

## Insights from the JDA Supply Chain Assessment Tool 2011

In the fourth quarter of 2010, supply chain software provider JDA Software launched an interesting new benchmark survey tool it calls the “Supply Chain Self-Assessment.”

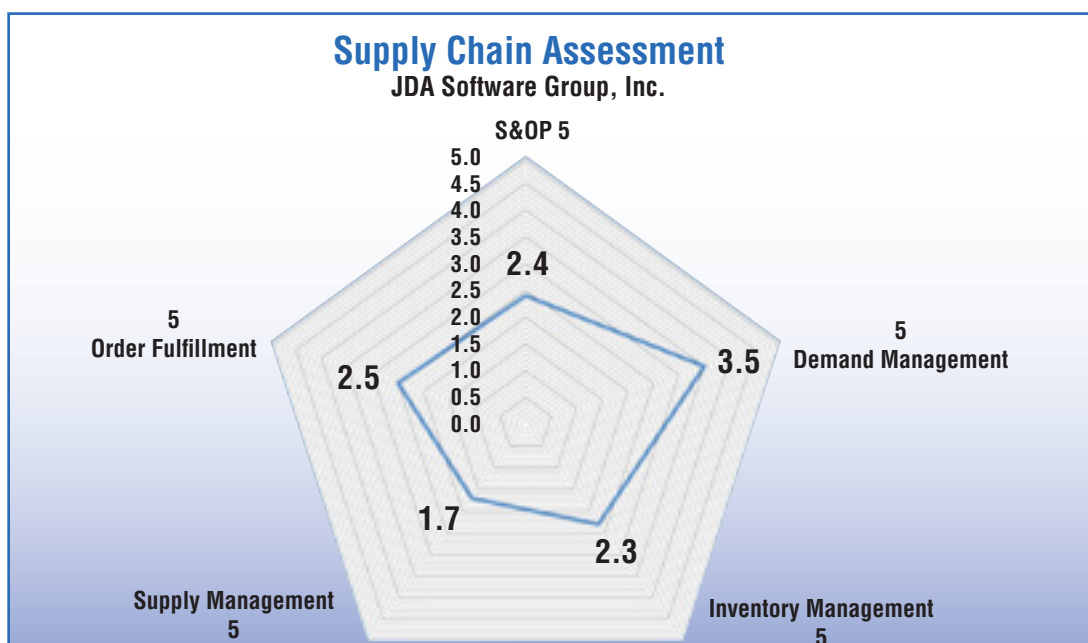
The benchmark tool involves an on-line survey in which supply chain managers answer 17 questions, grouped into five main focus areas:

- Demand Management
- Inventory Management
- Supply Management
- Order Fulfillment
- Sales and Operations Management

The full list of questions in the assessment, organized by category, is shown starting on page 2.

After answering the questions, companies receive an automated report within 24 hours that evaluates their maturity on the 17 process/practice areas, and an assessment of the value opportunity they have by moving further down the maturity curve. That includes a star chart that quickly gives respondents a visual representation of how they measure up in each supply chain area.

One of the attractive elements of the JDA assessment tool is that it is in part based on data from thousands of public companies in terms of operational and financial performance that supports the assessment and value opportunity calculations.



The new JDA tool is also based in part on the respected Strategic Value Assessment (SVA) that was used successfully for many years by i2 Technologies, a company that JDA acquired in early 2010. The SVA delivered an in-depth analysis and value creation opportunity estimate, but to achieve that involved a substantial effort for both the client and i2, and often had a cost associated with the work.

The new self-assessment tool automates the intellectual property associated with the SVA, and as a result can be delivered at no charge. While the result will be less precise than a traditional on-site assessment, the benefits of the on-line tool in terms of ease-of-use and cost makes it an excellent mechanism to get an industry-specific view of how a company’s supply chain stacks up and the potential bottom-line impact from operational improvement. More detailed assessment can be performed from there.

### JDA Assessment Question Areas

Category	Question
<p style="text-align: center;"><b>Demand Management</b></p>	<p>Consensus forecast frequency (How often do you create a consensus forecast from historical data and with sales or customer input?)</p>
	<p>Actual forecast accuracy (If you have a good forecasting system it will measure forecast to actual. The highest level may be at a region, business unit, product family, and the lowest level might be at a part/item level. Forecast accuracy is usually measured as a mean absolute deviation (MAD) or mean absolute percent error (MAPE) or weighted mean absolute percent error (WMAPE). Either MAP or WMAPE will suffice for this exercise.)</p>
	<p>Demand exception alerting (If for whatever reason reality is turning out to be quite different from what you forecasted, when will your normal processes and discipline detect and conclude that this is the case? When will you first know that the forecast was wrong?)</p>
<p style="text-align: center;"><b>Inventory Management</b></p>	<p>Inventory turns (How well are you turning your inventory? This will vary by industry, but for most industries the average is in the range of 8-10 times a year. Food and other fast moving products may be much higher. If you are not sure for your industry, you can provide your actual turns and we can compare your actual industry segment for you.)</p>
	<p>Inventory write offs/obsolescence (What percentage of your inventory is written off each year? This will vary by industry but for most general companies 3% is the average. So if you are at 2% you would be above average and 1% would be best in class. Lower is better.)</p>
	<p>Customer request dates service level compliance (Based on the customer request date how often can you meet their request from planned inventory, finished goods, semi-finished goods or raw materials across the supply chain?)</p>
	<p>Inventory policy segmentation (Inventory segmentation allows companies to create different policies on how products should be managed. These may be based on consumption patterns, criticality, velocity, and other key attributes. Parts and products are governed by a set of highly customized “designer” inventory strategies that are tailored to each micro-segment. The more dimensions you use the greater the flexibility and the more accurate the inventory will be at each level in the delivery chain. It is not uncommon to see 10-12 dimensions being used in best in class companies)</p>
<p>Inventory policy review (How often do you review the inventory policy settings in your planning or ERP system and is it a formalized process? Leading companies do this one or more times a month and can also model different scenarios.)</p>	

Category	Question
Supply Planning	Plan frequency/capability (How often do you recreate an optimized production/procurement/transfer plan to support high customer service levels and lowest cost production?)
	Compliance (How often does the actual production vary from the published production/procurement/transfer plan leading to overrides or expectations to the published plans during execution?)
Order Fulfillment	Order promise response time (How fast can you provide a promise date to your customer?)
	Percent of no-touch promises (What percentage of promise dates can be provided automatically from your systems without intervention?)
	On time to promise date (Based on the promise date given to a customer, how often can you meet those promise dates On Time In Full?)
	Order promise response time for exceptions (How long does it take to respond to exceptions or adjustments from customer requests without impacting other customers and re-adjust plans?)
Sales & Operations Planning (S&OP)	Production/Sales/Finance sync speed (How often are all departments collaborating to synchronize the plans?)
	Production/Sales/Finance sync fidelity (At what level of detail and time horizon are the plans actually in sync across all departments?)

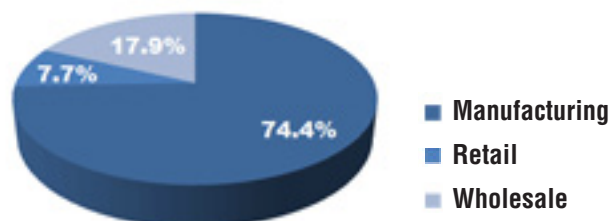
## Analyzing the Data Across Respondents

The assessment process and report obviously can be of great value to an individual company, but *CSCO Insights* thought the aggregate data might also provide some opportunities for interesting analysis on overall supply chain performance and trends.

We worked with JDA Software to get the (anonymous) data from the respondents to date (82 qualified respondents through early March 2011), which formed the basis for this analysis. JDA says that there are now over 100 respondents.

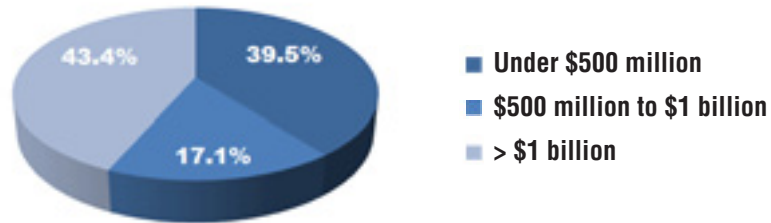
In terms of the respondent profile, the group as a whole covers a broad spectrum of both company size and industries. As shown in the figure below, for example, there have been participants from the manufacturing, wholesale and retail sectors. Within the manufacturing group, there are respondents from almost every sub-sector, from apparel to life sciences, with somewhat heavier participation from the food/beverage, high tech, chemicals and automotive-related sectors.

### Respondents by Industry Segment



There was an equally broad participation in terms of company size, with significant responses from companies under \$500 million in annual sales, those between \$500 million and \$1 billion, and companies over \$1 billion. In total, reported sales range from just over \$100 million to more than \$30 billion, including a number of the best known companies in the world, according to JDA.

### Respondents by Company/Division Sales Revenue



This breakdown, however, is somewhat biased downwards, in that it was clear that in many cases the respondents were answering for a business unit/division, rather than the entire corporation. This means the reported sales levels were less than they would have been at a full corporate level.

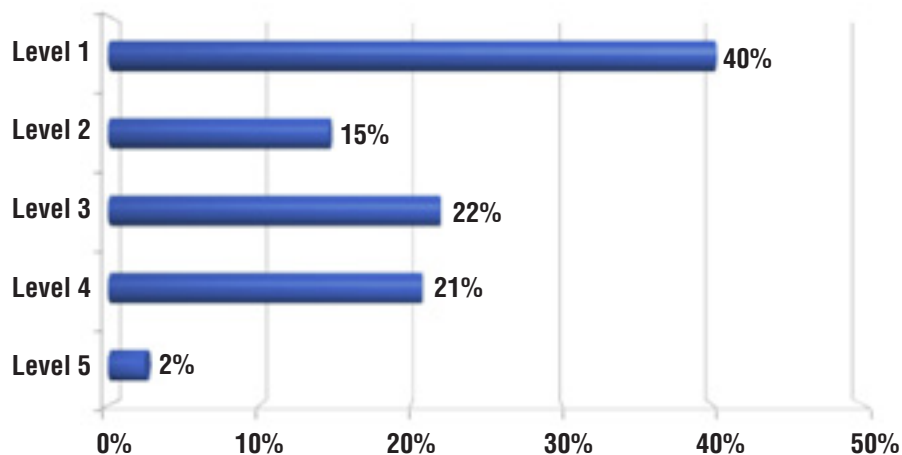
### Highlights of Data by Process Area

For this analysis, *CSCO Insight* took one or two responses in each of the five supply chain areas covered by the assessment, to look at and discuss in more detail.

#### Demand Management

In the Demand Management area, we took a look at the responses related to forecast accuracy. In the figure below, we show responses across the spectrum from all survey participants, along the five levels of maturity as defined in the assessment tool, which are also shown nearby.

### Forecast Accuracy Performance



The obvious surprise from these responses is that 40% of participants say they do not have a formal process for measuring forecast accuracy. In looking at the responses by sector, not surprisingly to us, the participants saying they did not measure forecast accuracy were overwhelmingly in more industrial sectors, though there were a few respondents in the consumer goods and/or retail sector that also said they were not really measuring forecast accuracy yet.

On the other end of the spectrum, just a handful (2%) of respondents had reached the most mature level of forecast accuracy, achieving accuracy levels of within 3% at the highest levels of product aggregation, and 30% at lowest levels.

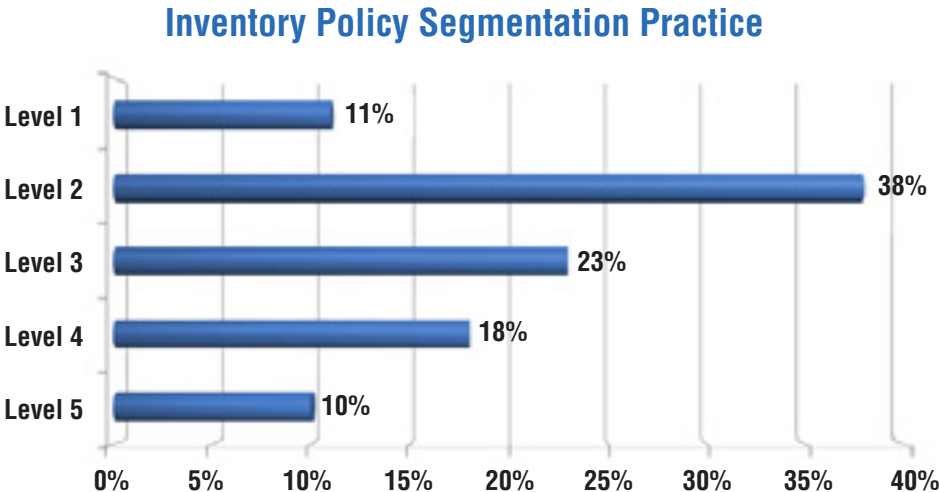
The preponderance of respondents were in the middle (levels 2-4), which captured 58% of the total, though we believe it is noteworthy that 21% have reached level 4. However, given that level 4 means no better than 50% average accuracy at the lowest levels of aggregation, it indicates how far as a discipline the supply chain industry has to go in terms of improved forecast performance.

Maturity Levels for Forecast Accuracy Question	
<b>Level 1</b>	Not formally measured
<b>Level 2</b>	Within 10% at highest aggregate levels and within 100% at lowest levels
<b>Level 3</b>	Within 5% at highest aggregate levels and within 70% at lowest levels
<b>Level 4</b>	Within 5% at highest aggregate levels and within 50% at lowest levels
<b>Level 5</b>	Within 3% at highest aggregate levels and within 30% at lowest levels

**Inventory Management**

We also took a look at a couple of the areas under the inventory management section.

First, as shown below, we analyzed data from responses relative to inventory policy segmentation practices, which relate to the level of granularity with which companies segment different SKUs for setting inventory policies.



Maturity Levels for Inventory Policy Segmentation Question	
<b>Level 1</b>	All parts or items treated the same
<b>Level 2</b>	Simple ABC segmentation based on one dimension like usage or value
<b>Level 3</b>	Multi-dimension segmentation (many dimensions, more than just usage and value)
<b>Level 4</b>	Multi-dimension across the whole enterprise reviewed/ updated at least once a year
<b>Level 5</b>	Multi-dimension within each business unit reviewed/ updated at least once a year

Inventory segmentation allows companies to create different policies relative to how products should be managed. For example, attributes that may be used to segment different SKUs include consumption patterns, criticality, velocity, and several others. The more dimensions a company uses, the greater the precision a company will have in managing inventories. It is not uncommon to see 10-12 dimensions being used in best-in-class companies.

For this question, just 11% of respondents said they treated all SKUs the same. But we were not surprised that a large number of companies (38%) were using basic ABC type SKU analysis based on volume or value.

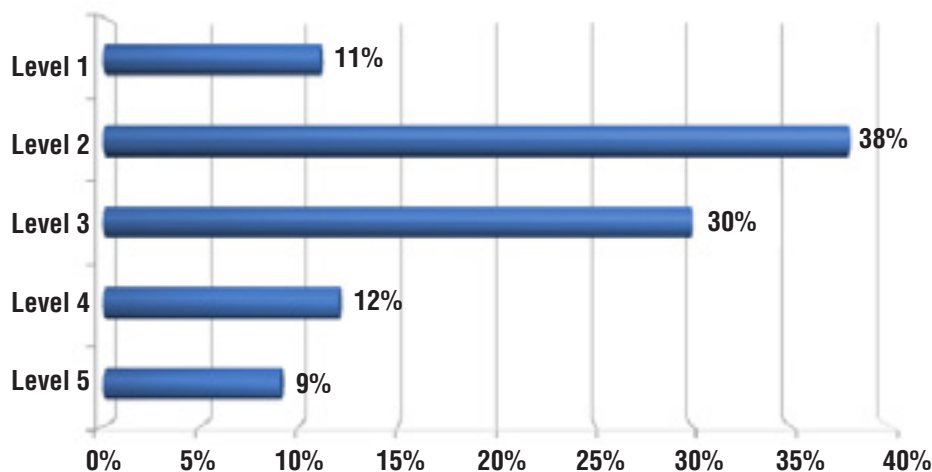
Indeed, the fact that 51% of respondents were using multiple attributes and/or reviewing these segmentation frameworks annually at different levels of the company shows just how far many companies have taken the practice of inventory management. This is perhaps the result of the increased

emphasis inventory management has received during and after the economic downturn of 2008-09.

Similarly, we also singled out the question on safety stock policies, as shown in the graphic below.

Companies must obviously determine how much safety stock inventory they want to hold. Most companies use very simple approaches to make these calculations, such as days of supply, statistical safety stock, min/max etc. In terms of the maturity levels here, “single echelon” is between two points, versus multi-echelon, which involves a more holistic view across many levels of inventory holding

### Safety Stock Policies



locations from customer DC's all the way back through production locations and work in process.

Here again, we are not surprised that a full 68% of respondents were at either level 2 or 3, which represent classical/textbook style approaches to safety stock calculation.

Just 21% were at the higher levels of maturity described for levels 4 and 5, which involve more sophisticated multi-echelon analyses rather than the node or point-to-point focused approach most companies take. At the most mature level, companies also actively incorporate collaborative planning with trading partners.

The reality is that for most companies, reaching the highest levels of maturity in this area is difficult if not impossible to achieve without a strong level of technology support, particularly through use of inventory optimization software that is specifically designed to look at inventory stocking levels across multiple tiers of the supply chain holistically.

**Maturity Levels for Safety Stock Computation Question**

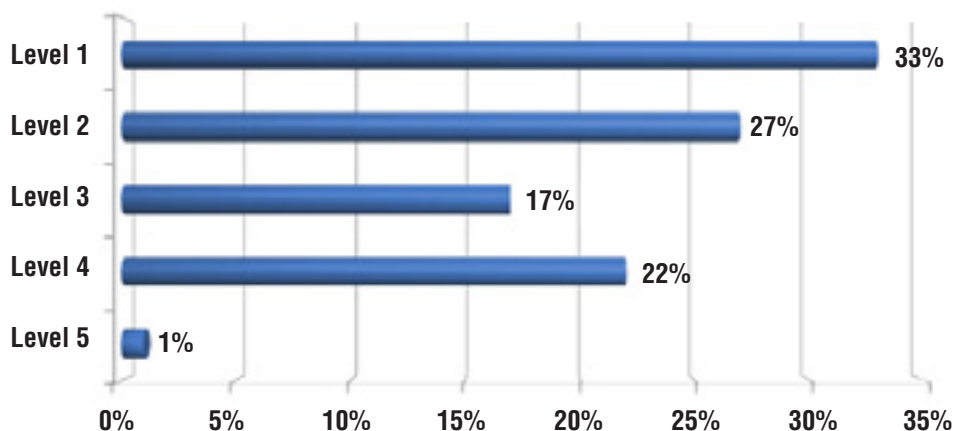
<b>Level 1</b>	Policy not well defined
<b>Level 2</b>	Simple days of cover based policy
<b>Level 3</b>	Single echelon classic text book formulas based on demand and supply risk
<b>Level 4</b>	Full multi-echelon optimization based on demand and supply risk
<b>Level 5</b>	Full multiechelon optimization based on demand and supply risk in conjunction with customer collaboration and expectations

**Supply Planning**

There were just two questions in this category, and for analysis here, we chose a question related to how well final production schedules actually “comply” with published production and procurement plans.

The obvious observation for this question is that just 1% of respondents (one company, actually) had reached the highest level of maturity, in which less than 1% of the plan is overridden - quite a level of production performance.

**Production/Procurement Plan Compliance**



**Maturity Levels for Production Schedule Compliance Question**

<b>Level 1</b>	More than 20% of the plan is overridden (actual vs. plan variance)
<b>Level 2</b>	Between 10% and 20% of the plan is overridden but overrides are tracked
<b>Level 3</b>	Between 5% and 10% of the plan is overridden but overrides are tracked
<b>Level 4</b>	Less than 5% of the plan is overridden
<b>Level 5</b>	Less than 1% of the plan is overridden

In fact, different from any other question in the assessment, more companies (33%) chose level 1, in which more than 20% of the plan is overridden on average. The second most common response, at 27%, was at level 2, where 10-20% of the plan is overridden.

As challenging as reaching level 5 may seem, best-in-class companies are in fact able to re-run supply plans daily across their global supply chain and keep to those plans with something like just 1% in overrides.

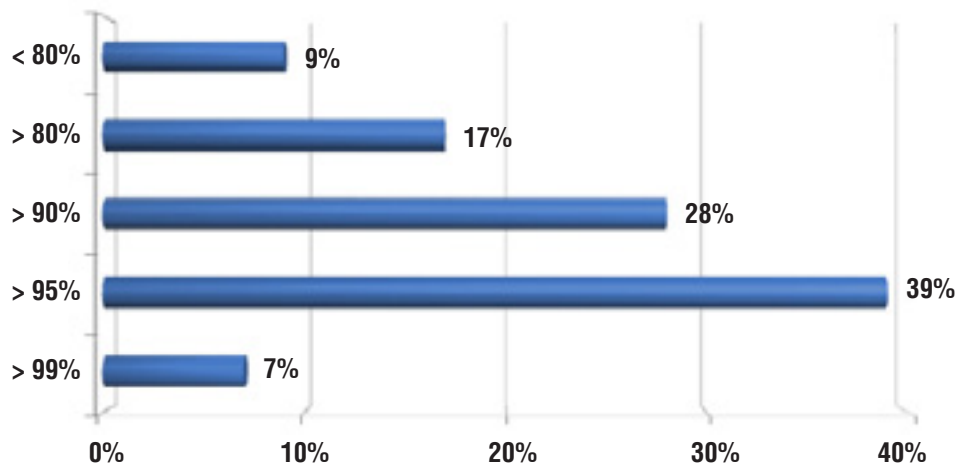
**Order Fulfillment**

Of the four questions in this section, we chose to focus on one related to how often a company is able to meet its promised date for customer orders.

Here, the levels of maturity are linked directly with numeric levels of performance.

As can be seen, overall companies have reached fairly high levels of maturity, with 46% at levels 4 or 5, meaning they are hitting the promise dates greater than 95% and 99% of the time, respectively. Just 26% were below 90% (levels 1 and 2) in their ability to meet dates.

**On-Time to Promise Date Performance**





This makes sense to us, as this is a highly visible, customer-centric measure that is one of the key elements of overall customer satisfaction. In fact, over the past 10 years, the increasing “lean” orientation of the supply chain means the ability to hit promise dates is more important than ever, and suppliers are usually willing to incur extra costs (expedited scheduling, transportation, etc.) to meet a customer commitment.

The specific question in the survey, however, refers to the metric as being delivery performance that is “On-Time, In-Full” (OTIF). Most studies focusing on the related concept of “Perfect Order” have found much lower percentage attainment, so we wonder whether respondents may not have fully processed the OTIF aspect when providing their performance data, which we think would be lower on a full OTIF basis.

### **Sales & Operations Planning**

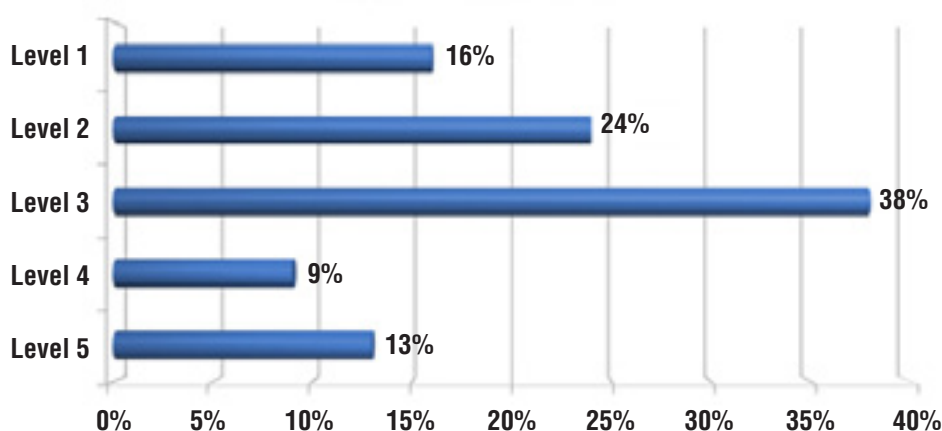
The fifth and final category involved a couple of questions around Sales and Operations Planning (S&OP).

The responses charted below specifically referred to what we think is a very interesting question: At what level of detail and time horizon are the plans coming out of the S&OP process actually in sync across other departments, such as sales, finance, manufacturing, etc? JDA calls this synchronization “fidelity.”

Here, 16% of respondents said there was no formal process for achieving this cross-functional synchronization.

The middle level of maturity is defined as “Financial plan plus aggregate product family in the medium and long term,” which is the level that a plurality of 38% is currently achieving.

### **S&OP Synchronization Detail and Fidelity**



Maturity Levels for S&OP Synchronization Fidelity	
<b>Level 1</b>	No formal process today
<b>Level 2</b>	At the overall financial budget plans and goals, long term
<b>Level 3</b>	Financial plan plus aggregate product family in the medium and long term
<b>Level 4</b>	Detailed product level in the medium term
<b>Level 5</b>	Detailed product/location specific in the near term

Compare that with level 5, in which companies are able to move to synchronization that is “Detailed product/location-specific in the near term.”

There is, in fact a dramatic level of difference between levels 3 and 5 using these definitions. Moving from a mid-term, aggregate-level sync to a detailed, location-specific and short-term alignment is in fact a tremendous leap forward - but one we know companies such as Fairchild Semiconductor have been able to achieve today (based on a recent presentation).

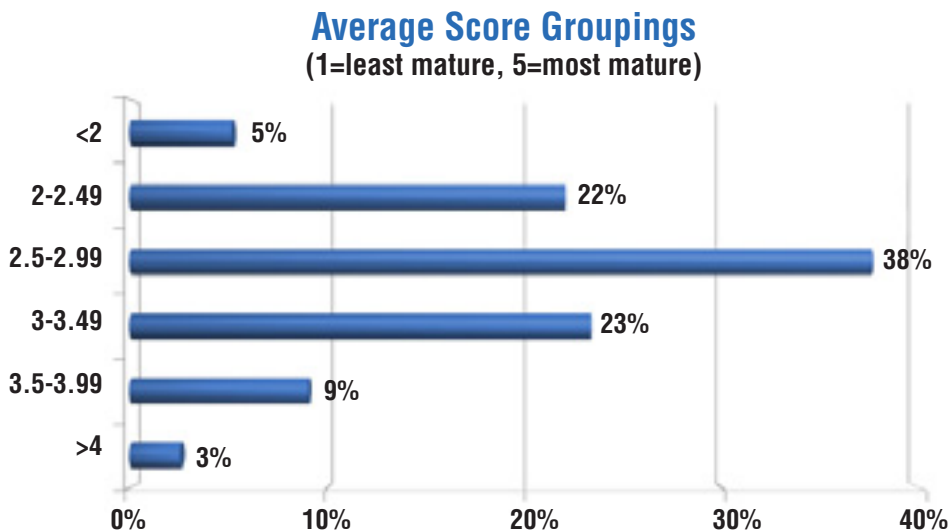
We observed that this specific attribute of S&OP performance is rarely discussed, and that the data shows that even companies that have made excellent progress in S&OP performance still have much work ahead to meet world class levels.

### Additional Analysis

In addition to looking at select responses from each of the five process categories in the assessment, we also took a look at the overall data in some additional ways.

For example, as seen in the chart below, we converted each respondent’s score into a numeric scale, with 1 for a given question if the respondent was at a level 1, 2 for level 2, etc. This enabled us to compute a given respondent/company’s average score or level of maturity across all five main categories. We then grouped those averages into several ranges.

As can be seen, a full 65% of respondents scored on average less than a level 3, which is the mid-point in each category in terms of performance/capability maturity.



Just 3% of respondents on average scored above 4, and just another 9% scored on average between 3.5-3.99.

One might be tempted to say this is due in part because the scale is tilted too high, or too difficult to achieve. But this is not the case, from our view.

Why? Because in every category, with one exception where there was only one company, at least several firms were in fact achieving level 5 performance. Many more are achieving level 4 performance in each area. So because some companies are achieving at the top level of maturities in each performance area, it seems to us the scale is properly calibrated.

We also took a look at how companies are performing along each of the process areas in the survey instrument, using the same 1-5 scoring methodology described above.

We had to leave the two questions around inventory turns and inventory obsolescence out of this analysis, because they were scaled 1-4, and the comparisons would therefore not be accurate.

The average results for the other 15 questions are shown below.

### Average Supply Chain Performance by Category

Category	Average
<b>Inventory Management</b> - Customer request dates service level compliance	<b>3.46</b>
<b>Order Fulfillment</b> - On time to promise date	<b>3.20</b>
<b>Sales &amp; Operations Planning (S&amp;OP)</b> - Customer request dates service level compliance	<b>3.20</b>
<b>Order Fulfillment</b> - Percent of no-touch promises	<b>3.00</b>
<b>Inventory Management</b> - Inventory policy segmentation	<b>2.78</b>
<b>Order Fulfillment</b> - Order promise response time	<b>2.78</b>
<b>Sales &amp; Operations Planning (S&amp;OP)</b> - Production/Sales/Finance sync speed	<b>2.78</b>
<b>Demand Management</b> - Demand exception alerting	<b>2.77</b>
<b>Order Fulfillment</b> - Order promise response time for exceptions	<b>2.71</b>
<b>Inventory Management</b> - Inventory policy computation	<b>2.70</b>
<b>Demand Management</b> - Consensus forecast frequency	<b>2.68</b>
<b>Inventory Management</b> - Inventory policy review	<b>2.57</b>
<b>Supply Planning</b> - Plan frequency/capability	<b>2.40</b>
<b>Supply Planning</b> - Plan compliance	<b>2.32</b>
<b>Demand Management</b> - Actual forecast accuracy	<b>2.28</b>

Not surprisingly, given the analysis of overall score performance, in only 4 of the 15 areas was the average across all respondents at or above the mid-point of 3.0.

Also not surprising was that the two top scoring areas were two sides of the same coin in terms of customer service level performance. These are highly visible metrics in most companies that can lead to customer revenue loss if poor performance is experienced.

And also probably not surprising to most, forecast accuracy performance trails the field. While many companies have and are making important gains here, it remains a tough area for most companies to reach what seem like high levels of accuracy and world class performance.

### **Most Companies Have Mixed Performance**

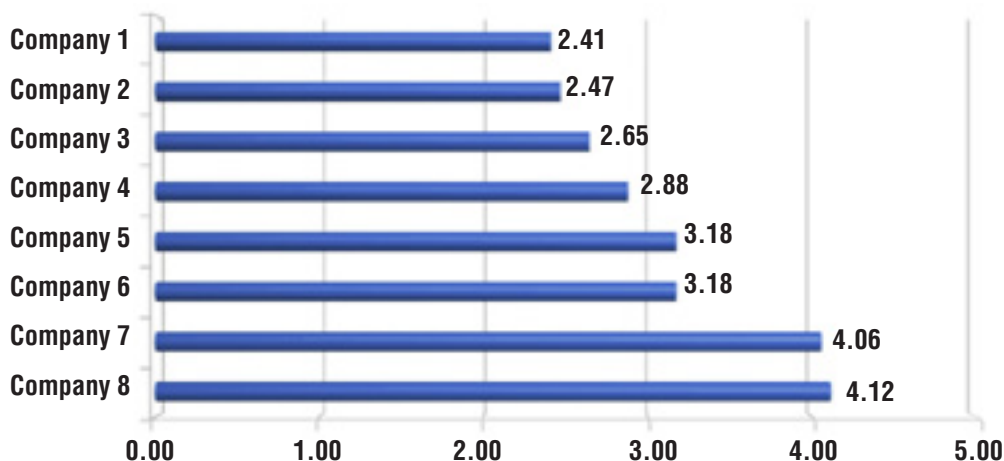
While overall the best performing companies tended to be better in most areas, overall few companies are either great or poor performers in every area.

For example, only one company among all respondents assessed itself as being a level 3 or above in every area. While five firms rated themselves as being at a level 4 or 5 in ten or more of the 17 areas, most of those had several level 2 performance maturity in other areas, while one was at a level 1 for a single question.

Twenty-two of the 82 respondents we analyzed were not at level 5 in any category. However, the majority of companies were at levels 4 or five for some areas, but had a wide mix of lower levels of maturity in most the areas questioned.

Our take away from that is that supply chain progress is not uniform across all levels, but rather is uneven based on overall company priorities, where technology investments have been made, or other

**Average Score for Food Respondents**  
(1=least mature, 5=most mature)



factors. The benefit of an assessment like this is to better understand the individual components of overall supply chain performance, and where a company may currently have a strength or weakness.

Finally, and importantly, we took a look at how responses might vary within a given industry sector, in this case using the Food industry, which to date has had the largest number of responses.

Here, we think, is really what is at the heart of the assessment process. Again using the same 1-5 scoring methodology, we see that companies rate from a low of an average score of 2.41 all the way to two of the few firms that had average scores over 4.0, with everyone else in between.

This means to us that clearly there is a huge supply chain performance and capability gap between companies in a given sector, many of which will in fact be direct competitors. That is true not only on a qualitative/maturity level, but also of course in how those differences translate in most cases directly to financial performance in terms of cost, revenue and profit.

### **Translating the Financial Impact**

The assessment report provides a nice, industry-specific analysis of what that financial impact might be from making improvements in maturity/capabilities, using a High, Medium, Low approach to potential financial improvements in each area, then totaling those individual areas to arrive at the same ranges from improvements across all areas.

While the absolute numbers are subject to the size of a company and its current levels of supply chain performance, the results of this analysis can be eye-opening, often estimating that there is a potential impact in the hundreds of millions of dollars for very large companies, and proportionate amounts for medium and smaller companies.

## **Summing It Up**

Analysis of the 82 respondents to the JDA Software Supply Chain Self-Assessment tool provide a number of useful insights. Those include:

- The spread between the lowest and highest levels of maturity in each area is very broad
- Just a few companies are well above average in most areas; most have pockets of strength and relative weakness
- Performance can and does vary significantly even within a given sector, with the obvious links to competitive advantage or disadvantage in that market segment
- Companies seem to be most mature in areas that are most directly related to interfaces with customers
- Even as the highest levels of performance/maturity seem far off for some companies, other firms right now have reached that level of achievement, and are looking to go to even further heights of performance

## Insights from the Supply Chain Assessment Tool 2011

- Forecast accuracy remains a challenge
- The range of financial impact from achieving higher levels of performance should be enough to at least get the attention of company executives.

We believe the JDA assessment tool (available here: *JDA Software Supply Chain Self-Assessment*) provides an excellent way for companies to take a look at their own supply chain performance, especially to better understand areas where they are strong and others where there is much room for improvement.

We also think that as the program moves forward, it will continue to provide opportunities for additional insight by looking at the numbers from an aggregate level across respondents at different points in time. If, as we expect and encourage, there are a large number of additional participants over the coming months, this will enable us to do a similar analysis of the data in 2012. That will provide us the opportunity not only for a fresh look at the same type of data another year into the program, but also to have more critical mass in analyzing specific industry segments, comparing responses year over year, etc.

The JDA assessment survey involves a modest amount of time, is free of charge, and the quality of the report respondents receive is quite good. We believe for most it will be well worth the effort.

## About CSCO Insight

CSCO (Chief Supply Chain Officer) Insights offers research and analysis focused on providing actionable information and intelligence to senior supply chain executives and those aspiring to reach executives levels. The research arm of Supply Chain Digest, the industry's leading on-line publication and web site, CSCO Insights is becoming the preferred source of insight for supply chain leaders.