A New Era of the Truly Consumer-Driven Supply Chain is Coming (Fast), with Huge Ramifications for Consumer Goods, Manufacturers, and Retailers.

CSCO insights

There is an important sea change currently starting to develop in the consumer goods to retail supply chain.

Obviously, there has been significant improvement in almost every area of this important supply chain sector over many years, driven in part by initiatives such as Quick Response, Efficient Consumer Response (ECR), Collaborative Planning, Forecast, and Replenishment (CPFR), RFID and others specific to the consumer goods to retail value chain.

While each of these industry programs has delivered benefits and moved the ball down the field, there was always the feeling that the potential had not quite been truly grasped. The same problems (too much inventory, not enough collaboration, too many stockouts, etc.) have seemed to persist. In fact, if you look at the text from the documents describing these initiatives, often from the VICS organization, you will see highly similar language over many years describing the industry challenges and opportunities from the latest program.

But the industry may have finally found the approach that truly takes the consumer goods to retail supply chain to the next level. In fact, the vision has actually been here almost from the start of supply chain thinking in the 1980s. Someone back in that era once said that the supply chain will one day become so integrated and responsive that we would soon arrive at the state that when a sweater is sold in a department store in Peoria, a sheep will be shorn somewhere in New Zealand.

We haven't quite arrived there yet. But we may at last be getting close.

There are two keys points relative to the sweater-sheep vision: (1) The commonsense idea of "sell one, ship one," adjusted appropriately for economies of scale; and (2) The realization that the rest of the supply chain needs to be directly connected to and driven by the retail shelf and actual consumer demand.

In the past few years, a number of factors have been coming together to bring this vision into reality. That includes work by consumer goods (e.g., Scott's Miracle-Gro) and retail companies (e.g., Lowes) themselves; thought leadership and technology development by supply chain software vendors; and just recently, strong support from industry groups such as VICS.

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A case in point – in May of 2012, VICS published a powerful new Guideline, titled *The Ultimate Retail Supply Chain Machine: Connecting the Consumer to the Factory.*

That document does an excellent job of describing this new world, in which POS and shelf-level data truly drives manufacturers' supply chains, all the way back to scheduling their production lines. It also describes how manufacturers and retailers can together use these principles to drive out costs and improve the top line at the same time.





A very simple but effective view of how this works taken from the VICS Guideline is shown above.

The VICS guideline in fact provides detailed, step-by-step examples of how this new vision can be realized by both manufacturers and retailers. In our view, the document identified two critical process and technology components of this opportunity:

- 1. An extension of the Distribution Requirements Planning (DRP) concept that drives much of the consumer goods to retail supply chain today from being one that in the end focuses on replenishment of the retail distribution center to one that moves down to the individual retail store. This ultimately means forecasting each product, at each store, every day.
- 2. Adoption by retailers, really for the first time, of time-phased order planning, the way most manufacturers have been operating for years. This not only gets retailers a bit further down the supply chain maturity curve, it also provides a platform for better and deeper collaboration with manufacturers (as well as building a foundation for developing a Sales & Operations Planning process, or whatever name is used, by the retailers, who have only just recently begun to embrace S&OP). This is a seminal shift. Lowes has been one of the most aggressive companies in the retail industry in adopting this time-phased approach, and the practice is a critical plank in the company's overall aggressive drive to create an integrated supply chain planning and execution environment.

So let's be clear: the vision set forth in the VICS document will drive significant improvements in forecast accuracy, by pushing the forecast to the point of actual demand. That will have significant benefits to the supply chain by itself, but can be leveraged even further by reducing information latency in supply chain planning and - for those embracing the full vision – lead to much tighter integration of planning and execution, from the shelf to the factory floor.

This will all in turn drive substantial improvements in a wide variety of supply chain performance metrics, including reductions in inventory, fewer stockouts, lower manufacturing costs and more, all serving to juice the top and bottom lines.





Why Has It Taken This Long?

Many companies reading this report may wonder why it has taken this long to get to what may seem a commonsense approach to supply chain management, and which as noted above, is an idea that has been around almost as long as supply chain management itself.

There have been several barriers. Technology has certainly been one of the largest. Forecasting every product in every store every day was simply a problem that was too big for then existing hardware and software.

That status quo has now dramatically changed. Substantial improvements in the performance of affordable servers (or as processing power now available through the Cloud), combined with more efficient algorithms from a few software providers, have simply cracked the code. The scalability problem of the past is just no longer an issue – an important breakthrough.

We might also argue that many of the earlier initiatives in the industry were heavily dependent on collaboration between manufacturers and retailers on a very company to company and even individual manager level. And that kind of collaboration can be very difficult to maintain.

In contrast, this latest thinking is literally more mathematically oriented – and sharing data is frankly a lot easier than personal collaboration. We don't mean to downplay the role of collaboration even in this new model, but the numbers simply have a bigger role – and that is to the good.

Finally, for both manufacturers and especially retailers, it simply takes time to evolve in supply chain thinking and practice. But manufacturers have seen that this is clearly the next battleground for supply chain improvement, and retailers have generally come to the realization that they need to focus not just on logistics efficiency but total supply chain performance.

The opportunity is clearly here. A few early leaders on both the manufacturing and retailing side are proving the concept. The technology to make it happen is available right now. The ability to achieve the integrated, consumer-focused supply chain has finally arrived, and it will fundamentally change the consumer goods to supply chain forever.

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How Manufacturers and Retailers See the Opportunity

With that as backdrop, in late Spring of this year *Chief Supply Chain Officer (CSCO) Insights*, SCDigest's research arm, undertook a major survey of consumer goods manufacturers and retailers to better understand how they perceived opportunities for a more "shelf-connected" supply chain, and what if any actions they were taking to get there.

In total, about 250 usable responses were received, including those from a number of well-known manufacturers and retailers.

Certainly, both groups see significant opportunity through better connection to the shelf.

As shown in the chart below, 46% of manufacturers and 40.6% of retailers view achievement of a shelf-connected supply chain as a high priority, while just 10.3% and 12.5%, respectively, see it as a low priority.



Manufacturers and Retailers See Shelf Connected Supply Chain As High Priority

"This is clearly the next generation of supply chain improvement for consumer goods companies," a director of supply chain planning for one manufacturer noted in the comments area.

That said, it was interesting to see how companies evaluated the extent to which their supply chains were currently driven by point of sale (POS) data. As shown in the graphic on the next page, despite widespread availability of POS data for many years, just 19.8% of manufacturers said their supply chains were driven by POS at a high level. Conversely, just under 50% of manufacturers said their companies operated at a somewhat low level of POS leverage or worse. In this respect, the industry clearly has a long way to go – and this is part of this exciting new opportunity.





The survey also asked retailers to rate how far advanced they believed their vendors were in terms of leveraging POS data. As seen in the chart, they were even more pessimistic, with just 3.1% estimating that vendors are using POS data at a high level. We'll note that the manufacturers were rating themselves, while retailers were rating their vendor base as a whole, which probably partially explains the differences in perspectives.

How do manufacturers and retailers rate their own progress on achieving a shelf-connected supply chain? Understandably at this early stage, very few manufacturers (12.9%) and retailers (15.6%) say they have "made substantial progress" on building these capabilities (see charts below).

Meanwhile, 47.1% of manufacturers and 43.8% of retailers are either just getting started or really don't have an initiative yet. The obvious conclusion: there are vast differences in progress on this game-changing opportunity among manufacturers and retailers. *CSCO Insights* recommends that companies in both sectors quickly formally evaluate their status versus the competition and develop a plan to "catch up" as appropriate. Even if the decision is to go slow, it is important that this be a formal decision made by weighing all the factors, not a default choice driven primarily by inertia.



Current Progress on Achieving a Shelf Connected Supply Chain





What are the Barriers to Getting There?

CSCO Insights next asked respondents what they saw as the largest barriers to achieving a shelf-connected supply chain. The results are shown in the following two graphics, and are quite interesting. The charts are based on average scores across all respondents in each sector, with 1 being a very low barrier, and 7 a very high one. The mid-point is of course a score of 3.5.

How Manufacturers See Barriers to Achieving Shelf-Connected Supply Chain (Average Score, 1 = Low Barrier, 7 = High Barrier)



Manufacturers view the largest barrier as being the degree to which retailers will truly buy-in to the concept and collaborate with them to get there. That was just a just a few decimal points ahead of the manufacturer's "current supply chain technology," which in turn was rated as a slightly larger barrier than number 3 "current supply chain processes."

On the retail side, a somewhat different story, as shown on the next page. Here, retailers saw manufacturers' technology capabilities as the largest barrier, and at a stronger level of concern (4.9 average score, versus 4.3 for manufacturers) for this potential obstacle than the manufacturers themselves did.



"Manufacturers view the largest barrier [to achieving shelf-connected supply chain practices] as being the degree to which retailers will truly buy-in to the concept and collaborate with them to get there."







How Retailers See Vendor Barriers to Achieving Shelf-Connected Supply Chain (Average Score, 1 = Low Barrier, 7 = High Barrier)



That again was just a bit higher than concern over manufacturers' supply chain processes, which came in with an average score of 4.8.

They even rated their own capacity to buy-in and collaborate as a fairly high barrier to making this happen, with an average score of 4.1, well above the mid-point.

We next found equally interesting responses to how companies compared their own progress versus that of their chief competitors.

Here, as can be seen below, just 2.4% of manufacturers and 10.7% of retailers viewed themselves as being "well ahead" of their competitors in terms of building a shelf-connected supply chain. On the other hand, 31.7% of manufacturers and 35.7% of retailers say they are either well behind or slightly behind.

Retailers Well Behind 21.4 Manufacturers 10.7 % <[%] 10.7 Slightly 2.4% Behind 23.2% % About Even 32.1 42.7% 25.0 18.3% % % Somewhat Ahead 13.4% Well Ahead

Where Are You Versus Competitors in Achieving a Shelf-Connected Supply Chain?





Where Do Companies See Operational Benefits?

Where do manufacturers and retailers see the largest opportunities for getting to a more shelf-connected supply chain? We asked respondents to rank the usual list of potential benefits (lower inventory, higher sales through lower stockouts, etc.) as being a substantial opportunity down to no opportunity at all.

As shown in the chart below, manufacturers clearly see a huge opportunity to reduce overall inventory levels, with 71.4% seeing a substantial opportunity in this area. That was followed by reducing stockouts in store, cited by 53.6% as a substantial opportunity, just ahead of improving top line revenue and fill rates. Reducing the level of order expediting was viewed as the least important benefit, though we would note that if the other objectives are achieved, it will clearly reduce expediting requirements as well.



Manufacturers See Opportunities in Many Areas of Performance

The story was somewhat different for retail respondents, which in total could be said to rate reducing stockouts at the store level as the most achievable benefit, with 63.2% saying there was a substantial opportunity in this area. That was followed by improved inventory management overall, for which 51.3% saw a substantial potential benefit.

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To be clear, a key driver of all these benefits will in fact be substantially improved forecast accuracy, as companies get closer to the end consumer, and manufacturing replenishment becomes truly pull-based, versus being dependent more on the timing of retail orders as they are today.

The survey next asked manufacturers about what they viewed as the most important factors for deciding whether to make the effort with specific retailers to jointly drive the supply chain from the shelf back.

What Factors are Most Important when Manufacturers Consider Shelf Connectivity with a Retailer?

(Average Score, 1 = Low Barrier, 7 = High Barrier)









Interestingly, manufacturers rated confidence that the benefits from such an initiative with a retailer will be shared equitably as the top factor, which received a very high average score of 5.7, again on a scale of 1 to 7. That was followed closely by an evaluation that a retailer has a high level of category/product knowledge, so that the efforts to build the capabilities can be best leveraged. Even the lowest ranked factor, trust, still scored well above the mid-point.

How Do Consultants and Academics View the Opportunities?

To accommodate consultants, analysts and others outside the manufacturing and retail sectors who wanted to take part in the research, we constructed a couple of questions specifically to get their take on this topic.

Many are certainly bullish on the opportunity. As shown in the chart below, a full 71% see this as a major opportunity for the industry, and zero respondents from this group see it as either a modest opportunity or little opportunity.

Consultants, Academics, and Analysts See Major Opportunities with Shelf-Connected SCM



When asked what they saw as the top barrier to reaching this next state, from what might be called a more objective view than manufacturers or retailers might have, changing current processes in both retail and then manufacturing came out on top. Interesting to us, retail executive support scored fairly high as a potential barrier in the results from this group.

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How Consultants/Academics See Barriers to Achieving Shelf-Connected Supply Chain

(Average Score, 1 = Low Barrier, 7 = High Barrier)



Where do Manufacturers and Retailers Stand in Terms of Specific Processes?

At the end of the survey, we asked both manufacturers and retailers to evaluate in a fairly granular way where they stood in terms of specific capabilities, using a "maturity model" type of approach. A few examples of the responses to those questions are provided on page 12.



Process Area: Use of POS in Demand Planning	
Current Processes	Percent of Respondents
Level 1: Statistical demand plan is driven by retailer orders on manufacturing DC's and plants, no customer hierarchies are built into the consensus demand planning process.	15.8%
Level 2: Statistical demand plan is driven by orders on manufacturing DC's and plants with large customer forecasts segmented into distinct hierarchies.	27.6%
Level 3: Number 2 plus collaboration occurs with retail partners to augment and adjust the demand plan.	32.9%
Level 4: Number 3 plus daily POS demand sensing is leveraged to adjust the order based forecast based on daily demand signals from the shelf.	11.8%
Level 5: Shelf POS with largest customers are the starting point for the consensus demand plan. The capability to time-phase the forecast up the retailers and suppliers network incorporates key variables that drive an accurate order plan including: POS, On-hand inventories, lead times, in-transits, shipping and receiving schedules, transportation minimums and constraints, retailer replenishment strategies, current and planned planogram changes and current and planned promotions. Automation is leveraged to automatically select and tune the algorithms calculating the sell through forecast.	11.8%

First, we asked manufacturers how demand signals from the shelf are leveraged for the creation of the demand plan at their companies. The results are as follows on the next page.

Next, manufacturing respondents were asked to rate their maturity in terms of their use of advanced analytics.

Process Area: Use of Analytics	
Current Processes	Percent of Respondents
Level 1: Retailer DC product withdrawals to store, Retailer DC inventory positions	32.4%
Level 2: POS Movement, Store on-hands, DC On-Hands	17.6%
Level 3: Number 2 plus Post-Promotion lift analytics and historical out-of-stocks	24.3%
Level 4: Number 3 plus Sell-In versus Sell through analytics, proactive vs. historical analytics (Likely future out-of-stocks), store grading analytics	16.2%
Level 5: Number 4 plus Root cause analytics tied to phantom inventory, space allocation, replenishment strategy, etc. Analytics incorporate category interdependencies (Halo, Cannibalization - including shopper specific insights)	9.5%

The next question was focused on the degree to which manufacturers are incorporating time-phased order projections from the retail shelf into their corporate Sales & Operations Planning processes.



Process: Use of Time-Phased Retail Forecasts in S&OP	
Current Processes	Percent of Respondents
Level 1: Time-phased order projections from retailers are not incorporated	28.0%
Level 2: Projections are used as a "sounding board" in consensus demand planning and are loosely coupled	45.3%
Level 3: Projections are tightly coupled and directly impact consensus demand & supply plans within S&OP	26.7%

Another survey area had to do with use of Vendor Managed Inventory (VMI) programs by manufacturers, as shown below.

Process Area: VMI	
Current Processes	Percent of Respondents
Level 1: VMI is manually executed at Retail DC level with spreadsheets. VMI is a customer service function. Order planning horizon is one lead time into the future.	33.4%
Level 2: Automation exists to on-board retail customers. VMI is executed at retailer DC level. Order planning horizon is one lead time into the future.	19.7%
Level 3: Co-managed inventory programs leveraging internet portals assist with scaling volume. Some portion of VMI is leveraging store level demand in the calculation of the retailer order. Insights and data from VMI programs are integrated into corporate supply chain planning functions. Order planning horizon is one lead time into the future.	24.3%
Level 4: Co-managed inventory programs leveraging internet portals assist with scaling volume. A majority of the VMI/CMI order volume is being driven from shelf demand signals. Insights and data from collaborative programs are tightly integrated into corporate supply chain planning functions. Time phased orders move beyond the single lead time horizon and are visible more than three months into the future.	11.3%
Level 5: A majority of the collaborative order volume is being driven from shelf demand signals. Insights and data from programs are tightly integrated into corporate supply chain planning functions. Time phased orders move beyond the single lead time horizon. The manufacturer and retailer have a closed loop process that enables the retailer to commit to the order plan beyond one lead time and the manufacturer to provide capable to promise and commit to promise feedback to the retailer.	11.2%





Additional results in such areas as store clustering, assortment collaboration, planogramming and more can be found in the Appendix. On the retail side, we first asked retailers about how well time-phased order projections from the retail shelf are incorporated into their corporate planning processes.

Process: Retailer Use of Time-Phased Order Projections	
Current Processes	Percent of Respondents
Level 1: Time-phased order projections are not calculated or leveraged	18.5%
Level 2: Projections are used as a "sounding board" in consensus demand planning and are loosely coupled as inputs to other key planning functions	51.9%
Level 3: Projections are tightly coupled into corporate budgeting and other key planning processes	29.6%

Another retailer question concerned the level of category shelf assortment collaboration that is executed with a retailer's most strategic suppliers:

Process: Retailer Collaboration with Vendors on Shelf Assortments	
Current Processes	Percent of Respondents
Level 1: We do not collaborate on category assortments	35.7%
Level 2: We make regional assortment recommendations based on POS and syndicated data	39.3%
Level 3: We make store level assortment recommendations based on pre-defined store clustering	25.0%

Interestingly, we next asked retailers about how well their category management function is integrated into the supply chain function. Obviously few companies believe they have tightly integrated category management and supply chain.

Process: Retailer Integration of Category Management w/Supply Ch		oly Chain
	Current Processes	Percent of Respondents
	Level 1: Category management and supply chain planning are separate and distinct functions that operate independently	40.7%
	Level 2: The functions are loosely tied together with plans shared on an ad hoc basis	48.1%
	Level 3: The functions and processes are tightly integrated. Category strategies impact service level settings within replenishment, shelf level forecasts are key inputs into shelf facing decisions and future store and shelf resets impact replenishment flow plans.	11.1%





Finally, we looked at maturity in terms of plannogramming, ultimately a key capability in terms of integrating supply chain planning and execution. Interestingly, not a single retailer placed itself as having level 5 capabilities/processes.

Process: Retailer Plannogramming Granularity	
Current Processes	Percent of Respondents
Level 1: One size fits all for store chain. Planograms vary by section and size.	25.0%
Level 2: Regional planograms with variation by section and size. Fine tuning to store/ volume potential. Store grading on volume class (A,B,C)	35.7%
Level 3: Number 2 plus assortment and space decisions are tightly coupled within a single process	17.9%
Level 4: Planogram by cluster and incorporate: POS, consumer demographics, third party market scan data, product and store attributes. Visibility to plan and forecast as key inputs to space allocation decision versus average historical sales. P&L and return on investment analysis by brand and segment drive category space allocation.	21.4%
Level 5: Capability to create three dimensional virtual store and shelf consumer response. Leverage consumer bio-feedback to improve consumer response via virtual reality store walk throughs and closed loop research to execution modeling. Planogram by cluster with execution capability to individual store/category. POS forecasts replace history as primary volume metric. Ongoing space allocation decisions are fully enabled by management by exception.	0%

All told, the data show a tremendous level of interest and opportunity in better connecting the POS data and the store shelf back up through the supply chains of both manufacturers and retailers. Both groups seem to sense that there is a true breakthrough opportunity here.

At the same time, manufacturers and retailers are aware they have a long way to go, as indicated by the more general questions about progress and where they stand versus competitors, as well as the more granular questions relative to their maturity on specific processes/capabilities that in the end are components of achieving a more shelf-connected supply chain.

Scotts Miracle-Gro Shows the Potential

For a number of years, The Scotts Miracle-Gro Company has been a clear industry leader in the use of POS data to drive its supply chain, perhaps of necessity. Customer demand is not only regionally seasonal (i.e., Spring comes earlier in the South than North), it can vary dramatically by the specifics of a given weekend's weather in a particular market.

Given that, without very tight control of what is happening in store, inventories could easily explode or fall short of demand, leading to out of stocks.

Scotts makes extensive use of POS data with its largest customers to drive its forecasting and entire supply chain, receiving daily feeds from those large customers of POS data and on-hand inventory levels.





That drives a weekly store level forecast and related set of analytics that provide additional insight into demand and supply at the store level. This means, for example, that if a washout weekend in Columbus, OH puts a big damper on demand there, Scotts will quickly be able to react to that change at store planning level.

Scotts then in turn has completely integrated their store-level demand planning processes back through its supply chain, as the store-level forecasts are used to develop replenishment plans and factory production schedules, to the point where Scotts is collaborating with customers on those inventory build plans.

Scotts says it is to the point where it is planning, for instance, how many bottles of a fertilizer it wants to stock at different points of the season at a given retail store, with plans on how to bleed down that inventory as the season concludes. It is also doing all this across a wide variety of products and several distinct segments that have their own backend supply chains.

This scope of store-level visibility and control has also enabled Scotts to achieve VMI relationships with many of its customers.

Scotts is well aware of the role technology is playing in its success by enabling these shelf-connected processes. Supporting this aggressive use of store-level POS data, certainly one of the most advanced in the market, and connecting that data back up through its supply chain is a suite of forecasting and planning solutions from JDA Software. Scotts has been evolving with JDA over the last several years to continue to improve its shelf-connected approach to supply chain, as the capability to leverage this level of data granularity has evolved at JDA over time. This of course is consistent with the observation at the beginning of this report that the previous limitations that were barriers to solving the store-level challenge have now disappeared, as the Scotts' case study shows.

The benefits to Scotts have been substantial, and should serve as a solid proof point of the kinds of results a shelf-connected supply chain can deliver:

- Customer Service rates improved from 92% to 99%
- Inventory turns doubled -boosting free cash flow
- Proactive planning for local variations that can impact demand
- Average annual supply chain savings of \$30 million
- Complete value chain synchronization from "shelf to supplier" for rapid response to dynamic market conditions

Other early adopters of this concept are seeing similar types of results.

Summing it Up

The consumer goods to retail supply chain really is on the cusp of a dramatic inflection point.

A combination of new thinking, improved technology, and a realization that finally getting to the store shelf is simply the way manufacturers and retailers must go to drive the next level of supply chain improvements have combined to present this opportunity, which a few but growing number of leaders have already embraced.

"Scotts is well-aware of the role technology is playing in its success... Supporting this... use of store-level POS data, is a suite of forecasting and planning solutions from JDA Software."







Our survey data shows the level of interest in this concept, but also that most manufacturers and retailers are behind where they need to be.

This is also a clear case where companies taking the lead can achieve significant competitive advantage over others in the market, in no small part because the results that can be achieved are so strong.

We emphasize that even if a company decides to go slowly, that needs to be a conscious decision based on an analysis of where a company is at and how moving down the path can benefit its operations and bottom line. We think more often the decision will be to push forward.

The shelf-connected supply chain is really the culmination of a series the consumer goods to retail initiatives that have delivered partial progress but not yet fully realized the vision of consumer driving the rest of the supply chain that has been around really since the dawn of supply chain thinking.

We are pretty confident that if we repeat this survey in a couple of years, we find notable progress has been made.

About CSCO Insights

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.

