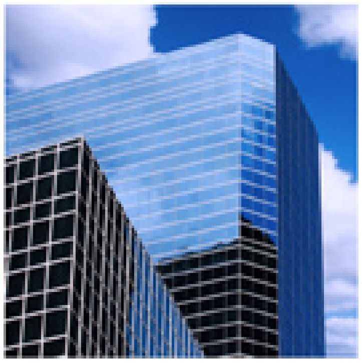
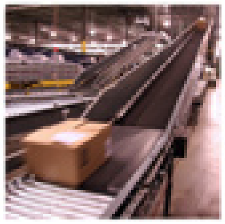



Next Generation Supply Chain Management

The Integration of Planning and Execution

CSCO insights






About the Report Authors

Dan Gilmore is editor of *Supply Chain Digest* and a lead researcher at CSCO Insights. He has nearly 20 years experience in many areas of the supply chain, from his early days as a practitioner to roles in marketing, consulting, and as a supply chain industry analyst.

He was Chief Marketing Officer at a leading supply chain software company before founding SCDigest in 2003. He is known as one of the industry's most important thought leaders, as well as being among its most prolific writers and speakers.

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Executive Summary

Most of us have moved through our supply chain careers with a model that divided the supply chain process and technology world into "planning" and "execution" domains.

It's interesting to consider that for many years, there was really not much discussion about how to integrate planning and execution. In fact, most of us have all seen various iterations of supply chain planning models that show, for example, strategic, tactical and operational planning phases – with "execution" not even on the printed page.

We are certain that this hierarchical, serial model of supply chain planning and execution is undergoing substantial changes, which will dramatically impact how we think about and practice the craft of supply chain management.

With time compression in the supply chain and the availability of real-time, multi-level supply chain visibility, planning and execution processes will become increasingly blurred. Real-time feedback loops will dramatically reduce the latency that exists for most companies today in terms of seeing and responding to the supply chain and market place results.

Companies will plan "only as far in advance as they need to" – and for most that will be far less further ahead than they do today.

These conclusions are supported by our survey of over 300 companies, for which respondents clearly identified the need for better integration of planning and execution and the significant benefits achieving that integration can bring.

For example, just 11% of our survey respondents said that planning and execution operated like a single integrated process in their companies today. In contrast, an amazing 92% of respondents say their companies need to get to a high level of integration of supply chain planning and execution in the next 3 years.

S&OP is Important – but not Enough

A growing number of companies place a high level of importance on the Sales and Operations Planning (S&OP) process, and rightly view S&OP excellence as an important component of integrated planning and execution.

S&OP excellence is essential to integrated planning and execution, but by itself is not enough. S&OP helps align the organization, perhaps even superbly, across a set of objectives and a common forecast, but S&OP alone will not get companies to the "Sense and Respond" supply chains that will ultimately define supply chain leadership and true integration of planning and execution.

We see four levels in this journey:

Baseline State: Mediocre sales and operations planning processes; planning and execution processes that are disconnected and operate largely in silos

Phase I - The Basics: Improved S&OP, a single view of demand, and enhanced feedback loops to planning from execution

Phase II – The Real-Time Supply Chain: Sensory networks, real-time visibility, intelligent alerts, and decision-support dashboards

Phase III - Sense & Respond Networks: Next generation supply chain technologies, changes to hierarchical planning models, multi-level visibility, and new organizational structures

As one survey respondent noted, "You have hit on a very good topic here. Better integration of planning/execution will be the next big trend."

We believe it is even more than that. For a period of time, those companies that can well integrate planning and execution will enjoy competitive advantage and superior operational and bottom line results. Soon, achieving a high level of integration between supply chain planning and execution will move to become a competitive necessity.

Ultimately, companies will significantly redesign existing processes and organizational structures to fully realize the opportunities that a sense and respond supply chain can deliver.

As never before, technology and information flow will be needed to power this transformation. Multi-level supply chain visibility, a synchronized view of demand, robust analytic tools to support enterprise S&OP, continuous use of network planning and optimization tools, supply chain dashboards – these are among the technology-enabled capabilities that will be deeply intertwined with the new integrated planning and execution paradigm.

We are excited about this analysis and the journey that lies before us all.

It's time to get started.

A New Vision for Supply Chain

In many respects the practice of supply chain management has made incredible strides over the past two decades of the "supply chain era." This is especially so since the beginning of the 21st century, when the level of SCM sophistication and focus really began to accelerate.

Yet there is still much room to grow.

Despite great efforts, inventory levels have reached a plateau in many industries and companies. Complexity is wreaking havoc on supply chain processes, and many are unsure whether to simplify their way out of it by eliminating customers, products and suppliers, among other actions, or to try to achieve competitive advantage by becoming a "master of complexity" and harnessing the power of change.

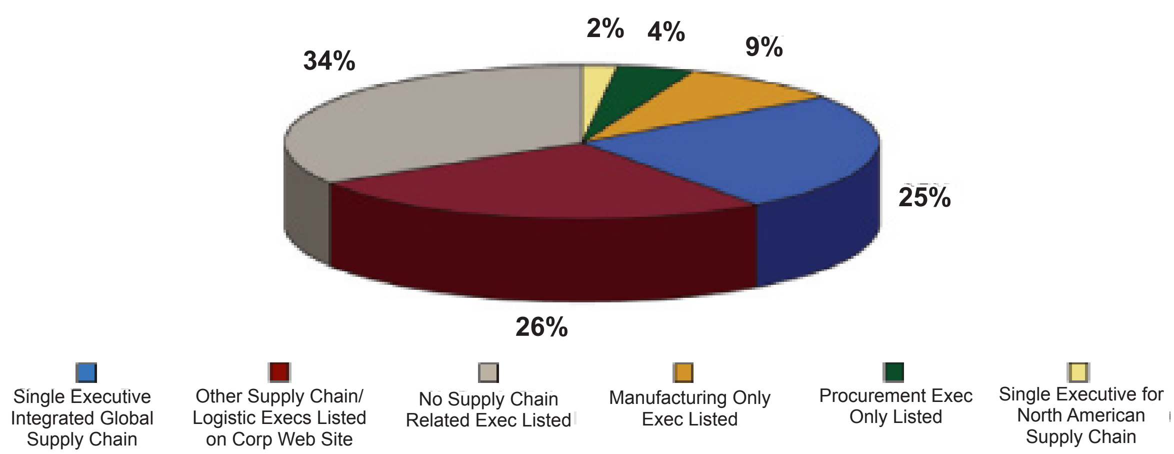
In fact, there is little doubt we are operating our supply chains in the toughest overall environment we have ever faced.

While there has been much progress in integrating the supply chain, it is clear that many companies still battle functional silos. An executive at IBM, for example, recently noted that they must continually strive to battle "local optimization" at the expense of overall supply chain results, even after IBM spent 10 years successfully integrating its vast global supply chain operations.

Few companies have gone that far. In fact, a 2008 Chief Supply Chain Officer study of the Fortune 125+ product-based companies found that only 26% had an integrated global supply chain organization under a single executive (see illustration nearby.)

Companies are also struggling to deal with supply chain complexity. SKU proliferation, longer global supply chains, sourcing and market development in emerging market economies, channel proliferation, the increased focus on supply chain risk mitigation and other factors are making supply chain planning and execution increasingly complex.

Senior Supply Chain Executives Structure: Fortune 100+



"Companies are starting to realize that this Complexity Crisis is crippling them, destroying their profits, and draining their resources," author and former corporate CEO **John Mariotti** says in a recent book on the topic.

It's easy to understand the many challenges increased complexity puts on supply chain operations: more products to forecast and plan, more supply chain variability, demand signals emerging from new and varied sources, and more.

It is ironic that in many cases the programs and innovations put in place to generate growth cause such a high level of demand volatility and demand unpredictability that the resulting execution failures create a loss of both top and bottom line growth.

In the face of all that, there is a relentless focus on reducing supply chain costs. When companies have real or potential top line revenue issues, the reaction in most of them is to look for the supply chain to bail them out on the bottom line by removing still more operating costs. The pressure from Wall Street and other financial markets to meet earnings per share numbers is intense and unrelenting.

Supply Chain Digest recently spoke with a supply chain director at consumer products giant Procter & Gamble, who as part of his role does a lot of joint benchmarking with other consumer goods and retail companies.

"Everywhere I go, it's about the same," the executive told us. "Wall Street pressures are putting incredible pressure on supply chain managers."

A recent survey by analyst firm Gartner found similar results – most companies put cost reduction, rather than more strategic initiatives, at the top of the supply chain priority list.

However, leading companies will have a higher level of expectations regarding the importance of their Supply Chains. While cost-focused supply chain improvements continue to improve the bottom line, the next challenge will be to fully align the Supply Chain with the strategic intent of the business and effectively execute growth objectives. To accomplish this, both the longer term and short term planning processes must be aligned throughout the entire enterprise to ensure that the supply chain organization executes in a manner that delivers on revenue, profit and customer service expectations.

It is ironic that in many cases the programs and innovations put in place to generate growth cause such a high level of demand volatility and demand unpredictability that the resulting execution failures create a loss of both top and bottom line growth.

Impact of Shorter Product Lifecycles

In most industries product lifecycles are declining dramatically. That's true not only for technology-based products, which inherently have short product lifecycles as competitors in the industry release new products in the category, but increasingly in more traditional consumer and industrial products.

Why? Because competitive knock-offs now reach market it seems almost over night.

It almost might be more appropriate to talk about shortening ***gross margin cycles***, as companies must increasingly grab profits early in the product lifecycle before competitive improvements or knock-offs lead to rapid declines in price points and margin dollars.

In a related vein, in the consumer goods and retail sectors an increasing percentage of revenues and profits are driven by promotional products and campaigns. Given this growing importance, it's no wonder that the focus on RFID in the consumer goods to retail supply chain has really moved to improving the effectiveness in promotional goods, rather than the basic supply chain blocking and tackling of overall goods movement.

As a result of both shortening product/margin lifecycles and increased reliance on trade promotions, a company's effectiveness in optimizing decisions during the product lifecycle and in executing promotions has a growing impact on the bottom line.

Changing Information Environment

At the same time companies are facing these supply chain pressures, there are profound changes in the availability of information that can dramatically impact supply chain processes.

The days of serial, hierarchical information flows are nearly at an end. Today, we are already in the early stages of the real-time supply chain, where information about supply and demand is not only visible and available in near-real time, but can easily be shared broadly within the enterprise and with its trading partners.

As **Nick LaHowchic**, former president of The Limited Brands' Logistics Services unit, and **Dr. Don Bowersox** of Michigan State University recently wrote in their insightful book ***Start Pulling Your Chain – Leading Responsive Supply Chain Transformation***, "A many-to-many supply chain architecture offers the potential for all participating in the "network" to simultaneously share identical information across the entire supply chain in real-time…The advent of simultaneous real-time visibility constitutes an enormous technological breakthrough having far reaching implications."

We are indeed at the start of the "zero latency" world, the ramifications of which we are only beginning to understand.

CSCO Insights believes that the distinction between planning and execution in many areas will be increasingly irrelevant, as companies achieve continuous and near real-time feedback loops between the real-world and today's traditional planning processes.

The Nature of Supply Chain Planning and Execution Must Change

As a result of all these forces, and our growing understanding of what makes supply chains work effectively, we must rethink our approach to planning and execution.

For many years, the industry has divided the supply chain landscape into "planning" and "execution" processes. Supply Chain Management was organized to support the internal processes of "plan," "source," "make," and "deliver." This created functionally driven supply chains and operational silos that failed to connect the network as customer back to supplier. This conceptual framework served as an underpinning for how software vendors were "organized" (e.g., "supply chain planning" vendors and "supply chain execution" vendors), how companies organized themselves internally, and how processes were designed.

But that world is changing. While we will always have "planning and execution," the two processes must clearly become more integrated, and be seen more directly as simply different ends of one long supply chain process continuum, more so than distinct functions and processes.

As with any continuum, the edges between adjacent points on the line are blurred, not sharp. While there are and certainly will continue to be differences between, say, long term strategic supply chain planning and supply chain network planning (on one end of the continuum) and very execution-focused processes such as direct store delivery of consumer goods to retail on the other end, in the middle the distinctions between planning and execution processes will begin to dissipate.

In a "sense and respond" supply chain, just what is planning and what is execution?

CSCO Insights believes that the distinction between planning and execution in many areas will be increasingly irrelevant, as companies achieve continuous and near real-time feedback loops between the real-world and today's traditional planning processes. This change will also help foster and/or require that the functional and process silos that still exist in many companies break down even further.

In the end, it will simply be about alignment – having the entire extended supply chain fully and flexibly working together to meet the needs of the business and maximizing profit and shareholder value in alignment with customer demand.

Multi-level, real-time visibility, next generation supply chain decision support and optimization tools, new supply chain organizational models, and increased understanding of how to close the loop between planning and execution will combine to create the next paradigm of supply chain management excellence.

Companies should begin to set their sights on this target today.

"Multi-level, real-time visibility, next generation supply chain decision support and optimization tools, new supply chain organizational models, and increased understanding of how to close the loop between planning and execution will combine to create the next paradigm of supply chain management excellence.

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Major Research Study on Integrated Planning and Execution

With a goal of understanding the importance and benefits of much more fully integrating supply chain planning and execution, in mid-2008 CSCO Insights executed a significant web survey of supply chain managers and executives on the topic of integrated supply chain planning and execution.

The results were interesting, and clearly showed that while in most companies the integration of planning and execution have a long way to go, the need for better integration and new ways of thinking are high on the priority list, and that such improvements offer the opportunity to deliver a wide range of top and bottom line benefits.

We received more than 300 responses from companies in a wide range of industries. Some of those companies are listed below, but in general they represented a wide and appropriate spectrum across vertical industries and size of companies. A number of supply chain executives participated in the survey.

Sample Companies in Survey Population

Ace Hardware	Engro Polymer Ltd.	Mission Foods, Inc.
ADTRAN	Estee Lauder	National Starch
Agilent Technologies	Fastenal	Newell Rubbermaid
American Eagle	Ford	Owens Corning
Arrow Electronics, Inc.	GE Medical Systems	PepsiCo
Ashland Inc.	General Mills	Philips Healthcare
Ashley Furniture	Georgia-Pacific LLC	Primark
Bealls Inc	Giant Eagle	Procter & Gamble
Best Buy	GlaxoSmithKline	Red Spot Paint
BI Chemicals	Greif, Inc	Robert Bosch LLC
Brightstar Corp	Hannaford Brothers	Rockline Industries
Cadbury Schweppes plc	Hanover Direct	Sealed Air
Campbell Soup Co.	Hawker Beechcraft Co.	Sherwin Williams
Canadian Tire	HH Gregg	Siemens
Canon USA	Honeywell	Solvay Pharma
Cardinal Health	HP	Sony
Carter’s Inc.	Hudson’s Bay Co.	Suzuki Motor Co.
Chatsworth Products	IKEA	Target
Cisco Systems, Inc.	International Paper	Texas Instruments
Clorox	Iron Mountain	The Coca-Cola Co.
Colgate Palmolive	JC Penney	The Gap
Continental Mills	Johnson & Johnson	The Goodyear Tire Co.
Cooper Tire	Kroger	The Timken Company
Coors Brewing Co.	Kraft Foods	Tim Horton’s
Danka Office Imaging	Leiner Health Products	Tyco Electronics
Del Monte Foods	Lexmark International	Unilever
Delphi	LG Electronics	Urban Outfitters
Dow Chemical	Lifeway	VWR International
Dow Corning Corp.	Limited Brands	Walgreen’s
E&J Gallo Winery	LL Bean	Whirlpool
Eaton	Long’s Drug	William-Sonoma
EchoStar Technologies	Malt-O-Meal	World Kitchen
Emerson Electric	Menard’s	Wyeth

In this section, we will present and comment upon key results from the survey. In general, we asked respondents to answer questions at whatever the appropriate level was in terms of company organization – that is, it could be for the entire company, or for an individual business unit or division, depending how the company's supply chain processes were structured.

Disconnects Between Supply Chain Planning and Execution are Real

To get a sense of where the integration of supply chain planning and execution are going, it's important to assess where we stand now. The clear consensus from our respondents is that most of them have much room for improvement.

How well integrated is supply chain planning and execution at companies today?

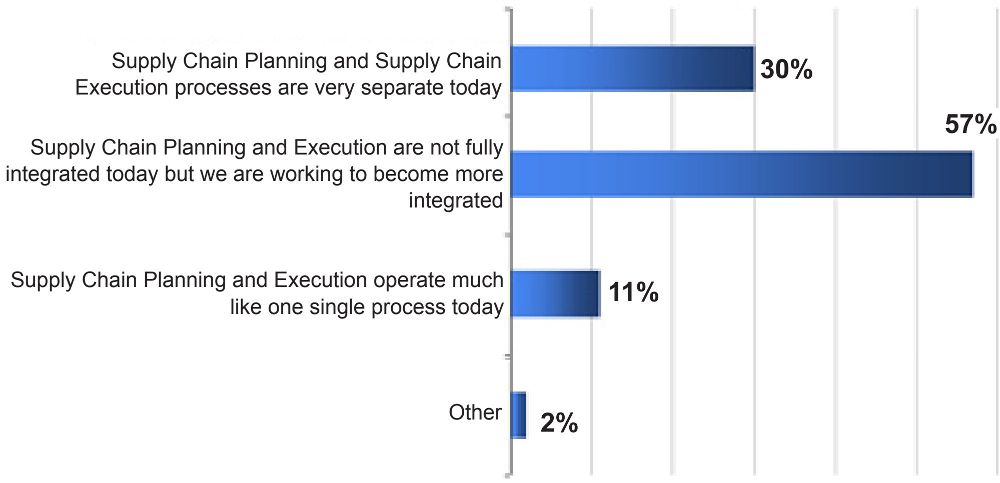
Just barely more than one-tenth (11%) of the respondents said planning and execution operated like a single integrated process today. Nearly three times as many (30%) said that planning and execution processes operated very separately right now.

Most (57%) believe they are somewhere in the middle – modestly integrated today, but on a path to become more fully integrated over the next few years.

That effort will take time, as one respondent in the consumer goods industry noted: "To better integrate planning and execution deeply is a major effort, and it will take years. What you hope is that changes in leadership in that time don't derail the effort."

The Key Takeaway: There is a high level of consensus that few companies have yet reached high levels of integration between planning and execution.

Categorize Supply Chain Planning and Execution at your Company/Division



> ***"It's at the troop level where integrated planning and execution really come together, and in some cases execs may not be close enough to the battle to understand those disconnects."***

Do Executives Over-Estimate the Level of Integration?

We were also interested in comparing the results of supply chain executives (VP and above) with those in lower level management positions.

This was interesting: executives believe planning and execution were well integrated at their companies at levels more than three times that of the overall overage (34% versus 11%).

Who's right?

Our bet is on the overall responses. It's at the troop level where integrated planning and execution really come together, and in some cases execs may not be close enough to the battle to understand those disconnects. Also, for executives there would be a certain amount of self-criticism in a low level ranking of planning and execution, so more favorable assessments from that group should not be surprising.

One Key Takeaway for Executives: Have you really looked at this issue in any real detail? How would you really assess the level of integration and alignment in your organization?

Barriers to Better Integration of Planning and Execution are Many

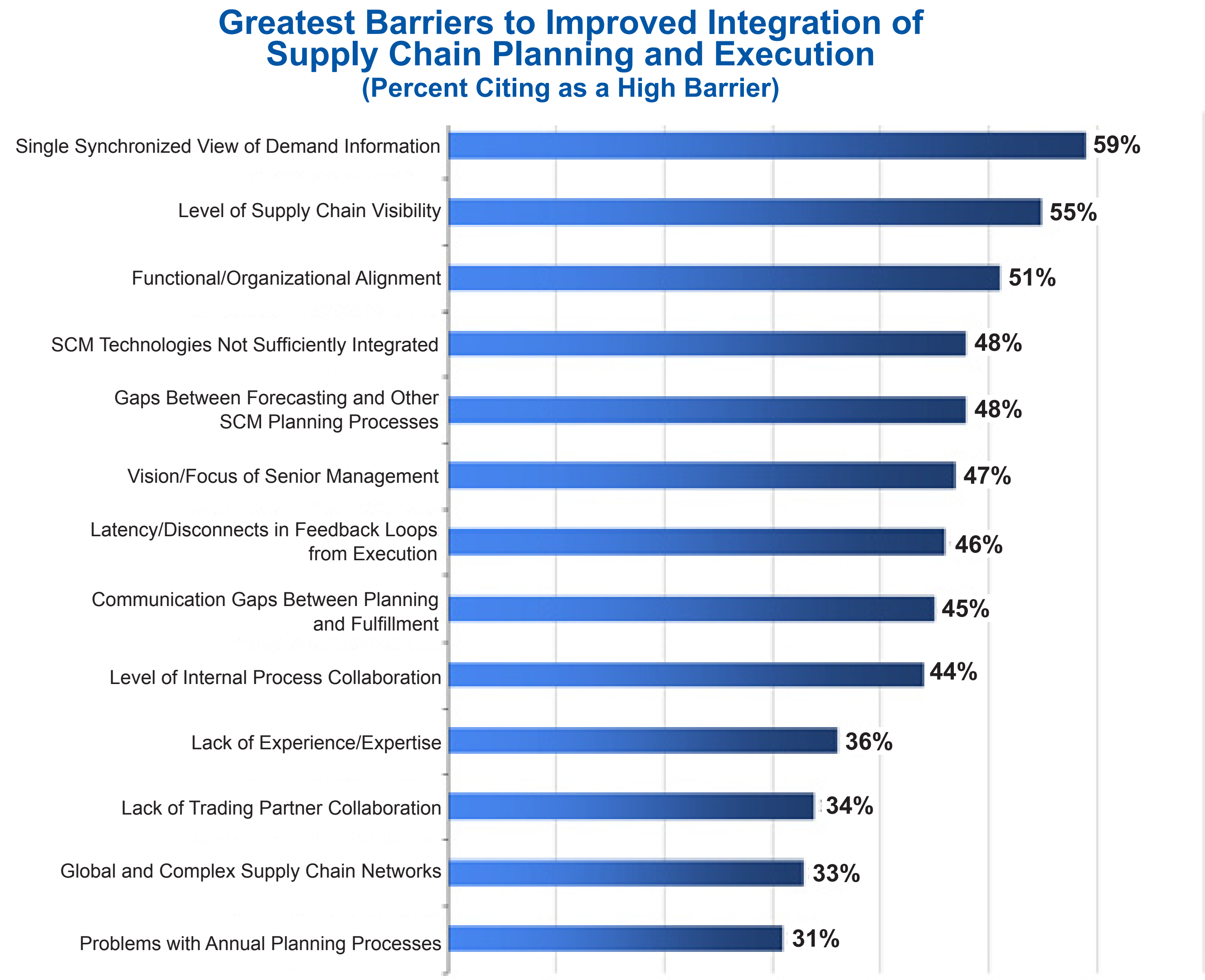
Many companies recognize they do not have high levels of integration between supply chain planning and execution. Why is that true? What are the barriers?

We believe that fundamental to the current state is simply where most companies are in terms of overall supply chain evolution. In fact, supply chain industry thinking itself has only just now begun to explore and detail this new, more integrated model, of which this report will serve as a key step.

But companies do perceive a number of specific barriers to better integration of supply chain planning and execution.

We asked respondents to rank the importance of a number of barriers to reaching improved levels of integration.

Almost every one of the barriers we listed were rated as fairly significant by respondents, an indication of the number of challenges that exist to better integrating planning and execution.



But there were nevertheless several barriers that were rated as the most significant.

As shown in the chart nearby, the top barriers cited by respondents were:

1. "Achieving a synchronized view of demand information," reflecting, we believe, the challenge of moving the supply chain to a more pull-driven model.
2. "Level of Supply Chain visibility"
3. "Basic functional/organizational alignment of the company"
4. "Integration of supply chain technology."

Why was "Achieving a synchronized view of demand information" rated so high? One respondent from the consumer goods industry explained her response this way: "Lack of clear demand signals across channels is a significant problem" in terms of better integrating planning and execution. "We are being pulled and tugged in a different direction," she said.

All told, every barrier was cited as high by at least 31% of respondents, and 9 of the 13 categories were rated as high barriers by at least 44% of those surveyed.

We were actually a little surprised that "Supply chain network complexity" did not score higher among the listed barriers. In fact, one respondent noted that "We are now running a much more virtual supply chain, and it's a lot harder to synchronize."

Our theory is that perhaps many respondents viewed the basics of integrated planning and execution processes to be the same regardless of network complexity.

The Key Takeaway: The path to better integration of supply chain planning and execution will take some time, as most companies will need to chip away at multiple barriers. At the top of the list, however, seem to be barriers related to information availability and flow.

Companies Have Aggressive Goals for Improvement

"One respondent summed it up this way: 'You have hit on a very good topic here. Better integration of planning/execution will be the next big trend.'"

While the vast majority of respondents do not believe their supply chain planning and execution processes are well integrated today, improving that condition is a high priority for most companies.

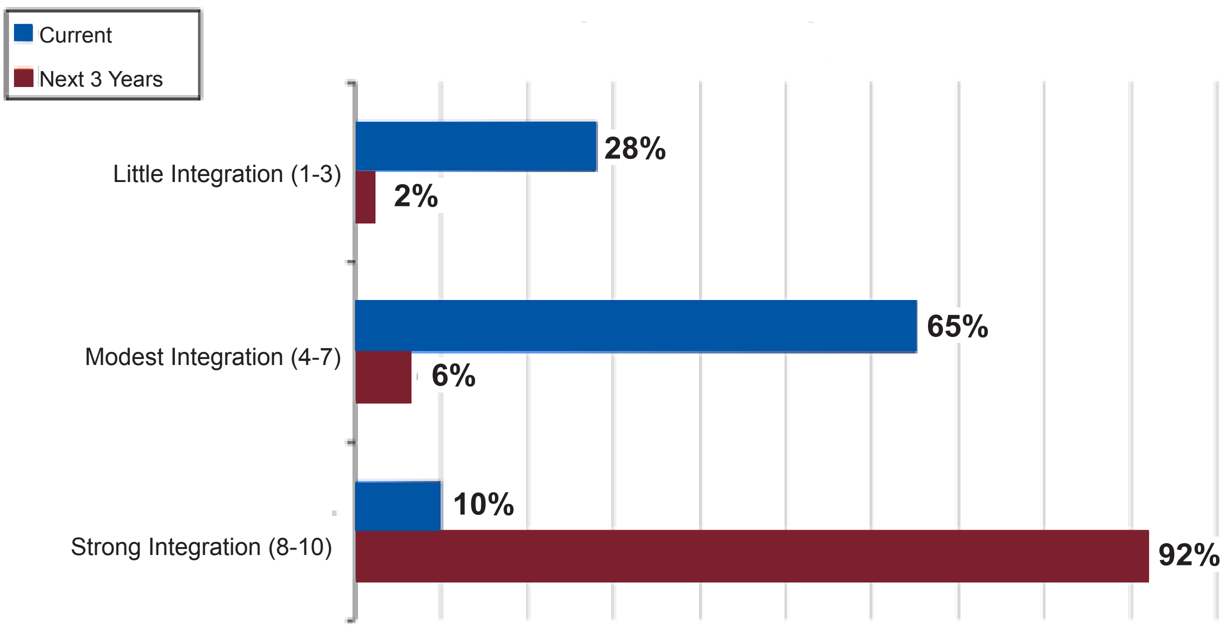
It is interesting to look at a comparison between where companies say they are today, and where they hope to be in the next 2-3 years.

As shown in the chart nearby, for example, while just 10% of companies said they currently had a strong/high level of integration between planning and execution, an astounding 92% say they need to be at that level in 2-3 years.

Only 6% said they needed to be at a modest level of integration, and just 2% indicated a low level of planning-execution integration would suffice.

One respondent summed it up this way: "You have hit on a very good topic here. Better integration of planning/execution will be the next big trend."

Current State Versus Need Next 2-3 Years for Better Supply Chain Planning/Execution Integration



Benefits from Improved Integration Expected to be High

It's clear why companies believe it is important to better integrate supply chain planning and execution – they expect significant benefits from reaching that goal.

Our survey question, which asked about expected benefits, reinforced that the vast majority of companies have much room for improvement. In fact, just 1% said they were already at such a high level of integrated planning and execution that they did not expect much additional operational improvement.

The vast majority (60%) expect significant benefits from their plans to improve integration of planning and execution. 34% expected moderate impact, and 4% a low impact.

It is likely that the response to this question may involve not only the level of potential benefit, but how much a company thinks it can accomplish over a given time frame.

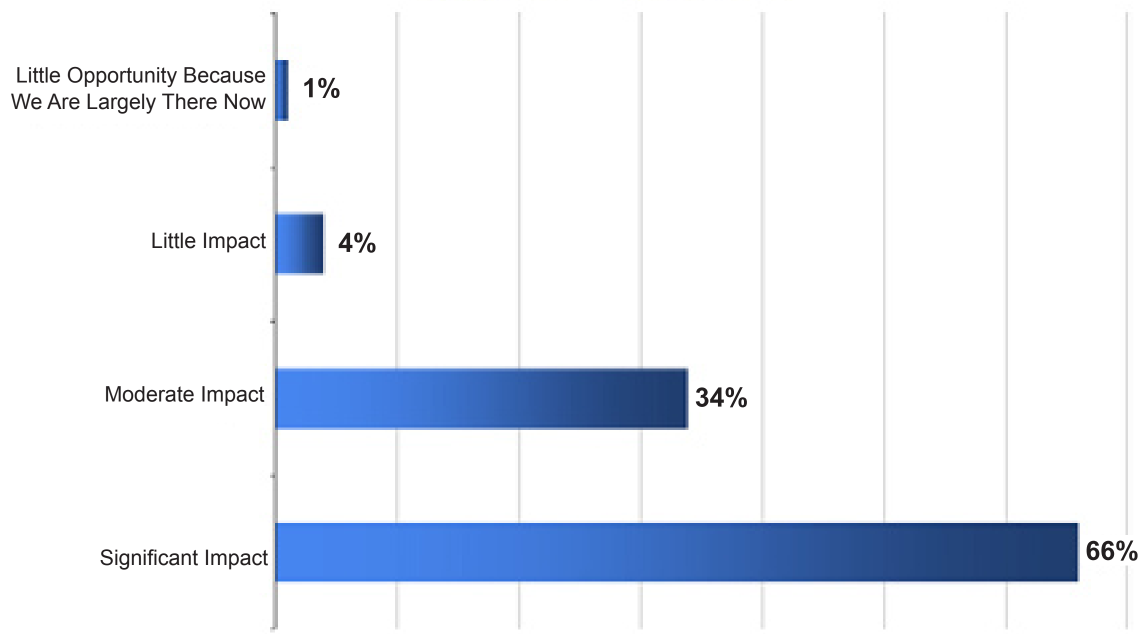
One retail company supply chain director, for example, said, "I would expect only moderate results because I think in the next few years we will only make moderate progress in this area."

The specific areas where respondents expect to see beneficial results is the usual list of high-level supply chain metrics, but is interesting to look at nonetheless.

More than three-fourths of respondents (77%) rated improved customer service as a high potential benefit, making it the top response. That was followed by improved inventory management/lower inventories (71%), reduce out-of-stocks (68%) and reduced supply chain/operating costs (66%).

The more top line oriented areas received lesser but still strong support, with 49% citing increased revenue growth as a high impact area from better integration of planning and

Level of Expected Impact from Improvement in Integration of Supply Chain Planning and Execution



CSCO insights

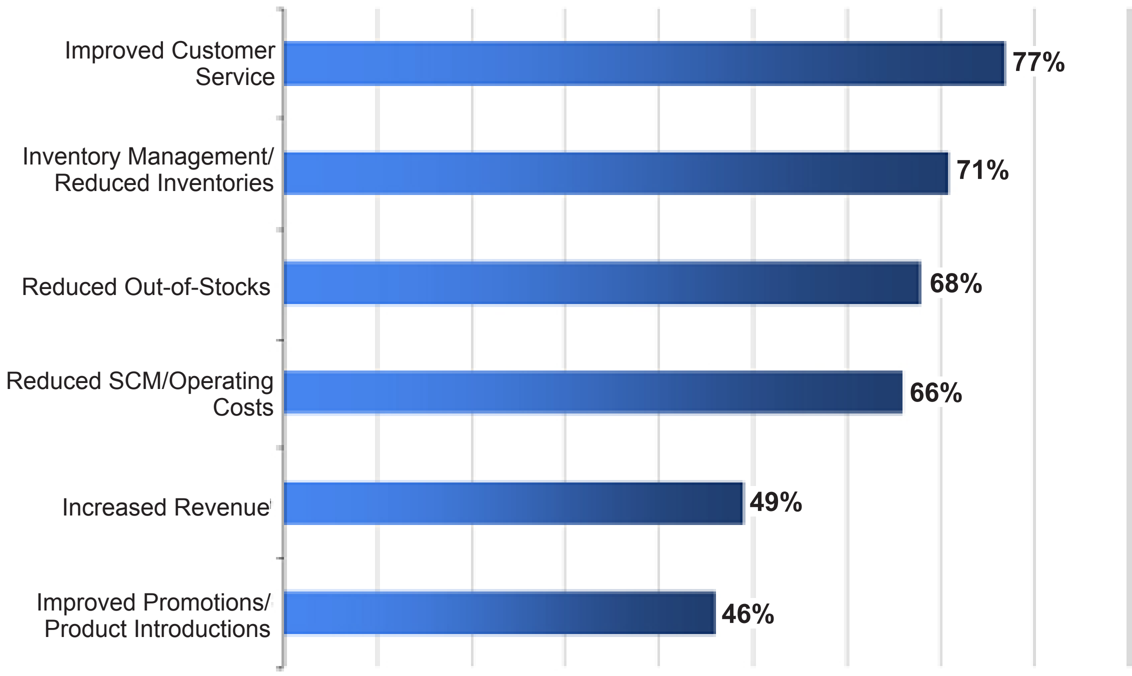
execution, and another 41% citing management of promotions and new product introductions.

Of course, improvements in areas like customer satisfaction and reduce out-of-stocks should have a direct impact on top line revenue, but our supply chain-oriented audience probably is more mentally connected to the cost and customer satisfaction areas than the top line of the company.

We also believe that better integration of planning and execution is especially critical for both successful promotions, especially in the consumer goods-to-retail value chain, and new product introductions (NPI) across all industries. Improvements in either of these areas should also impact revenue and profits favorbably.
This perspective was re-enforced by the vice president of supply chain management at one high tech company. He said in an interview for this report, for example, that for his company, "getting research and development better integrated with supply chain planning and execution" was the next step for them in their supply chain journey, and an important step to improve NPI processes.

The Key Takeaway: There was as much consensus on the benefits of improving the level of integration of supply chain planning and execution as there was on the current lack of such integration today. Most companies appear to have aggressive goals of getting there in the next 2-3 years. Whether it will really happen is the question. We predict that most companies will make good strides, but that it will take longer than they hope.

Key Expected Benefits from Improved Integration of Supply Chain Planning and Execution



Companies Embrace Multiple Strategies for Getting There

With the near complete agreement that their companies do not have high levels of planning and integration, and that there are substantial benefits – and even competitive necessity – to increase that level of integration, we wanted to understand what strategies respondents believed were key to getting there.

Not surprisingly, in many ways these strategies reflect the mirror image of the barriers companies perceive, as we discussed previously. In other words, key strategies by necessity must involve overcoming in some way those barriers.

But seeing the responses does offer interesting insight in terms of what actions companies are planning to take.

We offered respondents a series of possible actions and asked them to rate the level of importance in terms of a strategy to improve integration of supply chain planning and execution:

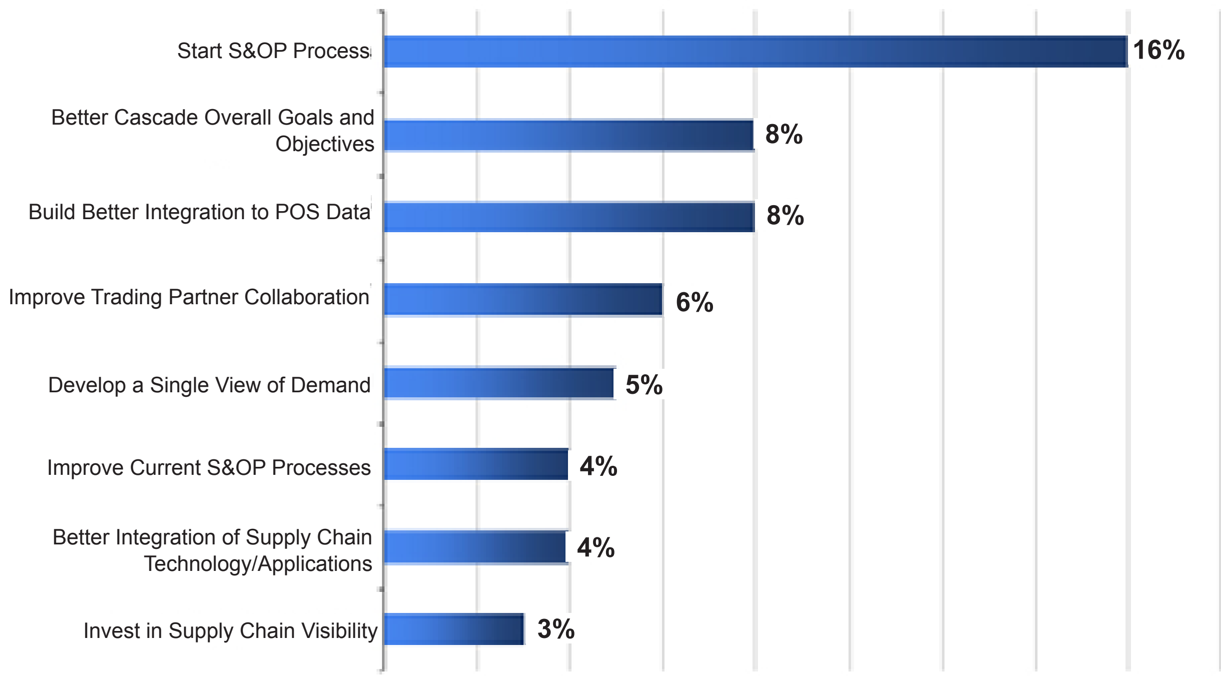
- Not a priority because "we are already there now"
- Low priority
- Medium priority
- High priority

The question was designed to measure in which areas that impact integrated planning and execution companies believed they were in "good shape."

As can be seen from the chart nearby, the area for which the highest percent of respondents (24%) said they were in good shape was in "Starting Sales and Operations Planning (S&OP) processes."

That actually seems like a low number to us, given that generally more than half of companies

Strategies for Improving Integration of Supply Chain Planning and Execution: Areas Where Companies Say They Are in "Good Shape"



say they are doing some form of S&OP. We would have thought a much higher percentage would have said they were OK in this area.

We suspect some may have mixed this up mentally with category of "Improve current S&OP processes," for which only 4% indicated they needed no further improvement.

Almost amazingly, in no other area did more than 8% indicate they were "in good shape" with little need for improvement. Only 3% of respondents, for example, said they did not need to invest more in improving supply chain visibility.

The results are basically reversed for the areas where companies said they are placing a high priority, though with some changing of the order.

Perhaps not surprisingly, the top strategy (49% of respondents) for better integrating planning and execution is to better integrate the supporting planning and execution technologies.

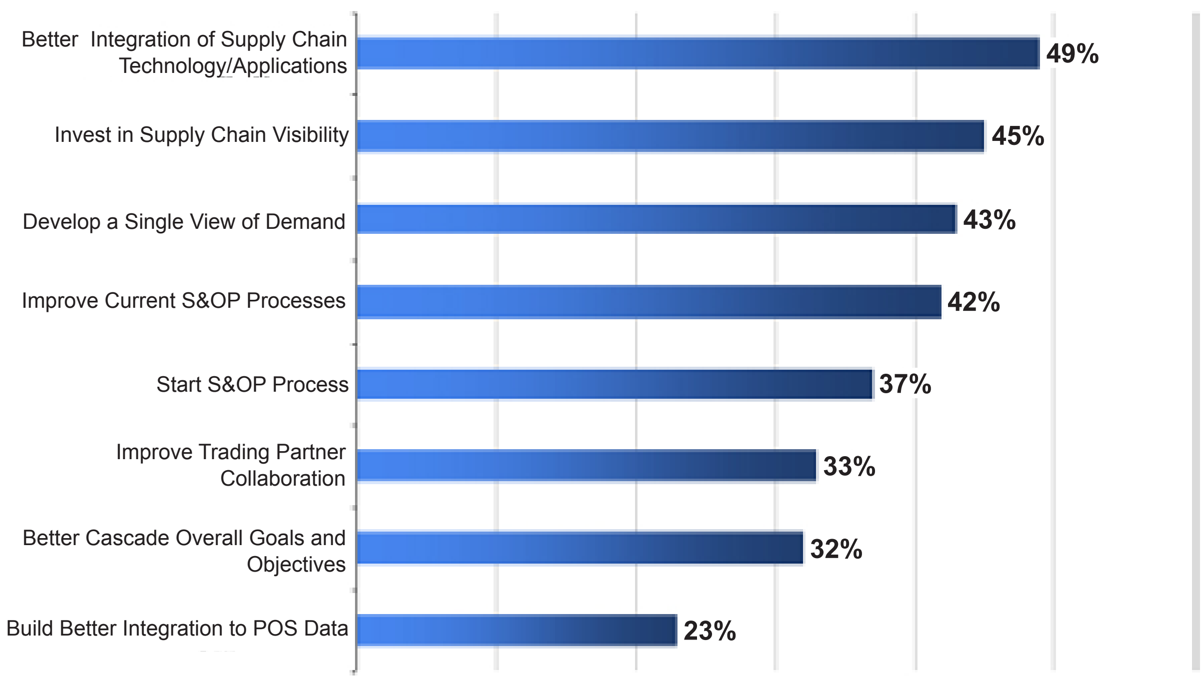
That was followed by improving supply chain visibility (45%) and developing a more integrated view of demand (43%).

As per other data from the survey, this re-enforces the position that technology generally and enhanced information flow specifically is a pre-requisite for improved planning and execution. While improved visibility and technology integration alone will not be sufficient for reaching new levels of integrated planning and execution, the survey consensus and our own position is that it is fundamentally a necessary component.

We were a little surprised that "Build better integration to Point of Sale (POS) data" scored fairly low overall at 23%, since as we will detail in the next section closing the loop between end consumption and the planning processes is a key to improving that integration.

But raw numbers in our survey are deceiving. While POS data can be meant to indicate end

Strategies for Improving Integration of Supply Chain Planning and Execution: Areas that are of "High Priority"



> *"When we looked at just consumer goods related companies, 53% actually cited better integration to POS data as a top priority."*

consumption from channels in any segment, it has definite consumer goods to retail connotation. When we looked at just consumer goods related companies, 53% actually cited that as a top priority. Many non-consumer goods companies may have thought POS data did not apply to them, though in reality end consumption data is critical in almost every sector.

One consumer goods industry respondent actually suggested that we didn't quite get the question correct, though we were on the right track.

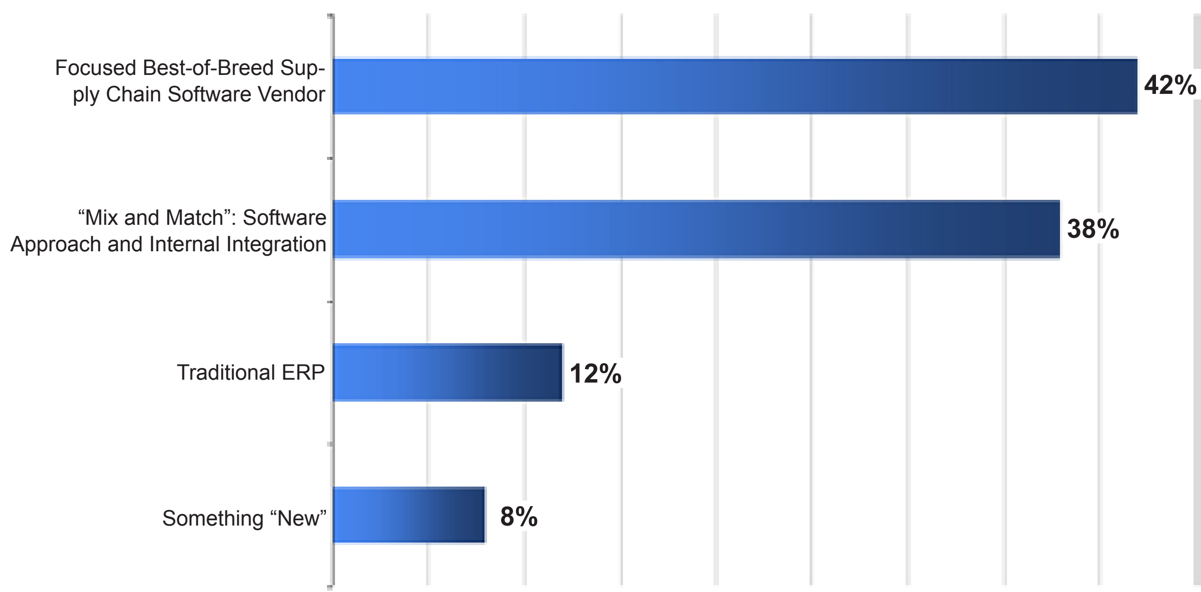
"The issue isn't really acquiring POS data, if that's what's meant by integration," she commented. "The issue is how to use it, and how to integrate it into planning and execution processes. That is a high priority."

The Key Takeaway: Few companies seem to believe they have reached the level of maturity and excellence they need for better planning and execution in any area. Interestingly, however, technology related areas in general scored somewhat higher than process-related areas in terms of priority. This could be viewed as indicating the desire and foundation is there from a people and process perspective, but the technology tools are not yet in place.

Who Will Deliver the Supply Chain Technology Solutions?

As noted below, the survey results support the common sense view that integration of supply chain planning and execution applications is a key element of better integrating those processes.

Who Can Best Deliver on Integrated Supply Chain Planning and Execution?



But what is the path for getting there, and what types of approaches/vendors offer the best path to reach those integration goals?

A “focused” best-of-breed vendor with planning and execution capabilities” came out on top, favored by 42% of respondents. The second place response, at 38%, was a “mix and match” approach to supply chain applications. That showing surprised us a little. That was followed by traditional ERP at 12%, and “something new” at 8%.

Some comments from responders add color to those numbers.

“It’s hard to get what you need from a single vendor to do this, so a mix and match style is needed,” one respondent noted. This could also mean that some respondents who voted “mix and match” meant combining ERP systems with one or more best-of-breed supply chain solutions.

Another respondent offered a different perspective, “I think to really get to integrated planning and execution will require a new set of technology tools,” and not surprisingly this respondent selected “Something new” as what is needed.

One respondent selecting “Focused Best of Breed” provider said that “The vision for integrated planning and execution suites is here, but we need to see if vendors can really deliver.”

Finally, one respondent said that “Whatever your supply chain software strategy is, you need a solid ERP foundation” upon which to capture transactional data in an integrated way.

The Key Takeaway: Clearly, our respondents saw best of breed solutions in total as offering the best path to solving the technology challenge. Together, “Focused best of breed” and “Mix and match” (which implies at least a partial best of breed strategy), were selected by 80% of respondents. We think believe this signifies recognition that getting to a high level of integration is a specialized problem that requires focused solutions. ERP can and should provide the transactional foundation for support of integrated planning and execution processes, but will not have nearly as strong a position in delivering robust integrated planning and execution systems, especially for companies with complex supply chains and/or those for whom supply chain excellence is highly critical to overall company success.

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The Data Clearly Indicates the Opportunity

Clearly, we are in still in the early stages in our evolution towards better integration of supply chain planning and execution processes and technology.

By several measures, our data showed most companies believe they have not yet well integrated those processes. This is consistent with other studies that have shown that most companies have only begun to get good at Sales & Operations Planning, clearly one of the foundations for achieving a more integrated state.

As we will discuss in the next major section, despite progress by most companies in S&OP, S&OP excellence alone is not enough by itself to fully achieve integrated planning and execution. Companies recognize there are many other barriers and strategies in play.

At the same time, the data also clearly indicate that the vast majority of companies see significant opportunities to improve performance through better integration of supply chain planning and execution, and are anticipating a strong array of operational, customer service and top and bottom line benefits. As leaders move down this supply chain continuum, they will not only reap these financial and service benefits but ultimately gain competitive marketplace advantage.

This will change the game from being one of "benefits achievement" to "competitive necessity."

There are a wide variety of potential strategies being considered to close the planning/execution gap, but in the end most relate to achieving a more "pull-oriented" or "demand-driven" supply chain, using visibility and information flow to drive alignment, reduce latency, and improve decision-making.

We looked at the responses by different vertical industries, but did not find any noticeable differences in the results. Overall, it appears the challenges, benefits and strategies that companies perceive in terms of better integrated supply chain planning and execution are quite similar across sectors.

We did tend to see some differences in the responses between supply chain executives and those of with directors and manager-level titles, primarily in the area of executives tending to perceive a higher level of integration than do those mid-level employees. We would attribute this to several factors, including the fact that as executives responsible for the supply chain they might be more biased towards viewing those operations positively, and also due to the fact that the disconnects between planning and execution may be more visible to those actually in the trenches.

With that data as a foundation, the next section will provide CSCO Insights' view on where the integration of planning and execution is headed, and how companies can best reach this state.

This will change the game from being one of "benefits achievement" to "competitive necessity."

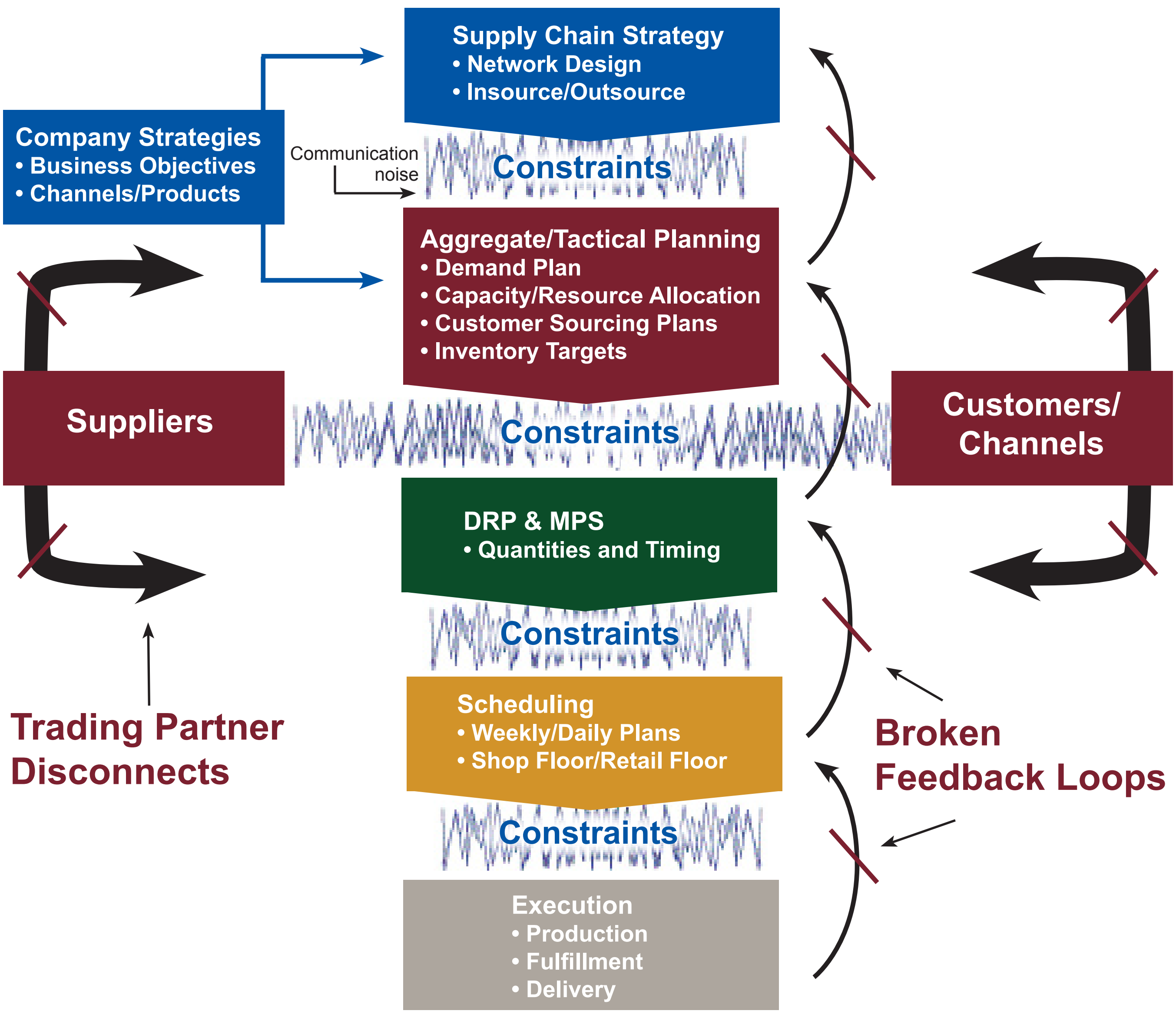
The Path to Improving Supply Chain Planning and Execution

No company sets out with the goal of poorly integrated supply chain planning and execution. Indeed, most companies, as our survey data supports, have achieved moderate levels of such integration.

But it's hard to get to a more advanced levels.

As shown in the accompanying illustration, even for companies with advanced supply chains, there is often a loss of "fidelity" in moving strategies, goals, and plans progressively down from the top through mid-level planning and ultimately to execution. This certainly can become even more difficult when communicating with external trading partners, and trying to achieve synchronization with their activities.

Hierarchical Supply Chain Planning Model



In addition, it is difficult, especially with most current technology stacks, for planning at the top levels to well consider execution constraints elsewhere in the supply chain. This inherently leads to disconnects between planning and execution, as plans are adjusted to meet these realities.

Those challenges in achieving "top down" integration of planning to execution are mirrored in disconnects in feedback loops back up the chain. In many cases appropriate feedback loops do not exist, are broken, or have a significant amount of latency in them.

Top down cascading can also create "reality gaps" in annual plans that cause execution failures, in part by excessively stretching growth and financial targets that can't be met. Without the proper feedback and synchronization, business plans can remain poorly aligned, improperly funded and resourced, and left with inadequate supply networks. Execution of the plan becomes doomed to failure at the time of the annual plan development and even S&OP process excellence can't help it – the plan is basically "DOA".

"In reality, it often takes us a couple of months to realize whether the promotion we planned and executed really was successful," the VP of supply chain for a large consumer packaged goods company told us.

It is clear this must change.

A number of factors, in fact, are pushing companies to address these challenges and improve integration of supply chain planning and execution.

The most important of those is simply the logical and continued evolution of supply chain thinking and sophistication. As planning and execution disciplines improve individually, the opportunity to better link those processes, and in fact blur them significantly on the boundaries, is the natural next phase of SCM maturity.

The recent focus on making supply chains more "demand-driven," and moving from "push" to "pull" supply chain models, is a closely related aspect of this evolving SCM maturity. The supply chains of many companies are finally acting on the principles understood from early on in supply chain thinking that end customer demand should largely drive the activities and decisions of the rest of the supply chain.

Driving that evolution forward, of course, is the unprecedented level of global competition. In that environment, companies that cannot achieve continuous supply chain improvement simply lose their competition position and fail to meet corporate financial expectations. For many leaders, better integration of planning and execution – in some cases representing the beginnings of significantly new supply chain models – is the next logical step.

Finally, the good news is that a number of exciting new technology developments are providing a foundation today that can at last well enable integrated planning and execution. Those include:

- Progress in the breadth of software suites (i.e., including both planning and execution capabilities)
- Better integration among the components of those supply chain suites
- New web and related technologies to empower visibility and collaboration
- Emerging technology that supports integration and blurring of planning and execution processes

We'll discuss these in more detail at the end of this report.

At the same time, there are some headwinds to this evolution. Supply chains are becoming more complex and longer for most companies, the result of product and channel proliferation, accelerated product lifecycles, globalization, virtualization and other factors. The higher the level of supply chain complexity and the greater the number of partners involved in execution, the more difficult it likely will be to well integrate planning and execution processes.

However, as one respondent to our survey noted, "As our company has become more virtual, it is increasingly important that we focus on integrated planning and execution to make sure we are all rowing in the same direction."

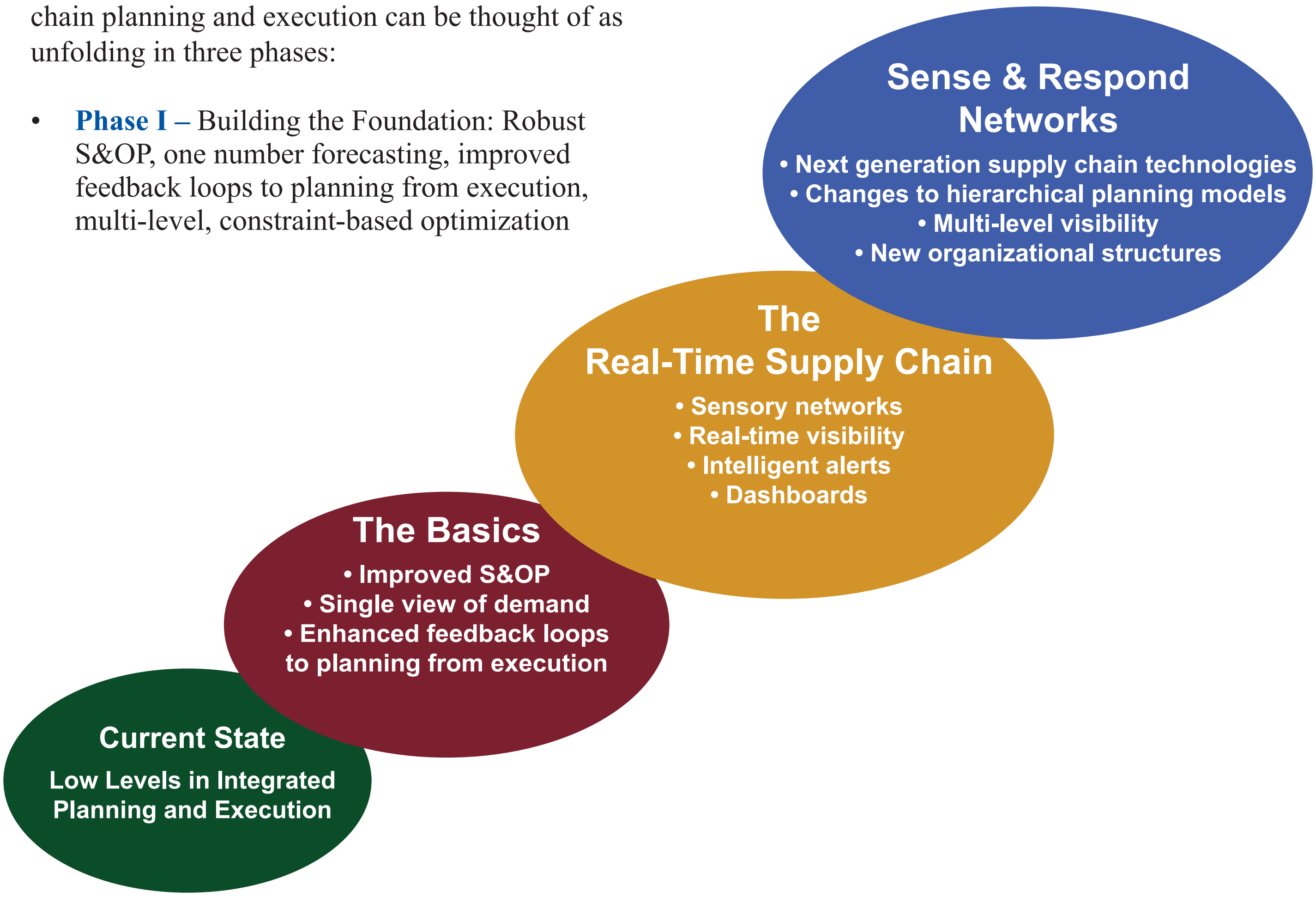
In the end, planning and execution will not only become more integrated, but also start to blur. In the traditional, hierarchical supply chain planning model, the "operational" planning level and supply chain execution will increasingly be viewed as a single process, reacting flexibly and rapidly to real-time demand and supply intelligence. Tactical and operational planning will also start to see diminished distinctions.

We believe that the journey to integrated supply chain planning and execution can be thought of as unfolding in three phases:

- **Phase I –** Building the Foundation: Robust S&OP, one number forecasting, improved feedback loops to planning from execution, multi-level, constraint-based optimization
- **Phase 2 –** Leveraging The Real-Time Supply Chain: Sensory networks, real-time visibility, intelligent alerts, dashboards
- **Phase 3 –** Sense and Respond Networks: New generation supply chain technologies, changes to hierarchical planning models, highly integrated systems and processes and in some cases entirely new models, multi-level visibility and planning

Common to all three levels is that they mature and improve planning and execution as information becomes more transparent, real time, and highly visible throughout the enterprise, internal and external collaboration and feedback increase, and connectivity and synchronization of all business processes improve.

In the following section, we look at the key characteristics and technology support in each of these three phases.



Building Robust Sales and Operations Planning Capabilities

It has almost become a cliché but yet it is nonetheless true: most companies do Sales & Operations Planning, yet few do it well.

Effective S&OP is a necessary but not sufficient state to reach world class levels of integrated planning and execution. Merely performing some of the basics of an S&OP process such as Sales and Supply Chain collaboration for forecast development is insufficient to achieve operational excellence and significantly improve planning and execution.

How can companies improve? In the table nearby, we present an S&OP maturity model that looks at processes and capabilities at four levels, from "laggards" to those we can consider "world class."

Value/Risk Level	Process	Organization	Information	Systems
Leader - Value Maximized	Fully integrated Supply Capability and Demand plan reconciled internally and with Trading Partners, with integral link to company financial performance/metrics; integration of NPI/PLM.	Sr. Executive owns the process with high involvement in leading and optimizing utilization.	Timely and accurate with internal and external linkages. Full analytical and decision making capabilities. Organization wide transparency.	Suite of integrated S&OP modules linking internally and externally (eg., customers and suppliers).
Established with On-going Improvements	Well integrated cross functionally. But internally. Process accountability in multiple functions with good and consistent performance.	Sr. Management leads the process. S&OP culture exists with trust and understanding of the process. Linkage to individual performance assessment.	Available in an integrated manner. Good quality. Consistent data integrity used in plans.	Effective and integrated. Business Dashboards in place. Can dissect plans and results apropriate to function and level. Good linkage to order to cash.
Fundamental	Elements are in place and plans are aligned. Some improvements are achieved.	Responsibilities are understood at the middle management level but process is mostly run by Supply Chain.	Information is available but in separate systems and not fully visible organization wide to enable analysis and decision making.	Individual systems are reliable but may be difficult to use in an integrated manner and needs manual intervention.
Laggard - Business Plans at Risk	Process controls and responsibilities not clearly defined.	People dependent - reliance on the heroic efforts of a few experts.	Lack of linkage of supply, demand and financial info. Many reporting gaps.	Basic and disparate systems requiring multiple duplicate entries and manipulation.

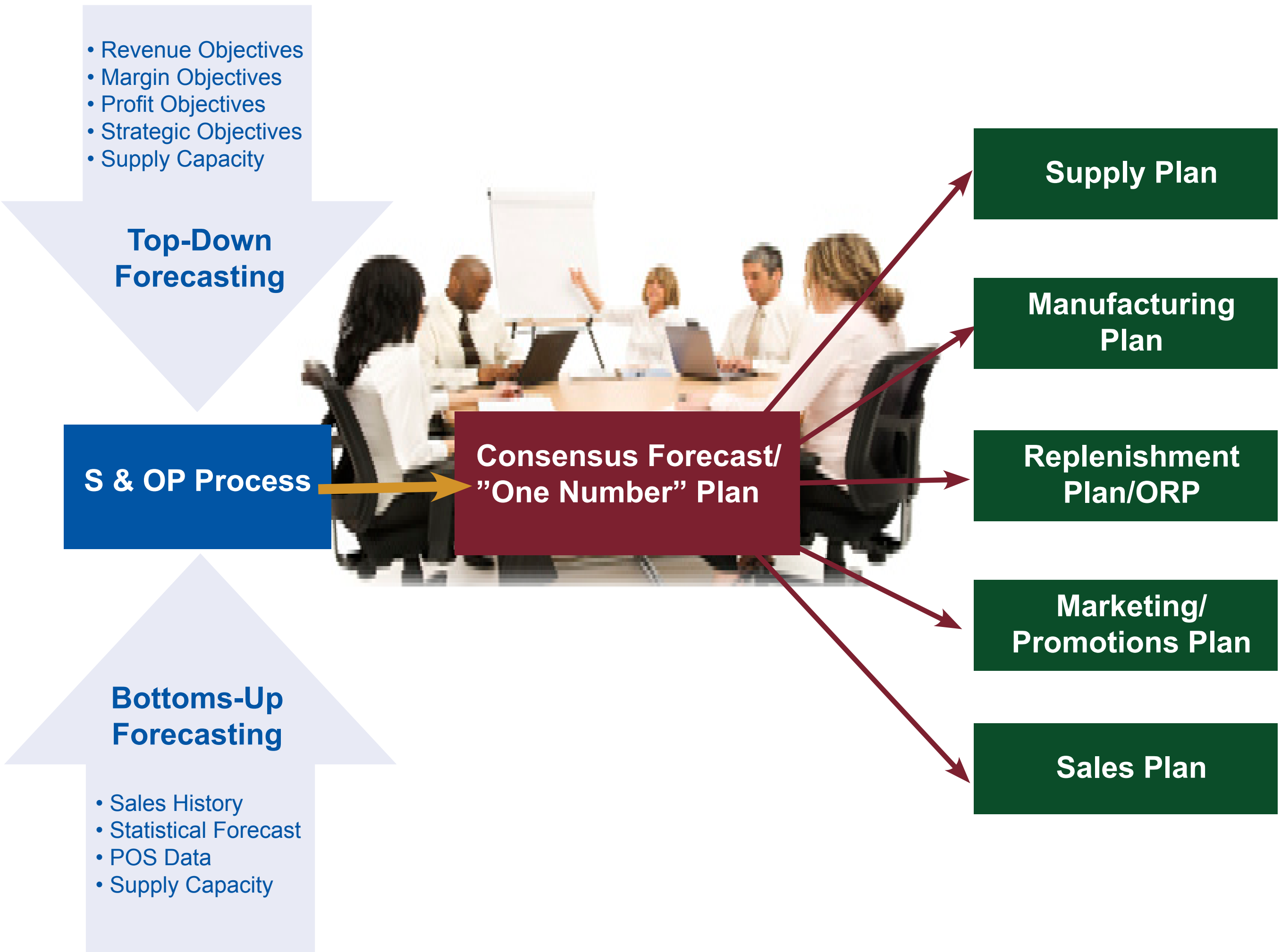
The various levels and characteristics should be self-explanatory, and somewhat different from other S&OP maturity models. Here, we will note some key characteristics of "world class" S&OP:

- Robust supply and demand planning technology capabilities
- Integration of trading partner forecasts and capacities into the demand and supply planning processes
- Direct, integral linkage of supply and demand plans into companies financial metrics, including profitability, return on assets, and other metrics
- Integration of inventory planning and targeted customer service levels into the S&OP process.
- Integration of new product introduction/ product lifecycle management decisions into the S&OP process
- Robust set of tools for analysis and scenario planning
- Highly transparent process and discipline flow of results to the rest of the enterprise

By assessing where a company is now on this framework and setting goals for what they want to accomplish, a company put together a plan for continuous improvement in their S&OP processes to ultimately reach world class levels.

Driving a Single View of Demand

Flowing from the S&OP process will be a consensus forecast that comprehensively drives



all other supply chain planning and execution processes.

While most companies understand this to be the desired state, few companies have actually reached this place in their supply chain journey. Some do not really develop a consensus forecast at all. Others do, but still allow other forecasts to creep into supply and demand processes. In either case, it will inevitably result in planning-execution disconnects.

One supply chain executive in the electronics industry told us that at a previous company, the CEO's policy was that "if you are talking numbers that are not driven by the one forecast, I don't want to discuss the issue."

Of course, achieving that consensus forecast is one thing, having it be as accurate as possible is another. Robust demand planning tools and forecasting processes are a must, and those processes need to be based on a synchronized view of actual customer demand across increasingly multiple channels of distribution.

Leaders are transforming their demand forecasting processes into elements of accountability associated with demand drivers and timing horizons. Total sales during a planning period is comprised of normal turn business plus promotional sales plus innovation launches. Properly assigning responsibility and building forecasting capabilities and processes for these components to Supply Chain planners, Customer Development and Marketing will greatly add value to the resulting sales forecast.

Too often, where the process falls apart is in sharing this "one plan" number broadly and at a level of granularity that meets the needs of supply chain processes and partners that consume the forecast information.

Here's one example of a company that is not using its consensus forecast well: a confectionary company builds a total forecast based on specific forecasts by individual customers and channels. It then aggregates that forecast by SKU, losing the customer uniqueness.

But to its distribution centers, that customer component of the forecast is critical for effectively short term planning, as the order profiles and activities required are very different across customers and channels in terms of picking, replenishment and value-added service activities. Having that customer-level visibility, the company logistics executive told us, would lead to lower distribution costs and/or costs or improved service levels.

Contrast that example with that of retailer Canadian Tire, which does an excellent job in making its supply chain demand-driven and integrating planning and execution processes. The company's rolling 26-week forecast is rigorously used to drive its internal supply chain processes, down to product slotting and labor requirements in the distribution center. Even better, the company broadly shares that data with hundreds of its trading partners (suppliers and carriers), using a web portal that enables them to see that forecast data in the units of measure that are most appropriate to them (units, cases, pounds, containers, trailers, etc.).

The result - Canadian Tire's entire extended supply chain operates off the single forecast, in the context that is right for them.

Demand forecasting excellence is a critical element of successful planning and execution. Organizations should elevate this competency's importance and establish a continuous improvement mindset that considers all organizational aspects including process design, organization needs like clear roles and skill

Holistic Approach to Demand Forecasting Improvements

development, technology and information requirements, and the ongoing strategy to optimize and improve the process.

Closing the Loop: Plan-Do-Check-Act

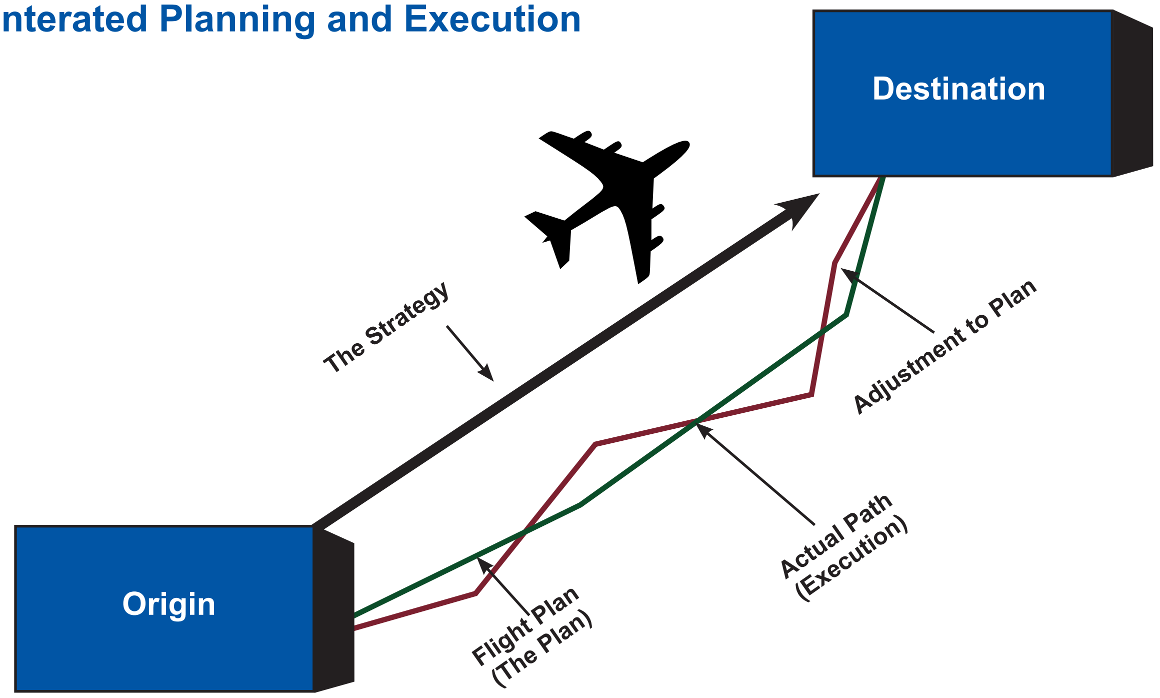
Fundamental to the integration of planning and execution is development of a robust feedback loop from execution back to planning.

The good news is such a model has been well established: Plan, Do, Check, Act, originally developed for improving manufacturing quality by management guru Edwards Deming.

While Demings' work was largely focused on monitoring the quality of manufacturing processes, the principles can easily be applied to any process, including those involved in supply chain planning and execution.

The analogy of an airplane flight is appropriate here. The captain and flight crew have a "flight plan" that includes the destination and how long the trip should take (the objective) and the basic path (the plan). However, as the plane moves towards its destination, wind, weight, and other factors will cause the airplane to veer off course. The captain knows he is getting off course in real-time, because of the aircraft's instrumentation systems (execution results). The plane is put back on course, and the system confirms that the correct path has been regained (plan adjusted). Key to optimizing the trip and achieving the objectives is making frequent course corrections,

An Airline Flight is a Good Metaphor for Interated Planning and Execution



rather than only correcting occasionally, meaning the plane could get way off course and as a result add significantly to the time and cost of the trip.

The reality is that most companies today do not have highly robust "closed loop" systems that are structured to ensure integrity between planning and execution. In the basics phase, companies build processes and supporting technologies to develop that closed-loop approach and consistently re-adjust supply and demand plans in a timely fashion based on execution feedback. In the next phase, companies continue on that basic path, but do so with reduced information latency.

A closed loop process must be directly integrated into the S&OP process. As one consultant respondent noted, "With monthly S&OP, you have 12 opportunities for course correction."

This cycle of self-correction could be more or less frequent depending on business model and the supply network's ability to respond to change.

Building Performance Management Systems Support

Improved performance measurement and management has been one of the key trends in the supply chain. Internal and external "scorecards" are certainly a key step to better aligning planning and execution.

Most companies are building on-line scorecard capabilities of some kind or another. The approach is an especially hot topic in retail right now, where many companies are starting to use a scorecard approach to vendor management.

More comprehensive measurement is certainly a fundamental component of a "Plan, Do, Check, Act" approach to integrated planning and execution. Some companies are taking it even further with so-called "line of site" metrics.

What does that mean? Overall company plans and goals, either annually as modified during S&OP, are cascaded down levels of the organization, until (in theory) the transportation dispatcher or other lower-level managers have goals and measurement that aligns all the way back up to the top.

While the "line-of-site" approach is probably never fully achievable, approaching goals and measurement from this basic philosophy can result in tighter linkages between planning and execution.

Today's increasingly powerful supply chain scorecard systems can help companies create that alignment.

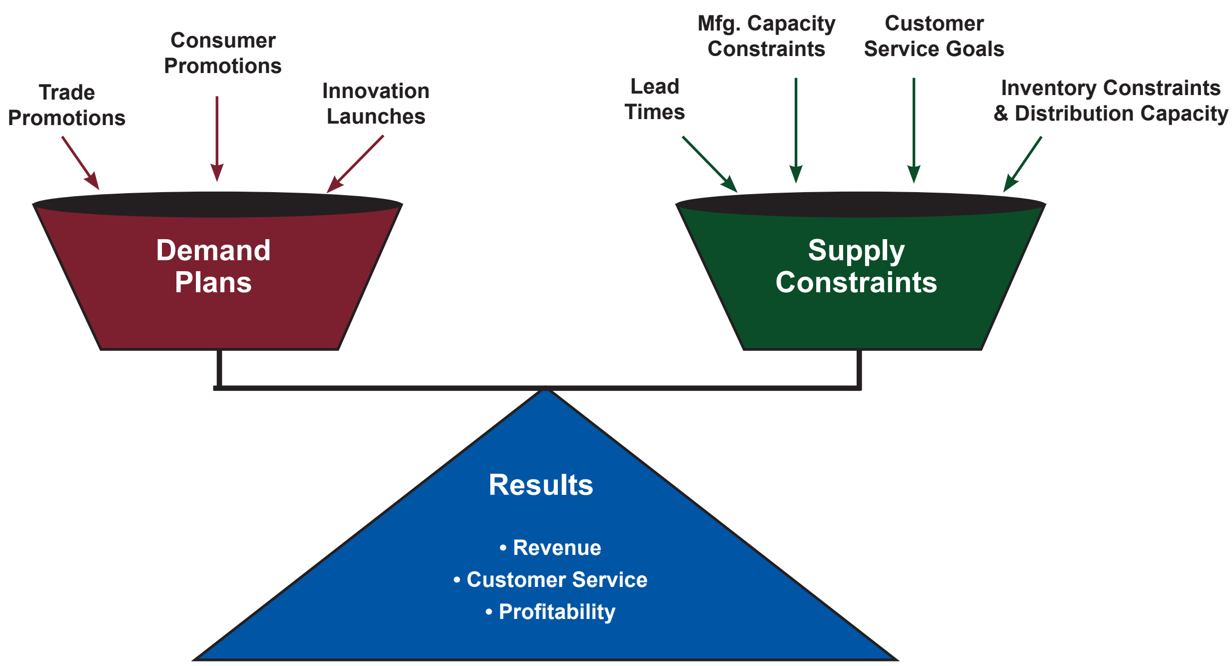
Balancing Demand Planning and Supply Constraints

To gain alignment, it is necessary to continuously monitoring demand and ensure that the network can supply the demand without creating cost or performance issues.

The diagram nearby illustrates the importance of creating an accurate demand forecast based upon the impacts of business activities related to trade and consumer promotions, as well as the impacts of new products. This in turn must be balanced against the supply network's ability to respond due to the constraints of capacity, inventory requirements and customer service performance requirements. Generating demand that cannot be supported or failing to properly resource the network will naturally create execution failures.

This has two ramifications. First, companies must regularly assess their supply network capabilities vis-à-vis business plans, demand forecasts, and cus-

Balancing Demand Plans and Supply Constraints



tomer service expectations, often using "Network Optimization" type software. Many companies are using these tools on a much more frequent basis today.

Second, they must more specifically consider constraints at multiple levels of the supply chain network.

In many companies, ERP/MRP systems are used to create an unconstrained master plan and then create a purchasing list of materials and a schedule of operations based on that plan. The foundational principle of this approach is that materials are the primary cause for concern, with an assumption that infinite capacity is available to complete any production operation.

Similarly, from an inventory perspective, many companies approach the problem in a disconnected way.

As Gartner's **Andrew White** recently noted, "For complex distribution networks where source and recipient locations can be dynamically determined, the inventory level in one location can affect the ability to achieve goals in another — to the point that you get into a circular argument: "If I set inventory levels at location 'A' to 'X,' what do I need to set inventory levels at 'B' to achieve 'Y' when 'B' is a source of inventory for 'A'?" The only way to correctly answer this question is to determine the total inventory level for all locations simultaneously, taking into account all the various dependencies and sources of variability of the network."

Today's next generation planning systems are capable of much more broadly considering true constraints up and down the supply chain, and to consider the inventory problem holistically, across tiers in the supply chain. This will enable planning and execution to be much better integrated.

Phase II — Leveraging the Real Time Supply Chain

Sales and Operations Planning, or the new version of it called Sales, Inventory and Operation Planning (SIOP), is clearly the foundation for integration of supply chain planning and execution. But, as Nick LaHowchic, former executive vice president of The Limited Brands and co-author of the recent book "Start Pulling Your Chain," told CSCO Insights: "Excellence in S&OP is important – but it isn't enough" to optimally integrate planning and execution.

After developing the basic foundation of processes and technology to better align supply and demand, companies need to work next to reduce latency of information flow and decisions throughout the supply chain. This will happen in multiple ways.

One foundation will be the deployment of "sensory networks," especially in the area of real-time data collection. Bar codes are prevalent, but are not used comprehensively by many

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companies, and are subject to human and process errors. In addition, data captured by bar codes is often stuck in local applications, without being pushed back up the chain to other planning systems.

In manufacturing, for example, the concept of "shop floor to top floor" has been around many years, but few companies have really yet achieved this level of integration.

The move to adopt RFID in the consumer goods to retail channel, while progressing slowly, nonetheless is another aspect of sensory network development. In that supply chain, the current focus has largely been turned to using RFID-based data to improve execution of in-store promotions, where there has generally been a glaring rift between planning and execution. Despite all the marketing, production, and logistics planning between the retailer and the manufacturer's customer team, a large percentage of in-store displays never make it to the store floor, or do so after the promotion was supposed to have started. This can deliver crippling blows to the expected financial results that may have been in part planned all the way back in an S&OP process several months earlier.

Development of improved data collection and sensory networks is foundational to achieving higher levels of inventory accuracy throughout the supply chain and providing support for supply chain visibility systems.

Fully Utilizing Point of Sale Data

The essence of a "pull-driven" supply chain is to use end consumer demand signals to drive the rest of the supply chain. In some channels, such as life sciences, being able to get that end consumption data through channels is not yet a reality.

In the consumer goods to retail chain, however, that POS data has become largely available – but little used by manufacturers, who lack the planning systems or processes to really take advantage of it.

That is starting to change. The home products division of Black & Decker is a great example of a company that has embraced use of POS data in demand planning and replenishment processes. According to CIO **Scott Strickland**, the new demand-driven processes that resulted from this POS-based shift have significantly improved the integration of planning and execution and led to substantial improvements in forecast accuracy, gross margins, store service levels and other bottom line benefits.

We are also starting to see interest in "demand sensing" technologies, which can really be boiled down to a process that uses actual demand data to tweak short term forecasts and impact near term production and replenishment plans.

Improved Visibility and Intelligent Alerts

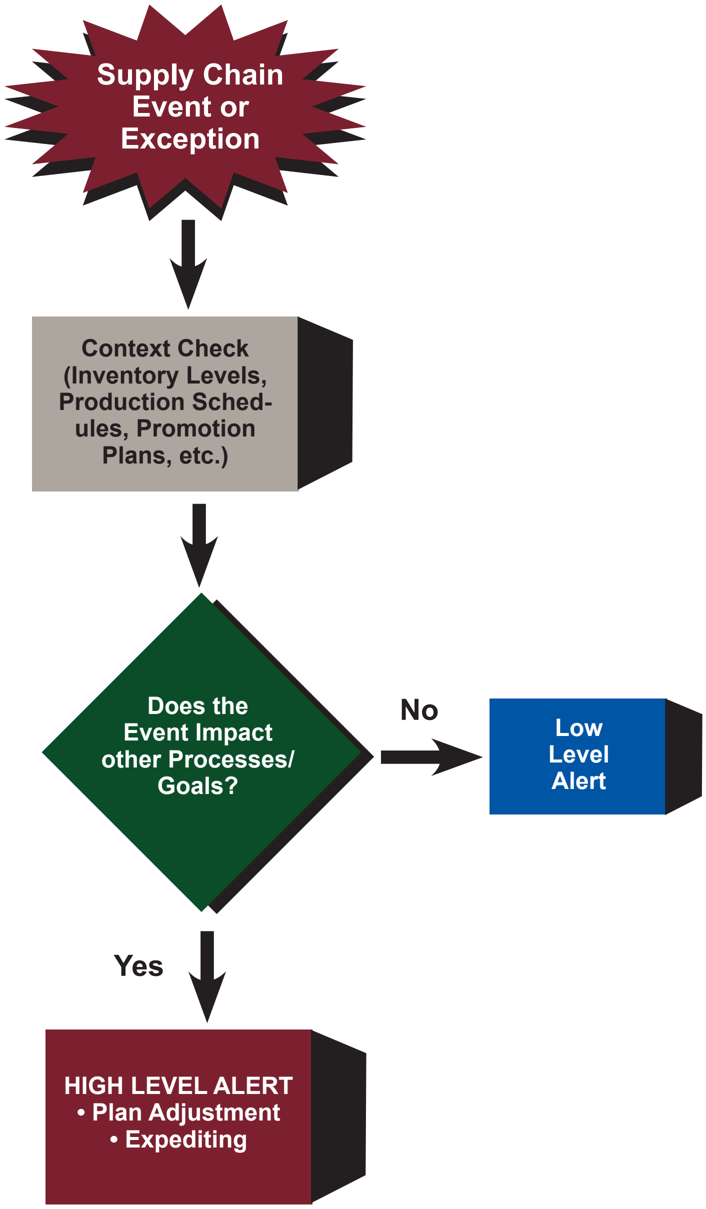
Phase 2 companies invest heavily in improved supply chain visibility and event management.

One survey participant told us a story of going to a meeting with a Dell supply chain manager. While they were at dinner, the Dell manager's phone rang. It was an automatic message from Dell's supply chain systems informing him that there was a possible supply problem that might impact the production schedule.

This is where we are headed – real-time visibility with intelligent event management, including the ability to link planning and execution.

The home products division of Black & Decker is a great example of a company that has embraced use of POS data in demand planning and replenishment processes.

Intelligent Event Management Systems are an Important Component of the Real-Time Supply Chain



This in fact is critical, because exceptions to what is expected to happen are only important in the context of how they impact existing plans. To take the Dell example, the inability of a supplier to execute an expected shipment on time is only really important if Dell does not have enough of that component already on-hand to meet production needs.

Extend that into a retail example. If an Asian shipment is going to be delayed, that exception takes on far more importance if it may result in shortages on the shelf, or jeopardize a scheduled promotion. In other words, are execution exceptions going to impact existing financial, manufacturing, or inventory plans, or not?

The importance and need for response and re-planning in each case vary tremendously.

Existing visibility and alerting systems must therefore be capable of understanding querying those plans and schedules, to know whether an exception to the plan will have in important impact on supply chain execution.

While we are early in this journey, a few companies have already built such intelligent alerting systems. Much of the data is already currently available, but has yet to be assimilated into a coherent and accessible framework.

From Scorecards to Dashboards

While supply chain scorecards are good, the focus will increasingly be on real-time dashboards.

What's the difference?

Scorecards are rear view mirrors, summarizing what has happened in the past. Dashboards provide information to supply chain managers about what is happening right now, helping them to prioritize actions and make decisions right now.

Some examples:

- A leading consumer goods company has created a dashboard that lets inventory planners see in real-time areas where there are disconnects between forecasts and inventory levels.
- A leading Internet retailer uses a dashboard to measure in real-time how it is doing against completion of planned "pick waves" that have tight time tolerances. If things start to fall behind, corrective action is immediately taken on the DC floor.
- A high tech firm presents to procurement managers each morning a list of parts or components that look like they might need attention due to on-hand and scheduled receipts versus the manufacturing schedule.
- A chemical company presents plant managers with view to real-time factory activity, which shows in part the impact on margins and financial plans.

The time compression of the supply chain and fierce competitive environment will make these real-time supply chain dashboards commonplace and pervasive over the next five years.

Phase III — Sense and Respond Networks

Phases I and II take care of the basics and move companies much closer to a state of integrated supply chain planning and execution.

But getting to a true "sense and respond" network, in which operational and even tactical planning blur with execution processes, is where the supply chain is ultimately headed – and faster than many may realize.

What is close to available today and will become commonplace in the future is the ability to see in near-real time a complete picture of supply and demand data, across multiple levels – from supplier's supplier to customer's customer. The view will also not be "point-to-point" but "many-to-many," requiring collaboration and synchronization around supply chain execution and tactical planning – in near real-time.

But it is a lot more than just technology, of course – it is completion of the journey from a forecast-driven supply chain, in which companies build supply chains around trying to **predict** demand, to a customer-driven one that is organized to **respond** to demand with lightning speed.

While the picture will look somewhat different from industry to industry, “build to stock” will ultimately give way to “build or customize to demand” in virtually every one of them.

Long production runs and costly changeovers will give way to much more flexible factories that can rapidly switch gears to cost effectively make short runs of product based on the latest near real-time demand data. Procter & Gamble has publicly stated its goal of being able to make every SKU every day in its plants, recognizing the cost of the weeks of inventory its pipeline still holds after years of attention and improvement in the forecast-driven model.

But this model cannot be implemented by a company stand-alone. It must be built with an intense level of visibility and collaboration.

As Nick LaHowchic and Dr. Don Bowersox recently wrote, if information “was shared fluidly between participating firms in a channel, then a great deal of “anticipation” would be replaced with facts. In a collaborative environment, it would not be necessary to forecast what others are planning to do or what they are planning to buy.”

This is the critical point: visibility and information sharing will allow trading partners to simply sense and respond, within defined relationship rules.

Of course, this vision of the integrated supply chain has been there all along – it was many years ago that the vision of a sweater being sold in a store in the US would trigger a sheep being shorn somewhere in New Zealand.

The difference is that in addition to a continuous maturing of the supply chain, the technology to make this responsiveness happen is very close to being here: web-based visibility and collaboration, sensory networks, integrated supply chain software suites, real-time analytics, mobile devices, Service Oriented Architectures, and other technologies.

Those changes will be accelerated by the powerful advances in computer technology. The cost for an entry level Cray supercomputer, for example, has fallen to just $25,000 and will drop further. What this means is that companies will be able to rerun operational plans at exponentially greater speed, based on real-time data on supply and demand.

Using this type of computing power, one retailer is now able to run its store replenishment plan in just 17 seconds – a computing job that that used to take 6 hours to run. Another manufacturer is re-optimizing manufacturing schedules throughout the day in a way that was never possible with less computer horse power.

There will be different models of sense and respond networks. An increasing number of companies will eventually use true build-to-order models, but others will use hybrid models that include postponement and related strategies.

But most will see their supply chain velocity continue to increase, rely far less on forecasts and much more on responsive, demand-based supply chains, incorporate high levels of product customization and tailoring, and embrace related supply chain process changes.

These business and technology changes will beget organizational and functional changes as well. Collaboration externally must be supported by collaboration internally, as the concept of “teams” supplants the concept of “functions.”

In other words, at the end of this road is a substantially different and incredibly more powerful supply chain world. In many cases it will require a “supply chain transformation” that will dramatically improve cost and customer service and bring the supply chain in much closer contact to end customers.

That will be a very good place to be.

The Critical Role of Technology

As we have discussed throughout this report, technology must fundamentally play a critical role in integrated supply chain planning and execution, and support a company's move from the basic level to development of "sense and respond" network capabilities.

Many of the technology pieces are already in place. Some vendors have developed very broad suites that combine robust planning and execution capabilities. The integration and communication between those suite components continues to rapidly improve, moving from "vision" a few years ago to reality today, with more to come over the next 2-3 years.

Many if not most of the capabilities discussed under Phases I and II of this framework are available in the market today, if not yet well adopted. For example there have recently been incredible improvement in technology which supports S&OP/SIOP processes, even though in most companies S&OP is still largely spreadsheet driven, which limits analytic rigor and the depth of scenario planning – half a loaf, instead of a full one.

Critical to these important technology changes is the rise of Service Oriented Architectures (SOA). When executed well, an SOA-based platform can significantly enhance the ability of components within a vendor's own suite to work well and flexibly together. With SOA, companies can also make it possible to successfully integrate supply chain software applications internally and with trading partners with much greater flexibility and at lower cost than in the past.

Use of the web for pervasive visibility and collaboration is technically here now, though there is still work to do to pull it together for users. Truly supporting the "many-to-many" concept is one that will require a new generation of visibility tools, a vision several supply chain software industry leaders are already embracing.

As stated earlier in the report, most of us have lived with traditional hierarchical planning models for years, both terms of process and technology. It was even seen as "best practice." Interestingly, in these models supply chain execution is often not even listed on the graphic, an important statement on the level of integrated planning and execution in itself.

The traditional "plan then execute" model is the product both of historical thinking about supply chain processes and the state of available supporting technology. In addition to the general evolution of individual applications and integrated supply chain software suites, computing power has also placed limited, and much supply chain data was hard and in some cases impossible to acquire or integrate.

Plans are by definition out of date almost immediately after they are constructed. The speed of this plan "obsolescence" becomes much more rapid as we move down the chain from strategic to tactical to operational planning. Strategic plans should have a long shelf life (though even that is shrinking); tactical plans a shorter life, and operational plans even less so.

In a sense and respond paradigm, with new generations of computing power, data availability, and intelligent software applications, companies can leverage continuous intelligence as to current supply and demand conditions and enable them to "plan while executing." They will plan only as far as is minimally necessary – which may be as little as just a few hours in some cases.

While recognizing the power of this model, some worry that such a paradigm could lead to systems that are "too twitchy," being jerked back and forth based on real-time data that actually is smooth and consistent with the plan over a longer time frame.

There is some merit in this view. One survey respondent, for example, said they had recently started to use order and shipment data to move to a daily MRP run versus the weekly runs before, and there was still some debate over the merits of that move. Proctor & Gamble, however, has said it is now adjusting its manufacturing schedule as often as 2-3 times per day.

Today, The Limited Brands crunches that past week's sales data over the weekend, followed by a cross-functional meeting on Monday morning where store plans are refined and communicated to local managers, with merchandising, pricing, and promotional plans being quickly executed at an individual store immediately based on the demand data.

Each company will have to find its own balance, but the principle that plans should be extended no further than is necessary, combined with increased computing power and availability of real-time supply and demand data, clearly will lead to dramatic changes in current "plan then execute models."

Much of the technology to do this is here. More is coming. Companies will find that the barriers to a fully integrated planning and execution environment and "sense and respond" model will be more around change management and rethinking paradigms than the availability of appropriate technology support.

Summary

We are coming to the dawn of a new supply chain era, whether or not we realize it fully yet.

Though not yet well adopted, technology is available today that can provide new levels of multi-level supply chain visibility, real-time feedback loops, and time compression across the supply chain. At the same time, the necessity of achieving increasingly precise alignment across processes and trading partners to successfully compete in today's market, supply chain management must move to a higher level of performance.

Whether this is considered an evolution or an inflection point isn't really all that important. We view it as more of an inflection point – a new phase of supply chain thinking and practice – but companies may see it differently depending on their current state of supply chain process and technological sophistication.

Improved integration of supply chain planning and execution processes and technology are an essential element of this next era of supply chain. In fact, in the real-time, sense and respond world, the blurring of planning and execution is an inherent step change.

Many companies have already started to move down this path. Improved Sales and Operations planning will inherently improve integration of planning and execution, as will the resulting "one number" forecast that should be used to drive downstream supply chain processes.

Some companies are also starting to more fully utilize point of sale data to adjust short term planning and use web-based collaboration to synchronize trading partners around the plan as well. Nearly every company is working to improve its level of supply chain visibility.

In this report, we have outlined three phases of integrating planning and execution, from building the right foundation to removing latency in information flow to developing a true “sense and respond” network.

Almost by definition, technology will play a critical role in this evolution. A vendor’s current ability to support improved planning and execution processes should be an increasingly important element of vendor selection, and its vision and roadmap to help a company move through the levels of maturity we defined have here.

Companies should assess where they are currently at, and develop a master plan for moving down this path. As we stated early on, improved S&OP is a necessary start, but the effort can’t end there.

The supply chain is all about helping companies win. Winning companies will find that that bridging the planning and execution gap and continually moving towards the original “sense and respond” vision of the supply chain, finally now a reachable objective, is a critical component of that winning strategy.

About CSCO Insights

CSCO Insights is focused specifically on the information and insight needs of senior supply chain and logistics leaders – or those aspiring to be leaders.

CSCO Insights provides research services, reports and white papers, and other publications for supply chain leaders.

The CSCO Insights team includes well-known and experienced supply chain professionals such as Dan Gilmore (Supply Chain Digest), Gene Tyndall (Tompkins Associates, Ryder, Ernst & Young), Robert Nardone (Unilever), among other experienced executives.

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