing in a supply chain analytics center of excellence with talent that spans data science, data engineering and supply chain domain expertise positions an organization to successfully adopt supply chain analytics to target cost optimization. Data science and engineering talent will select and build advanced analytics models to better predict supply chain needs and recommend actions to minimize total costs. Supply chain experts will ensure that analytics solutions align with supply chain and business cost optimization goals and encourage solution adoption for better decision making. Examples include:

- Machine learning and other advanced analytics approaches to improved demand forecasts for complex demand related to events and served by constrained supply. Examples could include attribute-based modeling for new products in fashion apparel or agricultural activity impacted by weather and commodity markets.

- By taking advantage of available data ranging from short-term sales patterns to downstream partner data and publicly available sensing, companies can deploy analytics to sense short-term changes in demand patterns. These insights can be propagated across functional areas to avoid such unnecessary costs as additional spend for expedited transportation to reposition inventory in the network to satisfy a spike in demand.

**Related research:**

“A Framework for Measuring the Success of Supply Chain Analytics Initiatives”

“Map Your Journey to Supply Chain Analytics Excellence With Gartner’s Five-Stage Maturity Model”

“Making the Case for a Central Supply Chain Analytics Center of Excellence”

“Buy, Build or Outsource an Advanced Supply Chain Analytics Solution? Five Questions to Answer”

**Gartner Recommended Reading**

*Some documents may not be available as part of your current Gartner subscription.*
Evidence

1 A survey of Gartner for Enterprise Supply Chain Leaders in May 2018 asked members to rank their top five key initiatives. For the 186 members who completed the survey, cost optimization ranked fifth out of 16 KI choices, behind only strategy, digital transformation, talent development and improved planning. Figure 1 shows the relative priority of cost optimization compared to other selected initiatives.

2 A 2017 Gartner research survey queried 238 supply chain executives across seven industry sectors about the external forces, disruptions and opportunities facing their organizations. This included questions about their top areas of capability investment, both past spending and future plans, and those initiatives that had delivered the most value. The research was conducted from January 2017 to March 2017 in North America (57%), Western Europe (37%) and APAC (6%).

3 Gartner’s Supply Chain Benchmarking Metrics program includes measures for “inventory as a percentage of revenue” and “obsolescence as a percentage of total inventory.” Based on a combination of these metrics, median inventory obsolescence ranges from 0.18% of revenue for food and beverage companies to 0.9% for medical device companies. Other industry sectors have median obsolescence levels between those extremes.

4 Gartner’s Supply Chain Benchmarking Metrics data collected through July 2018 reveal significantly higher “order to ship” lead times for “make to order” manufacturing styles within the Industrial and High Tech sectors. Companies reporting metrics based on a “make to order” strategy have median “order to ship” lead times of 24.3 days and 30.5 days, respectively in High Tech and Industrial Manufacturing sectors. These figures reflect increases of 19.9 days and 23.1 days, respectively, compared to “make to stock” operating styles (based on reported median “order to ship” lead times of 4.4 days and 7.4 days, respectively).