Elusive Integration:
Linking Sales and Operations Planning

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Effective sales and operations planning requires intensified levels of collaboration, trust and data integration. Fostering a commitment to relationship building, shared incentives and accountability can help.

Mapping customer delivery requirements against the realities of supply chain capability is often an endless source of friction. Demand forecasts are constantly changing, customer needs are ever more specific, and service requirements are rising in every industry. Growing overseas sourcing makes seasonal fluctuations tougher and places greater stress on intra- and inter-organizational communications. Supply chain integration has long promised to smooth the wrinkles between sales and operations planning. At a recent CIO summit hosted by Cisco Systems and the Center for Digital Strategies at the Tuck School, executives from many industries debated the challenges of integration. In this article, we highlight some of the key learnings and explore how companies have successfully integrated the forward- and backward-facing processes within their supply chains, focusing on the link between demand forecasting and supply chain implementation. Based on our findings, we concluded that:

- **There is a new urgency to integrating sales and operations planning (S&OP).** Increased supply chain velocity, greater demand volatility, shorter product life cycles and the growth of global sourcing are posing new challenges to supply chain coordination and integration across functional silos and across trading partners.
- **Planning and forecasting must become more dynamic, responsive and data-driven.** Companies can better respond to the demand fluctuations that challenge the S&OP linkage by improving synchronization of human insights with data-driven modeling and encouraging organizational sensitivity to variability triggers and demand discontinuities.
- **Shared incentives, accountability and language can help build effective S&OP processes that cut across functional silos.** Simply sharing data effectively is not enough to improve S&OP integration; a holistic approach should also focus on developing shared incentives and accountability.
- **Successful collaboration with external partners is increasingly important and requires constant relationship building, an explicit mutual commitment to gain-sharing and constant re-evaluation.** Deeper and more strategic levels of collaboration (e.g., sharing insight as well as data) must be based on direct relationships between functional managers, clear goals, a win-win mindset and a willingness to contractually share gains from collaborative supply chain innovation.
- **Building trust on multiple levels and across enterprises is core to S&OP integration.** Trust is critical to avoiding S&OP breakdowns; it must be built over time with face-to-face communication at multiple organizational levels, and with full support from top management.

Breakdowns and Culprits

How does the link between sales and operations planning typically break down? What can be done to prevent these breakdowns? Although the answers to these questions vary significantly by industry and business model, there are many common breakdowns between sales and operations planning.

Sometimes the problems are truly unanticipated shifts in demand due to changes in fashion, unusually strong seasonal demand or environmental factors like an extreme event. For example, after 9/11 Whirlpool found it was unable to keep fill rates high for specific products (dishwashers and stainless steel appliances) in the wake of an unexpected consumer demand shift. For many industries, weather alone can destroy even the best plans. A couple of years ago, Lowes initiated a program to accelerate the shipment of lawn mowers to its stores in an effort to minimize distribution-center inventory and improve local product availability, only to have them linger unprofitably because spring weather arrived unseasonably late.

However, these sudden shifts are rarely the sole culprit of breakdowns. Inaccurate or misaligned forecasts due to conflicting incentives, padding and hedging often cause breakdowns. Kirk Drummond, chief information officer of food service provider Sysco, described the situation all supply chain managers fear: a sales push creating huge last minute orders for next-day fulfillment without any advance warning to operations. Staples' senior VP of supply chain, Kevin Holian, described a similar frustration: an overly enthusiastic promotion where merchants dramatically underestimated demand. Trust- and incentives-alignment compound these problems, result-

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ing in "bad behavior" such as padded forecasts or withholding information. For example, in the aftermath of the 2001 appliance shortage, Whirlpool found itself scrambling to deliver product while balancing availability and fill rate with working capital and cost productivity. Whirlpool's VP of supply chain, Reuben Slone, noted, "We were totally disintegrated between the manufacturing operations and sales. There was no trust at all. The sales guys knew that we weren't going to build what they were asking, so they would add things. We knew they were padding things so we reduced things."

Many of these problems have been tormenting supply chains for decades, but it is clear that the increasing speed of business is making the problems ever more evident. Cargill CIO Rita Heise noted, "The difference [from 10 years ago] is the impact of being wrong and the speed at which the supply chain moves. Ten years ago maybe it was okay to have 84 percent delivery, but now 99.9 isn't good enough."

Rethinking Forecasting and Modeling

High-speed markets, long lead-times and constant change all translate into demand variability and forecast error. "Variability is huge," said Harvard professor Ananth Raman. Regardless of the cause of demand variability, mitigating the impact of demand variability is the key. The first step is better forecasting, followed by designing responsive, dynamic sales and operations planning processes that take variability into account. Often the signals are apparent, but managers simply don't have processes in place to anticipate and respond. Whirlpool's Slone described one situation where the writing was on the wall, but the company missed it, "We really screwed up from a merchandising standpoint because we could see the pot bubbling but we weren't seeing the bubbles … . If you went back and looked at weekly [data] buckets, you could see a very definitive growth trend."
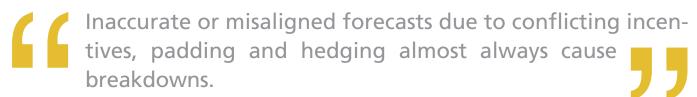
products – particularly for functional replenishment-oriented products with longer life cycles. "There is a woeful lack of understanding of just how predictable demand really is," said Bill Day, Sysco's VP of supply chain. "We showed that more effective use of computer forecasting tools (modeling) would increase service level and reduce inventory."

"Our biggest challenge," noted Staples' Holian, "is converting all these demand signals into an order forecast." One problem is that different functions like sales and manufacturing typically develop their own plans, which get rolled up into a single number, which then becomes static and detached from what is actually happening. David Lepow, director of supply chain operations for Owens Corning, described the perils of a being trapped in a single number, "There is a financial forecast we have to do, to set expectations externally, which has nothing to do with how we run the business daily. This policy of the single number, I think, seduces us into thinking okay, we got this covered when in fact all it takes is a very small amount of variation to really disrupt the customers."

Another challenge is that crosscutting processes like forecasting, scheduling, production planning and inventory management can only be improved marginally within the departmental silos of sales, manufacturing and distribution. "It's really the interconnect where we are going to see the breakthroughs in context of sales and operations planning," said Lepow.

Whirlpool found that matrix reporting relationships can help foster a holistic view. Slone explained, "Forecasting and the order desk are part of sales, but they report in to me as well." Whirlpool also found that IT can help provide multiple views of the supply and demand chain.

But Cisco CIO Brad Boston argued that while the right systems could potentially help, "It's not a tool discussion, it's a business process discussion … . If you don't have the data right and the processes to load the data, it doesn't matter how good the tools

> **" Inaccurate or misaligned forecasts due to conflicting incentives, padding and hedging almost always cause breakdowns. "**

Moreover, firms must have processes in place that can quickly react. As Whirlpool CIO Esat Sezer noted, "We have the data to see variabilities … we can define rules, exception messages, alerts and signals. The technology is there. But what do you do with it? Who's going to react to it?"

Mike Mabry, Lowe's senior VP of distribution, pointed out that variability starts with the consumer and then propagates upstream toward the distribution center and ultimately manufacturing. So staying on top of minor shifts in downstream demand is paramount. "Responsiveness in the supply chain and forecasting is an iterative process. That forecast is only good for the day I gave it to you, and then I have to come back the next day and say here's the trend."

Massive storage capabilities and data mining can certainly help by an expanded use of modeling in the forecasting process, incorporating the many terabytes of data seasonality, weather and other demand drivers. Sysco has found that in many cases computers can do a better job than human planners of predicting demand variability of some

look." Although departmental forecasts must ultimately be rolled up into a single plan, or common version of the truth, that plan must be dynamic, constantly refreshed and based on bottom-up input.

Incentives and Metrics

Once functional specialists have gotten together and are tackling the same issues, they will need to have aligned incentives so you can hold them accountable for achieving shared, rather than departmental, goals. For example, GM found that it had to establish end-to-end process owners who live in between the silos of sales and manufacturing and have accountability for processes like order fulfillment.

Sysco's Drummond suggested companies should structure management incentives based on collaboration at high levels in the executive group and in the sales and supply chain functions. "That person is [then] going to drive down those actions through his personnel even though they are more skewed toward their different departments." He also advised making sure people understand their incen-

tives, noting that he was surprised to find that many managers didn't know what return on average capital was or how to calculate it. 3M CIO Kirby Spike seconded the importance of getting metrics right, noting that the proliferation of granular metrics may distract from the more global, collaborative ones. Translating high-level executive metrics into detailed action-oriented metrics is the key challenge. Cisco's Boston warned that the further you drive the incentives down in the organization, the less dynamic they become. "A lot of it ultimately depends on how successfully they can translate [the metrics] into micro-objectives for their staff."

The interconnectedness of supply chains across trading partners means successful external collaboration is also a key component. "In order for a retailer to truly have a sales and operations planning process," said Staple's Holian, "you have to have a supplier engagement process – some degree of regular open dialogue of what's going on in the business." Many of the success factors for external collaboration mirror those of internal collaborations, including shared goals and metrics; mutual trust and understanding; making sure the right people are talking; top management buy-in; and a drive toward making the mutual pie bigger rather than simply shifting risks and resources.

"You've got to have an agreement and commitment around what the key metrics are," said Lowe's CIO Steve Stone. "How do you want to measure yourself and how do we want to measure you?" Greg Ehlert, 3M's director of supply chain, suggested focusing on the "one or two key metrics that add [the most] value to both companies. … You can never hit all 10 metrics that they measure you by."

Collaboration

Strategic collaboration can be the most powerful in cases where collaboration expands the mutual pie by providing more value more efficiently to their shared customer. Lowe's Stone noted that a major opportunity for deep collaboration lies in sharing insight into the consumer. "Can we come up with a product that we can sell better?" he asked. "That's where I think you move beyond the data sharing and [into a deeper relationship] … when I'm helping influence your product decisions."

Jenny Verner, VP of supply chain at Cargill, said a key to creating new strategic value is working through "who is best to perform" specific functions. You need a "willingness to allow the best-positioned company to actually manage that part of the supply chain."

Another key is developing a deep understanding of each other's business and leverage points. "You should understand the profitability that I contribute to your business, and I should understand the profitability of your products for me," explained Sysco's Day. "We take those two income statements essentially and see if we can do things that increase your profitability and mine."

Building a deep understanding also means collaborating at many different levels. "It starts with senior level business planning alignment and integration that sets the tone in terms of what are the business outcomes we are trying to achieve [and] a framework for key actions we are committing to," noted Owens Corning's Lepow. "You've got to know the right people to talk to within the [partner] organization so that your message gets heard and understood," added Lowe's Mabry. "You've got to have the logistics guy talk to the logistics guy, the IT guy talking to the IT guy, so that they speak the same language."

But Slone said arm-wrestling over potential spoils can get in the way of generating collaborative wins. "The path we were on when we first started is, 'how do we reduce the total cost to the customer between us?' If you look at a manufacturer and a trade-partner retailer, the way we're competing is [through our combined] supply chain. If our supply chain [becomes] more responsive, more effective and more flexible, then our collective customer is going to win. How can you get there if you can't sit down and openly share this information?" David Barclay, VP of information systems at Staple's, noted, "In the old days, three to five years ago, if our supplier lost, we won. Now we are looking at it like, 'if I help you win, you're going to help me win.' Added Sysco's Day, "We're being very successful in creating win-wins for our suppliers and ourselves by using collaborative models, and it's working – it can be done."

Paris Arey, VP of sales operations at Cisco, described a similar situation where Cisco's analysts extensively modeled the financial impact of changes in how it dealt with its distributors and then took that analysis to its top distributors to design a win-win implementation. "We said let's make a determination of what impact these particular initiatives will have on our mutual business," explained Arey. "We [then] spent another four months with them, going through everything, every assumption, cost of working capital and everything else."

Trust and Information Sharing

Collaboration can go awry when it comes to sharing the most valuable supply chain asset: data. Staples' Holian told of a situation with a technology vendor where the vendor was getting EDI sales and inventory data and then using that data to manage channel inventory. "So we couldn't get the quantity of product that we wanted because of the data that we were giving," he recalls. "By being open and providing data, we were actually being hurt by it."

"The word 'trust' is very genuinely part of the whole discussion," said Holian. "What information are you willing to share and how capable are you in dealing with information that could potentially [be used] to the other person's detriment?"

Whirlpool's Slone noted that navigating a crisis can be a key opportunity to build trust, citing a memorable case where Whirlpool had made a mistake with a major customer, potentially jeopardizing the entire relationship. "Our customer was in a position to absolutely severely punish us, and the attitude was, 'how are we going to work through it, how are we going to work together to be successful?' " recalled Slone. "That was definitely the turning point in the nature of the collaboration." What changed? "Trust and both parties feeling more comfortable that they can take more risks, share more information, that either one would protect the other."

Advanced IT systems can help enable collaborative relationships by selectively providing and preventing access to important data. Stone said Lowe's uses digital certificates to provide multiple authentication layers and protected data access, but acknowledged that this does not completely solve the problem of partners wanting access to data – for example cost and margin data – that Lowe's may not want broadly known. "The trust in data and the trust in each other almost go hand in hand," said Stone. ∎