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A PUBLICATION OF USC CONSULTING GROUP

VOLUME 8, ISSUE 2

# A Bottom-Up Approach to Supply Chain Optimization

In recent years, companies have studied, modeled, refined, and squeezed waste and cost out of processes to drive efficiencies and improve cash flow. But because these activities have been limited primarily to internal operations, they have not attained the full impact that might be gained from optimizing the entire supply chain.

According to Jerry Seidell, director of supply chain strategy for Tampa-based USC Consulting Group (USCCG), the stumbling block to optimizing the supply chain is that the whole concept of the supply chain is largely misunderstood in most business circles.

"The supply chain is typically viewed in a very narrow sense, but it is really all encompassing, running the gamut from supplier quality, cost, and service all the way to delivery performance, customer satisfaction, and warranty claims. Optimizing the supply chain requires examining every single node of activity in an organization and making sure they're all working in concert, that they are fully integrated and linked.

"An optimal supply chain means having the right capital investments in place for capacity, having the ability to adapt and respond, plus reliable supplier relationships that make it easier for you to react to your customers' changing demands.

*Strong supplier and customer relations are pivotal to flexibility and adaptability.*

"If systems are not integrated, you need to understand why. If employees are dissatisfied, you need to understand why. If suppliers are unhappy, you need to understand why. Each of these areas presents opportunities for improving your competitive position and growing earnings. Making no investment suggests that you are not interested in being successful."

Mr. Seidell also believes that embracing the entire supply chain may be simply too daunting for many organizations that could most benefit from its transformation, and that, absent a solid understanding of supply chain fundamentals, many organizations start their optimization initiatives in the wrong place.

"We were working with a life sciences company whose management team consisted of a lot of very bright chemical engineers and research engineers who knew nothing about the supply chain, so their senior operating executive asked us to give him a list of the 20 things he needed in order to understand it."

The result was the Supply Chain Hierarchy (see page 3), a highly effective visual that shows very clearly where the optimization process begins and how its components fit together to create a strong customer-centric organization.

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This bottom-up approach keeps the organization focused on the critical fundamental components of supply chain execution, instead of the more fickle demand forecast that traditionally has driven decision-making and problem solving.

The hierarchy, depicted as a pyramid, contains four different stages, each of which provides a platform for evaluating a firm's effectiveness and how well its resources, tools, and processes are interacting. Shortcomings in any one of these elements will influence the overall ability to serve the customer successfully.

## Ground Level

The first stage, or ground level, includes the very basic elements that drive operations and customer satisfaction. The areas that require daily and weekly attention include:

- **Procurement** – purchase price variance, supplier cost, quality assessment and on-time delivery, and total material costs;
- **Operations** - bill of material and router accuracy, manufacturing yields, cost per component, schedule attainment, schedule variances, variable and fixed overhead, case fill rate, capital investment, raw/WIP inventory, MRO inventory, capacity utilization;
- **Financial** – material costs, inventory turnover, damage and obsolescence, bulk, raw, WIP and finished goods inventory, inventory reserve;
- **Logistics** – order fulfillment, on-time delivery, total network miles, transportation cost per mile, warehouse cost per order; and
- **Customer service** – back orders, order lead-time.

Strong communication and broad visibility foster the accountability and goal sharing that drive organizational problem solving in each of the 18 elements, which range from procurement to delivery. Establishing these opportunities to identify problems, discover their root causes, and implement solutions, along with solid review practices, provides the basis for assessing the next level of supply chain effectiveness.

Strong supplier and customer relations are pivotal to flexibility and adaptability. Internal adaptability is important, says Mr. Seidell, but the ability to work with suppliers when demand shifts will provide the internal leverage to shift production schedules as needed to satisfy customer expectations.

*The most common mistake organizations make is to focus on the demand forecast….*

Suppliers are often overlooked, but if a company is willing to extend itself to share projected demand and schedule changes and work with suppliers as if they were employees, the supplier will become a valued member of the supply chain.

This means using the ERP or MRP system effectively. The most powerful tool in a company's toolkit is a common database. Everything from inventory transactions to shop floor orders to customer fill rates needs to flow through one database to capture activity and measure performance effectiveness. This makes it available to decision makers at all levels and encourages the kind of communication that captures opportunity and rectifies inefficiencies.

## One Step Up

At the next tier, supply chain flexibility, supply chain leaders can assess alternatives for meeting either internal or external challenges. Because of the supply chain's dynamic characteristics, supply and demand variables create multiple challenges on a daily basis. Whether these are manifested as supplier constraints or customer demand variability, the firm's ability to respond will be the difference between success and failure.

For example, limited availability of key components can constrict the supply chain's ability to respond to growing customer demand. Invariably, the most critical elements in the assembly or service practice are the most constrained. The more prepared a company is to find alternative resources or components or to adopt more realistic timelines, the more successful it will be.

In one recent case, a company engaged USCCG to help improve its forecast accuracy to better manage the material shortages it was experiencing. When the consulting team delved into the issue, they learned that the company had switched its component sourcing from a nearby three-state area to Asia a year earlier. Although this proved more cost effective, the company had failed to recognize how this change would impact their ability to turn around finished goods for their customers. As demand increased, it no longer took only a few days for the company to receive materials, but 60 days, which took company management by surprise.

USCCG's examination of the entire operation led them to recommend the company reassess its procurement processes, including its MRP and ERP systems, which would allow them to build a common informational database

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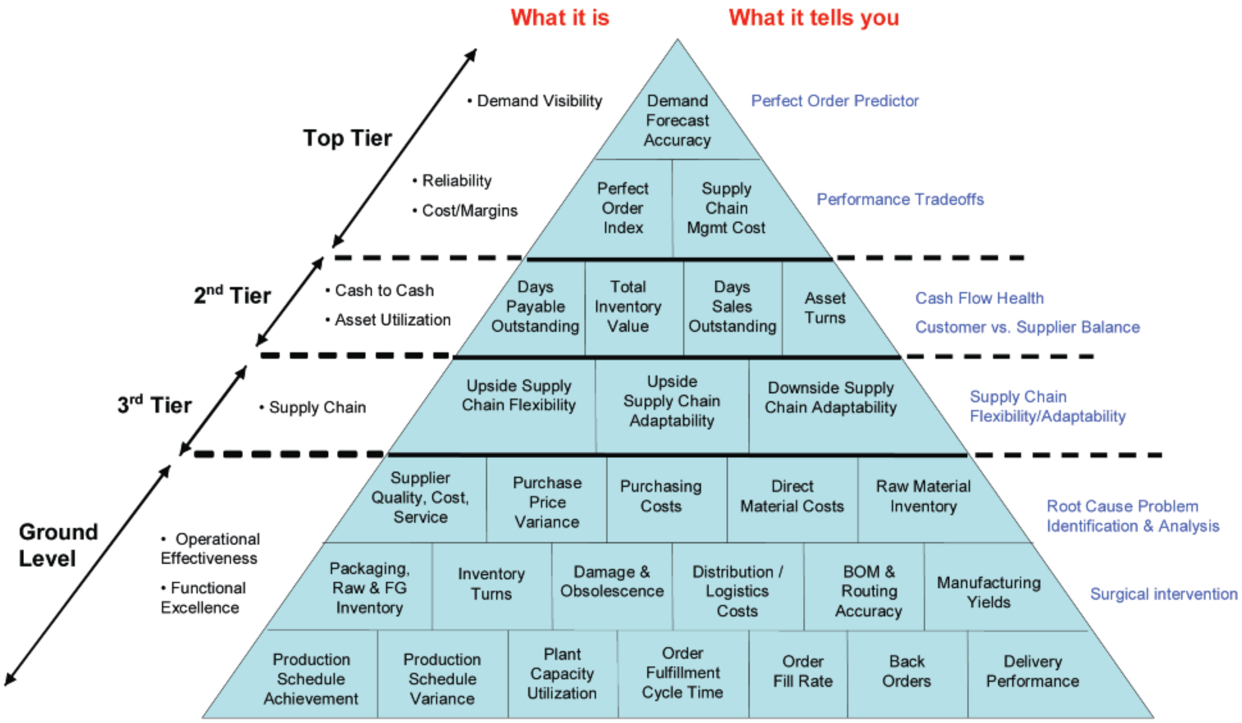
# Supply Chain Hierarchy




for use by everyone from suppliers to delivery schedulers. In addition, the company revised its plans for procuring components to include sub-assemblies, which would shorten manufacturing time.

Highly visible contingency planning and communication across the entire organization ultimately provided the kind of flexibility and adaptability this company needed to meet its customer demands.

### The Next Stage

Managing a firm's assets is the next stage, which is addressed in the second tier of the pyramid. Cash flow health is a key part of sustaining the supply chain. Cash flow health is often controlled by the finance team, but is influenced by the entire team. Cash flow, working assets, and liberated cash are the fuel for product development and innovation. Key elements here include inventory management, supplier payment, and customer receivables. Each of these is built on sound ground-level activities like accurate invoicing practices, qualified supplier relationships, and disciplined inventory practices. When these elements are not monitored well, an organization's cash stream can dry up and cash diverted from development and innovation. When errors arise, pools of resources are deployed to quickly assess the cash flow impact, always a costly disruption.

### The View from the Top

At the top tier, reliability and cost margin measurements provide the executive team with indicators for evaluating overall effectiveness. Performance trade-offs are well understood when cost and execution metrics are fully visible to the C-suite.

The demand forecast is critical to the execution of the organization and it completes the triangle, but it cannot be the only element to be addressed for refinement. Demand planning drives organizational planning and behavior, but open collaboration is the enabler that drives an effective supply chain. And it's important to remember that the forecast is exactly that – a forecast! It is a

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dynamic, living estimate of projected demand and it will change the moment it's published. Certain teams will want to hold individuals responsible for that one forecast number, but the focus should center on the assumptions instead.

The most common mistake organizations make is to focus on the demand forecast, not realizing how fruitless this can be. Mr. Seidell avows that even a world-class demand forecast is generally only about 80 percent accurate, which means there is a 20 percent variable at any given time. Companies must understand that the forecast is never static; it is totally flexible and moves as customer demand changes, often at the most inopportune times.  This is very frustrating for most management and operations people who traditionally have executed to forecast.

Companies must develop a strong, fundamental understanding of how their business runs and how it is being monitored and measured to better respond to demand changes. By ascending the supply chain pyramid, activity is naturally extended from vendors and procurement to customer delivery and visibility. Shared data advances the opportunities to invest effectively and drive overall customer volume for the long term. This is where technology plays a key role and where USCCG has deployed its LINCS®, or Lean Information Control System, to great advantage.

The LINCS tool provides the ability to "drill down" and understand specific performance by product, operating line, factory, or product family. With this visibility, performance can be quickly assessed by location and by specific attribute.

As an example, if fill rate and on-time delivery were critical measures to be evaluated by location and customer, LINCS would provide the real-time visibility needed to isolate performance by product, delivery carrier, and customer location. This is particularly helpful when trying to isolate high-priority issues and resulting performance issues.

At one food processing company, weekly reports on shipment deliveries were published, but the information was available only after the fact, which led to reactive management practices. With LINCS, the company was able to look at daily performance measures by customer to ensure that deliveries were on time and complete.  If performance was not to the established targets, LINCS allowed the company to quickly probe for the cause of the problem and communicate with the customer regarding the impact. Carrier performance was examined in the same fashion. All of this resulted in the food processor's ability to capture on-time delivery by shipment and measure each delivery by carrier and purchase order.

With LINCS, performance is measured proactively and is highly visible across the entire supply chain. This visibility provides real-time information that can be viewed all the way from the CEO's office to the warehouse floor at any given time.

**The Benefits**

The benefits of optimizing the supply chain are obviously financial, but the intangible rewards are equally valuable. Improved interaction and collaboration among employees, derived from having better visibility into operations and their own personal role in a company's health, enhances employee satisfaction. And happy, energized employees drive the kinds of results that can help establish a solid reputation for consistently producing and delivering quality products and responding to customer demand that generates the long-term volume growth so necessary for ongoing success.

*Gerald A. Seidell, director of supply chain strategy at USCCG, holds Executive Supply Chain Leadership certification from the Massachusetts Institute of Technology (MIT). He earned a Bachelor of Science degree in business administration from Ferris State University in Big Rapids, MI, and his Masters degree in public administration from Carnegie Mellon University in Pittsburgh.*

Jerry Seidell will lead a discussion on "Transforming Your Supply Chain" at the Council of Supply Chain Management Professionals (CSCMP) 2008 Annual Global Conference in Denver, CO, in October.  He will specifically address how companies often attack transformation with demand planning when, for better results, other issues should receive priority attention. Mr. Seidell will talk about what steps should be followed in the transformation process, as well as implementation flow, strategy, organizational impact, and measuring changes for improvement.

Participants in the discussion forum are limited to 25, so early registration is encouraged. For more information on the conference, visit http://cscmp.org/.

# Length-of-Stay: An Inadequate Measure of Patient Flow

*By Matt Carroll, Project Manager*
*USC Consulting Group*

Numbers should be the backbone of every business decision, no matter the industry. Unfortunately, using the wrong number or too many numbers creates confusion and bewilderment.

Using only one number on which to base a decision can be misleading, particularly when this indicator is poorly selected or it is not used in conjunction with other key measures. On the other hand, using too many numbers can cloud decisions by creating a lack of focus, lack of timeliness, and, ultimately, a lack of confidence.

For example, if a team manager focuses only on a baseball player's batting average in his selection process, he will miss a lot of other valuable facets in the player's game. If he considered two baseball players with batting averages of .300 and .270, respectively, he may choose the player with the higher average. But we all know that there are other important statistics, including home runs, RBIs, stolen bases, and fielding percentages, that should guide his decision in selecting the best player for his team.

Then again, some information, such as home field batting average during the day, how the player fields balls hit to his left side, how he hits on grass fields, etc., is interesting, but not essential to the selection process. This is simply too much information.

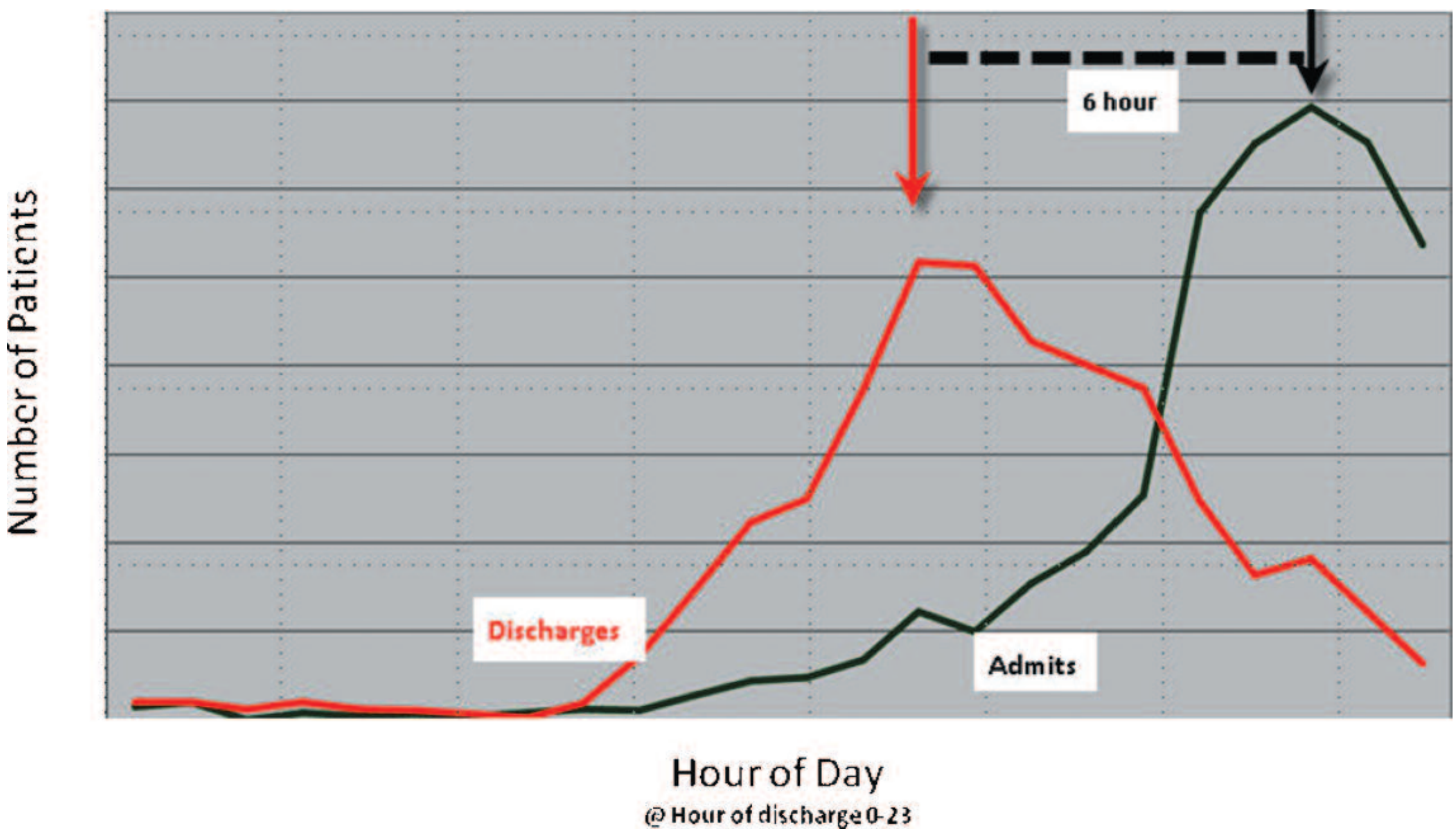
Let's apply this same kind of thinking to the hospital setting, where managers are fixated on length-of-stay (LOS) as the only measure of patient flow. In fact, many hospital scorecards are inundated with LOS trends and ratios (e.g., LOS by DRG or LOS by physician, etc.). But this laser-like focus on LOS can actually harm the patient flow effort because it tends to shift attention to a smaller percentage of patients, instead of the large number of patients that represent the bulk of a hospital's daily activity.

Worse, LOS is a poor indicator of patient flow because it is an imprecise snapshot of conditions taken in the middle of the night. When it comes to patient flow, what's important is *the time of discharge*; in other words, hours count, not days. If a patient who could have been discharged at 11 a.m. actually left at 6 p.m. and the hospital was on ambulance diversion for three hours between 11 and 6, the LOS measure would not push this issue to the surface. But adding an indicator that tracked percentages of discharges by noon would.

From another perspective, patient flow can be hurt if the hospital staff is perpetually measured, rewarded, and criticized on LOS. Every hospital has a few outliers that dramatically impact LOS, and while these outliers might have economic consequences to the hospital and should certainly get attention, their impact pales in comparison to the total impact of lost patient market share. Outliers have great influence over the numbers: often their LOS is five to 10 times longer than the typical patient. But, they typically represent less than five percent of the total census. In fact, losing just a few patients due to poor patient flow could easily negate a year of work on the outliers. As the CMO of a client hospital recently stated, "We are focused on the one barge stuck in the mud instead of trying to clear the main channel."

Making LOS a priority leads the care team staff to spend their mornings exhausting all options to minimize length-of-stay for the low number of "barge-stuck-in-the-mud" patients instead of spending their time on the mainstream or "easy" discharges. Thus the majority of patients wait while the minority of patients receive a disproportionate amount of time and attention. If the same care management team were to truly focus on patient flow, they would prioritize their activities to ensure that the non-outliers, the typical patients, are unencumbered through the discharge process. Unfortunately, *numbers* don't guide this behavior.

When the primary indicator for driving patient flow is length-of-stay (LOS), a predicable pattern emerges: famine and feast. A dearth of available beds in the morning is followed




by a mountain of beds late in the afternoon. Unfortunately, the demand for hospital beds peaks about four to six hours before they are available, and then remains constant into the early evening. When demand remains constant and supply is created later in the day, there will be long waits in the emergency room and PACU, physicians who can't find beds for their patients, and ambulance diversion. This results in inexplicable waiting, which leads to loss of revenue, loss of market share, damage to physicians' relationships, loss of community support, and so on.

Imagine shifting patient flow to earlier in the day, without considering LOS. Now the care management focus moves from the difficult cases to the easy discharges early in the day. Patients leave at an even pace throughout the day, smoothing out the supply of beds and better meeting demand. There is no extra work added, only a change in the daily routine. Focus for the current day becomes the mainstream discharges in the morning, followed by the more difficult discharges later and then working on the anticipated discharges for the following day.

For example, if three beds can be freed up early in the morning by focusing on the mainstream, an additional 15 people can be moved through the Emergency Room, assuming one in five will be admitted. Small things like this can have a big impact on patient flow.

To implement this type of behavioral change, it is critical to develop multiple key indicators that track the performance of the "main channel" and keep the "barge" numbers at the end of the scorecard and out of the spotlight.

When this happens, patients are seen in a timelier manner and receive the correct level of care. Physicians are able to place the right patient in the right bed and nurses have a happier patient who is stabilized more quickly. Administration is happy, because diversion is decreased or eliminated and patient satisfaction increases.

The unintended benefit of this type of behavioral change can be a decrease in length-of-stay without it being the sole indicator and focus of the care management staff. Working on patient flow *can* decrease length-of-stay, but focusing on length-of-stay *cannot* increase patient flow.

# New BDE to Bolster USCCG Northeastern Region

Stephen Capuano has been hired by USC Consulting Group, LLC (USCCG) as business development executive for its Northeastern U.S. region.

Mr. Capuano brings to his new post more than 25 years of strategic sales experience with IBM Corporation. He began his career with IBM as a new business client representative and rose through the ranks to software account manager. His industry focus has included distribution, insurance, manufacturing, and retail. He was most recently client manager with Champion Solutions, a Boca Raton, FL-based technology and services provider.

According to Alan Reid, USCCG regional manager for the Northeastern U.S., "Stephen's comprehensive knowledge of a broad range of information technology solutions and the benefits they offer in a variety of situations will be invaluable. His proven ability to provide clients with the best solutions available is a perfect fit for us."

Mr. Capuano holds a Bachelor of Science degree in computer science from the College of Staten Island. He has completed the Harvard University professional curriculum, the Master's Negotiation workshop, and the full spectrum of certification in information technologies. He resides in Monroe, NJ.

# PE Firms Can Profit from More Timely Visibility

Current economic conditions demand increased levels of interaction between private equity firms and their portfolio companies, according to George W. Coffey, president of USC Consulting Group, LLC. In declining business conditions, it is critical to make adjustments early enough to maintain asset performance.

"When business conditions begin to erode," says Mr. Coffey, "the difference in value between early recognition, accompanied by timely action, and a delayed response is substantial and warrants instituting fundamental reporting disciplines."

"Private equity firms must be able to look into their businesses at multiple levels. This requires establishing and using a set of key operational metrics that will provide real-time visibility into the state of operational performance."

He cites two problems that PE firms face when attempting to attain this kind of visibility: limited accessibility to data and the discipline to regularly review the metrics and hold the appropriate parties accountable for meeting goals.

To overcome these, Mr. Coffey recommends that PE companies adopt methodologies and technologies that can bridge the gap between line and PE managers. He provides an in-depth look at how this is done in a white paper he co-authored with USCCG Director of Finance and Administration Tom Klebeck. *Timely Visibility Improves Performance of Portfolio Holdings* speaks directly to the opportunities available to PE firms for shoring up troubled holdings and sustaining or improving stronger portfolio companies. Gains from such timely visibility into the causative drivers, or key performance indicators, explains Mr. Klebeck, can drive as much as 10 to 20 percent improvement in EBIDTA.

For more on USCCG's in-depth insight on how PE firms can capture impressive financial rewards through greater operations visibility, access the white paper at www.usccg.com.

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*First we make it work. Then we make it last.®*

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Produced by Meta Marketing, Inc. Designed by Zelen Communications.