

Growing Revenue from CPFR and VMI: Building the Demand-Driven Supply Chain

*An Oracle White Paper
Updated October 2006*

Growing Revenue from CPFR and VMI: Building the Demand-Driven Supply Chain

Demand-driven companies have five best practices in common.

- **Collaborate internally and externally.**
- **Use every source of data.**
- **Use intelligence, not algorithms (in your supply chain applications).**
- **Create a real sales and operations planning process.**
- **Focus on process excellence, then technology.**

EXECUTIVE OVERVIEW

Most supply chain projects to date have been all about reducing operating costs through inventory reductions, better transportation planning, lower transaction costs, and improved supplier management. Covering the costs for customer-initiated collaborative planning, forecasting, and replenishment (CPFR) programs and vendor-managed inventory (VMI) programs by further reducing these operating costs is difficult, at best. Industry-leading companies are building demand-driven supply chains around CPFR and VMI initiatives to grow revenue and profits. This white paper initially describes the five best practices these demand-driven companies have in common and the technology building blocks necessary to achieve them. The remainder of the paper focuses on how to build a demand-driven supply chain around CPFR and VMI programs to improve KPIs and have significant positive impacts on shareholder value.

INTRODUCTION

AMR Research defines the demand-driven supply chain in a framework it calls the demand-driven supply network (DDSN) as a “system of technologies and processes that sense and react to real-time demand signals across a supply network of customers, suppliers, employees.”¹ Supporting DDSN, CPFR, and VMI are processes that can improve your company’s ability to sense and react to demand signals from your customers. More importantly, AMR Research found a direct correlation between companies with demand-driven supply chain best practices and key performance indicators (KPIs). Companies with improved demand visibility and the ability to use this insight to produce better forecasts had

- 15 percent less inventory
- 17 percent stronger order fulfillment (with the associated revenue increases)
- 35 percent shorter cash-to-cash cycles

These companies combined these improvements to achieve perfect order performance in excess of 99 percent on a continual basis.

¹ O’Marah, Kevin, “Mastering Demand for Profitable Growth,” AMR Research Executive Spring Conference, June 2004.

Not surprisingly, these improved KPIs had a significant impact on shareholder value. An AMR Research benchmark study² found the following correlations:

- Earning per share (EPS)—A 10 percent improvement in perfect orders resulted in a \$0.50 gain in EPS
- Return on assets (ROA)—A 10 percent improvement in perfect orders resulted in a 5 percent increase in ROA
- Profit margin—A 10 percent improvement in perfect orders yields about a 2.5 percent gain in profits

The key factor behind these improvements—demand visibility—had a 2-to-1 impact on perfect orders. To measure operational progress toward these types of gains, best practice companies typically use four key metrics:

- Forecast accuracy
- Perfect orders
- Supply chain costs
- Cash-to-cash cycle time

The starting point is improving forecast accuracy in order to develop better plans and make adjustments if initial operating plans don't support financial goals. The remainder of this white paper will focus on how to build a demand-driven supply chain around CPFR and VMI programs to improve KPIs and have significant, positive impacts on shareholder value.

DEMAND-DRIVEN SUPPLY CHAIN BEST PRACTICES

Thought leaders often describe the efficient supply chain as one that replaces inventory and non-value-added processes with information and demand visibility as the key pieces of information. The Supply-Chain Council,³ a leading trade association for supply chain professionals, has built its supply chain process model (called SCOR) around the concept that the supply chain, and the related processes and metrics, stretch the suppliers' suppliers to the customers' customers.

Unfortunately, much of the supply chain technology and process improvement projects to date have been focused internally on manufacturing and distribution operations. This is why the idea of building demand-driven processes that increase demand visibility across multiple levels of the supply chain are paramount for many executives. Leading the charge, category leaders such as Wal-Mart, Dell, and Best Buy are taking aggressive steps to increase demand visibility to their suppliers and encourage them to participate in CPFR and VMI programs. With the increased visibility they'll be able to reduce costs and improve delivery performance.

² Hofman, Debra, "Mastering Supply Chain Excellence," AMR Research Executive Spring Conference, June 2004.

³ The Supply-Chain Council, www.supply-chain.org.

It is not by accident that many of the best suppliers to leading retailers excel at CPFR and VMI. AMR Research found that these demand-driven suppliers have five best practices in common:⁴

- Collaborate internally and externally
- Use every source of data
- Use intelligence, not algorithms in your supply chain applications
- Create a real sales and operations planning (S&OP) process
- Focus on process excellence, then technology

These best practices make it possible to increase demand visibility, make better decisions with this information, and ensure that the new collaborative process is scalable and repeatable to sustain revenue and profitability gains. It is critical that all of these criteria are met. Increasing demand visibility by itself will not produce sustainable long-term gains. Many early supply chain and just-in-time initiatives came up short because they attempted to make manufacturing plants and distribution centers flexible enough to respond to real-time demand signals, without any intelligent demand management to learn from this visibility. This leads to CPFR and VMI programs that simply shift costs from customer to supplier without taking any real costs out of the supply chain. The following sections examine each of these best practices and lay out the technology building blocks to achieve them.

Collaborate Internally and Externally

Collaboration allows suppliers and customers to communicate insights on planned promotions or extraordinary events. For example, Wendy's, the quick-service restaurant chain, collaborates on a daily forecast with each of its company-owned stores to catch local demand spikes, such as a nearby parade or sporting event.

Collaboration is the most critical step in any effort to improve demand visibility and use this increased visibility constructively. Collaboration allows suppliers and customers to communicate insights on planned promotions, extraordinary events, capacity constraints, new product introductions, operational problems, and other issues that are not covered by orders and shipping notices transmitted by electronic data interchange (EDI). These insights enhance raw demand signals and add richness to the historical data used to forecast future demand. For example, Wendy's, the quick-service restaurant chain, collaborates on a daily forecast with each of its company-owned stores to catch local demand spikes, such as a nearby parade or sporting event.

While it is somewhat obvious that demand visibility will be improved by external collaboration, the importance of improving internal collaboration is often overlooked. Eventually, all successful CPFR practitioners find that the real monetary value is derived from improved internal collaboration. However, improving internal collaboration is not always easy. It means putting systems and processes in place to ensure that the organization is presenting one face to the customer. As a stopgap measure, many suppliers establish cross-functional account teams that include sales, marketing, supply chain, and finance personnel to get

⁴ Preslan, Laura, "Embracing Demand Variability," AMR Research Executive Spring Conference, June 2004.

around the departmental silos that impede internal collaboration. Many Wal-Mart suppliers have adopted this model.

Best practice companies integrate CPFR and VMI programs into their S&OP processes and support them with accurate one-number forecasts. Inherently collaborative, the S&OP process is improved by the increased demand visibility from CPFR and VMI. More importantly, integrating CPFR, VMI, and S&OP processes improves overall forecast accuracy as it provides insights into why past forecasts may have missed the mark—such as high out-of-stocks because of shelf space limitations, an end-cap display that didn't happen, promotion event timing differences, or more aggressive pricing than anticipated. Better forecasting software can go a long way to improving forecast accuracy, but collaboration makes good forecasts great by improving both forward visibility and historical accuracy.

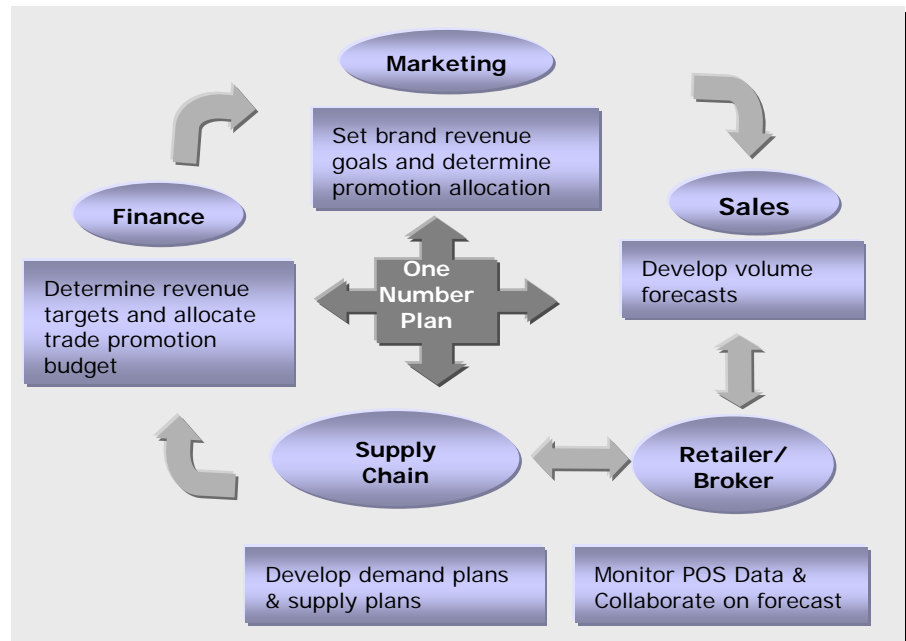


Figure 1: Collaboration makes good forecasts great by improving forward visibility and historical accuracy.

Use Every Source of Data

The internet and powerful network computers have made it possible to acquire and analyze the huge volumes of demand data including point-of-sale (POS) data, sales history, consumer demographics, syndicated data, National Weather Service, radio-frequency identification (RFID), and other sources. POS data-based forecasts have the potential to generate significant improvements in perfect order performance because

- Forecasts are more responsive to changes in demand, especially those driven by promotions

- Localized demand patterns and demographics can be accounted for more precisely
- Inherent latency, dampening, and selling tactic effects that result from the use of other demand streams such as order or shipment history are reduced

POS data is best used with data from other sources to validate that it provides an accurate picture of what is happening at the consumer level. The collaboration inherent in CPFR and VMI provides one potential check on the quality of POS data.

In addition to supporting forecasts that are more responsive to demand changes, using the POS demand streams provides the best foundation for another best practice: the one-number plan. POS data provides the richest source of information for sales and marketing to determine the effectiveness of their programs. Basing plans on multiple demand streams often leads to different plans by functional area and incurs additional costs to scrub and maintain the data. POS data provides a definitive view of what is really happening at the point in the supply chain where it matters most—the retailer’s shelf.

POS data is best used with data from other sources to validate that it provides an accurate picture of what is happening at the consumer level. The collaboration inherent in CPFR and VMI provides one potential check on the quality of POS data. For example, is shelf space adequate to support the volume of a specific promotion? Out-of-stocks at the store level can cause POS-based forecasts to understate potential sales. This can also be checked by comparing POS data with retailer distribution center stock status to determine if there is adequate inventory on hand to meet necessary days-of-supply coverage.

CPFR and VMI are the best ways to get visibility to this data. This sounds great in theory, but scaling this up across millions of SKU, location, and time period combinations is an impossible task to handle with spreadsheets. Fortunately, today’s exception-based event messaging applications provide a practical way to compare changes in POS-based forecasts with other demand inputs such as distribution center stock status to predict potential out-of-stock situations before they affect revenue.

Use Intelligence, Not Algorithms

For those not steeped in the evolution of supply chain planning technology, this refers to early attempts to create automated programs that attempted to optimize algorithms to solve complex supply chain problems based on huge models. The models often cost millions of dollars to build and ultimately, didn’t work. Using increased demand visibility, precise forecasting technology and collaboration, industry-leading companies are empowering their planners, not attempting to replace them with automated software.

To illustrate how more intelligent applications are designed, let’s use a VMI example. Many long-standing VMI programs use relatively simple rules for replenishment—usually a reorder point trigger with some minimum and maximum inventory thresholds to prevent understocking or overstocking. Replenishing SKUs on promotion is frequently handled outside the standard VMI replenishment

system, and little is done to adjust these replenishment parameters based on actual demand patterns. To apply intelligence to VMI:

- Use weekly POS data to create more accurate weekly forecasts and monitor demand patterns
- Integrate the volume forecasts for promoted items into the weekly demand forecast
- Monitor days-of-supply at the distribution center level to gauge potential out-of-stocks at store level
- Adjust replenishment orders for demand shifts affecting stores served by that distribution center
- Consider the cannibalization effects from promotions on other SKUs
- Constrain replenishment orders based on truckload requirements
- Route exceptions discovered at any step of this process through collaboration to whomever can resolve the problem

Using intelligent processes such as those described above, best practice companies have improved forecast accuracy to better than 98 percent, reduced days-of-supply required to meet customer service levels, reduced out-of-stocks, and increased revenue.

Create a Real Sales and Operations Process

A “real” S&OP process is one that allows all departments to contribute to developing and executing the annual and monthly plans. In many companies, the S&OP process in place is one in which the demand planning group does all the preparation work to determine the gaps in the plan, to satisfy current customer demand. The monthly S&OP meeting focuses on resolving these gaps or warning other departments that all demand might not be met. Generally, what’s missing is the ability to

- Enable sales, marketing, and finance to actively participate in the process
- Monitor progress toward the goals set forth in the annual operating plan
- Initiate demand-creation activities when the current forecast is falling short of the operating plan
- Incorporate inputs from customers through collaboration
- Increase demand data sources to ensure that right quantities of the right products are in the right place—this means CPFR and VMI programs become inputs to the S&OP process
- Include exception-based alerts into the S&OP process to identify problems before they become revenue shortfalls

Essentially, creating a real S&OP process as AMR Research suggests means adding the capabilities listed above to the traditional S&OP process. Combining these creates a collaborative, continuous planning environment that makes the organization much more responsive to changes in demand and new business opportunities.

Given that S&OP is an annual and monthly planning process and CPFR and VMI are generally thought of as more tactical execution processes, the relationship between them is not obvious to many companies. At the strategic level, CPFR and VMI imply a tighter relationship with your customers that generally includes annual and quarterly business planning sessions (this is Step 2 in the original CPFR model). These planning sessions provide an opportunity to improve the internal S&OP process with direct input from your customers.

What's the Difference Between Demand Management and Demand Planning?

Demand planning is the process of evaluating current and expected customer demand (usually based on forecasts) and developing plans to meet this demand. Demand planning and demand forecasting are often used interchangeably, but forecasting is actually a step in the overall demand planning process. Demand management goes beyond demand planning to manipulate customer demand, rather than just evaluate and react to it. An example of demand management is the use of promotions to increase demand above what would have otherwise occurred. This distinction becomes critical in CPFR programs. Trade promotions and co-op marketing events are effective tools for driving more volume and increasing revenue. Collaboration is one of the key means to ensure this revenue is profitable for both trading partners as well.

Focus on Process First, Then Technology

Collectively, most recommendations presented in this white paper are process improvements. CPFR and VMI are both excellent programs to improve demand visibility, but processes must be put in place to take advantage of the increased visibility. These changes in processes will often highlight weaknesses in current systems. Common weaknesses include the inability to

- Develop accurate forecasts at a more granular customer or location level
- Integrate promotion lift factors into VMI and CPFR program forecasts
- Make systems more responsive to increased demand visibility
- Handle more granular data, such as that generated by store-level VMI or daily forecasting

Fortunately, these capabilities can now be added to existing enterprise resource planning (ERP) systems with less difficulty than in years past. Better software platforms, common messaging protocols, and user interfaces mean that the weaknesses listed above can be addressed in months, not years.

BUILDING BLOCKS FOR THE DEMAND-DRIVEN SUPPLY CHAIN

The good news about the demand-driven supply chain is that much of the technology infrastructure including ERP, the internet, and powerful computer systems is already in place to achieve the best practices identified by AMR Research. What remains to be done is to harness these systems with a relatively thin layer of additional processes and technology to improve demand visibility and your company's ability to profit from these improvements. The building blocks of this additional layer of technology and processes are

- Advanced demand management, including demand planning and promotion planning
- Collaborative applications such as CPFR, VMI, and S&OP

- Integrated analytics to incorporate market performance of products in planning
- Exception-based process automation to make systems scaleable to real-world conditions

Technology and Process Improvements Blur the Differences Between CPFR and VMI

In many ways CPFR originated as an alternative to, or replacement for, VMI but now the terms are often used synonymously. The evolution of supply chain thinking and technology, especially the sharing of more information through internet connectivity, has added more collaborative aspects to VMI as companies regularly share forecasts and promotion plans. From a supply chain application perspective, this has blurred the distinction between the two supply chain concepts. Generally, both programs involve sharing forecasts and replenishment plans via EDI or Web-based portals and include some level of collaboration. Simplifying the remaining distinction, VMI programs transfer responsibility of generating replenishment orders to the supplier. With CPFR, replenishment order generation might be with either trading partner. The goal of both programs is to reduce costs and increase revenues in the supply chain from

- Inventory reduction
- Lower transportation costs
- Eliminated expediting
- Improved demand visibility, especially for promotions and special events
- Reduced out-of-stocks to improve revenue

While reducing supply chain costs is often the focus of VMI and CPFR, the most compelling reason to participate in one of these programs is to increase revenues. Studies sponsored by the VICS CPFR organization have shown conclusively that collaboration can increase revenue.⁵ Results such as these can be achieved in either VMI or CPFR programs as long as elements of true collaboration are included—improving demand visibility, sharing accurate forecasts, and communicating promotion plans.

Better Demand Management Means More Profitable CPFR and VMI

AMR Research points out that the most critical step to successful demand-driven programs such CPFR and VMI is getting the forecast right. Advances in demand planning software now make it possible to

- Consider the most granular sources of demand data, such as POS data from individual stores

⁵Voluntary Interindustry Commerce Standards (VICS) Association, www.vics.org/committees/cpfr/.

- Validate business plans against bottom-up forecasts to ensure that quarterly and annual revenue goals will be met
- Incorporate an unlimited number of causal factors and product attributes, and develop mixed-model forecasts (using Bayesian-Markov algorithms) which reflect real-world conditions—blue products sell better in the South, extra-large sizes sell better in Milwaukee, and mint-flavored products seem to sell better than lemon in winter in the Northeast
- Allow forecasts to be developed and maintained by business people, not just statisticians

Using the most granular data makes sense to most business people, because it's more tangible to picture products on a retailer's shelf than in rows of numbers in a spreadsheet grouped at the account level. At the store level, we can picture trade-offs between the number of shelf facings needed to prevent out-of-stocks and slotting fees and that these trade-offs affect revenue per store. It is also this picture, however, that leads many business people to believe that there are too many unpredictable factors to build into a forecasting model—we don't know exactly where to place more mint-flavored product and less lemon, or when.

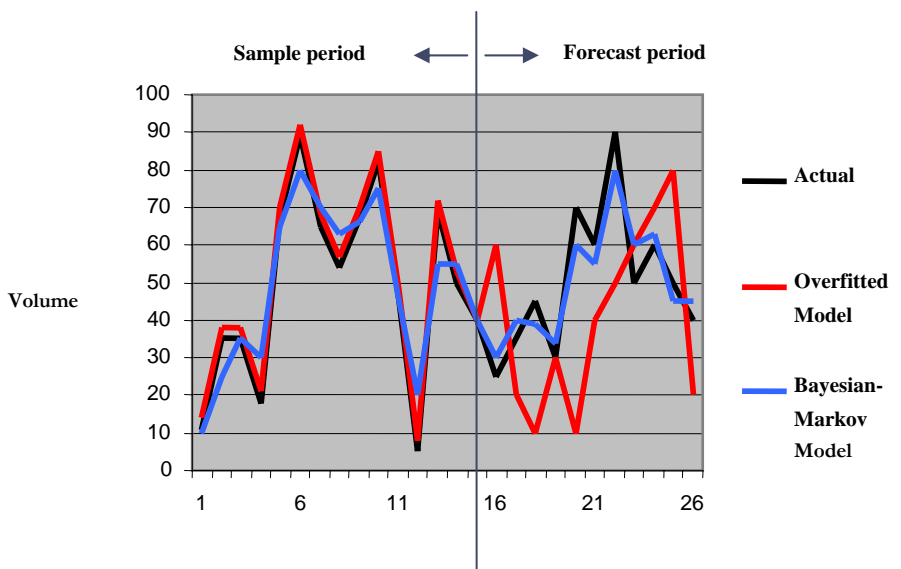
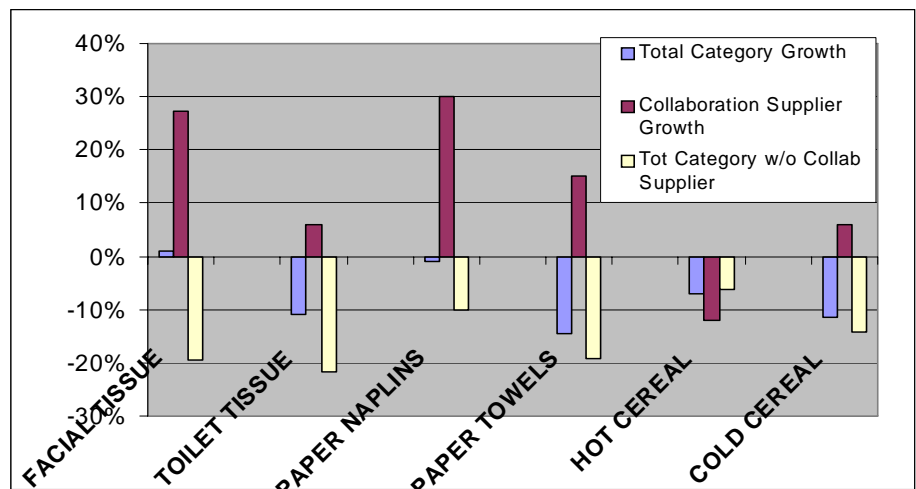


Figure 2: Advances in demand planning software make it possible to develop mixed model forecasts, using Bayesian-Markov algorithms, which reflect real-world conditions.

Demand management means producing the most accurate forecasts by considering all of the real-world factors that work for, and against, the sales of your products. This allows your company to get more from CPFR and VMI programs because it provides a better baseline on which to codevelop profitable programs. The advantage that suppliers have in both CPFR and VMI programs is that they have the best knowledge on how to sell their own products. For example, a floor tile manufacturer collaborating on product forecasts with their best customer, a leading home center, noticed that it was not stocking enough of any one style or color of

kitchen floor tile at the store level to complete the average kitchen floor. The retailer shared its planogram data and forecasts with the manufacturer who compared them with its forecasts. This knowledge leads to a recommendation to stock fewer styles in larger quantities. This increased revenue for both parties. For CPFR programs, collaborating on promotions is one of the most beneficial parts of the program as it ensures that both parties know the timing and real-time performance of a specific event. For the manufacturer, having precise forecasts on the expected performance of the promotion is critical to gaining the confidence of retailers and ensuring it has enough inventory to prevent out-of-stocks. According to a study by the Grocery Manufacturers of America (GMA),⁶ out-of-stocks on promoted items are more than double than that of regular items. A study conducted for the VICS CPFR organization showed that collaboration dramatically reduced out-of-stocks and increased revenues in a period of generally declining market share.



Manufacturer Sales Growth

Figure 3: For CPFR programs, collaborating on promotions is one of the most beneficial parts of the program.

Integrated Analytics Make Precise Forecasting Feasible

Getting the most precise forecasts means understanding all of the environmental factors and product attributes that impact the sales of specific SKUs. This input includes factors such as consumer demographics, season, location, weather, style, color, flavor preferences, and so on. Combined with powerful computers, sophisticated analytics are able to identify numerous causal factors that govern product demand patterns. In order to be useful, these causal factors must be transferred into the demand management application at the granularity of the

⁶ “Retail Out-of-Stocks: A Worldwide Examination of Extent, Causes, and Consumer Responses,” Grocery Manufacturers Association/Food Marketing Institute Study, 2002.

forecast. This means, for example, if seasonality differs by store location, depending on geography, for only some SKUs, potentially tens of thousands of causal factors might need to be transferred to the demand management system in order to produce accurate store-level forecasts. Integrated analytics make this process feasible in real-world size planning problems.

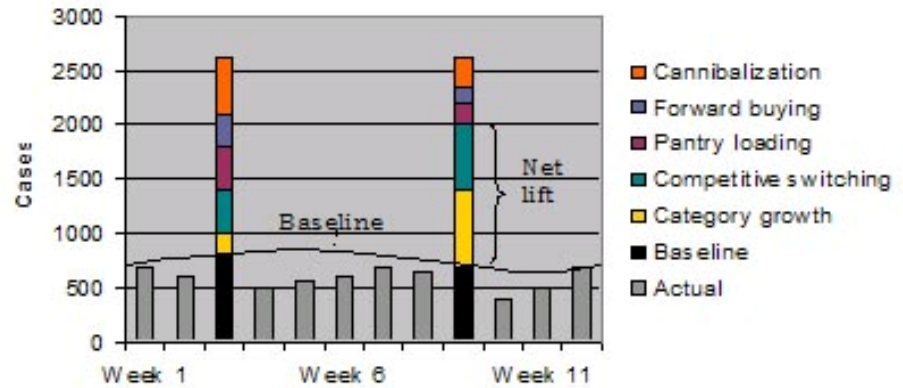


Figure 4: Sophisticated analytics can identify numerous causal factors that govern product demand patterns.

Exception-Based Alerts Scale Collaboration and VMI

One of the challenges with CPFR and VMI programs in the consumer goods industry is moving from pilot phase to go-live across many products and customers. What could previously be done with spreadsheets and e-mails quickly becomes unmanageable. Exception-driven alerts based on intelligent business rules allow much of the grunt work associated with CPFR/VMI, such as comparing forecasts, synchronizing replenishments, and sharing stock status data, to be automated. Coupled with role-based workflow, exceptions can be routed immediately to the person(s) responsible for problem resolution. As a result, issues can be addressed as they occur. More importantly, setting exceptions against forecasts creates an early warning system as alerts can be generated for problems that are likely to occur weeks or months in the future.



New VICS CPFR Model

Figure 5: By linking sales and marketing best practices such as category management to supply chain planning and execution processes, CPFR increases availability while reducing inventory, transportation, and logistics costs.

Workflow-based exceptions also become a valuable tool in coordinating internal collaboration. As mentioned earlier, internal collaboration is one of critical success factors for CPFR. VTech, a leading manufacturer of cordless telephones, uses exception messages to alert the field sales representatives to differences between internal forecasts (developed by the company's sales and operations planning process) and the retailer's forecast. This allows the sales representative to have a discussion with the buyer as the "single face to the customer." This addresses one of the most significant hurdles of CPFR—multiple and conflicting communications between customer and supplier.

CONCLUSION

CPFR and VMI are quickly moving from best practices of elite supply chain practitioners to standard operating procedure. It is likely that your customers will include your ability to excel at one or both of these programs in their evaluation of your company as a worthy supplier. The largest retailers have already begun to do this. They know that CPFR and VMI, when done correctly, reduce costs and improve responsiveness. Some buyers are forcing the issue by insisting on reduced prices prior to implementation of one of these programs. Can your company afford a 15 percent price reduction without lowering its costs and being in a position to sell more?

The good news is that technology has evolved to support CPFR and VMI with

- Precise demand management to profit from the increased demand visibility
- Web-based workbenches to support virtual, global collaboration—internally and externally
- Workflow systems to ensure responsiveness
- Rules engines and exception-driven alerts to ensure that these programs are not labor intensive
- Internet connectivity to reduce the cost of EDI and data communication

Ultimately, the combination of increased demand visibility and precise demand management yields the return on investment (ROI) to pay for one of these programs. The other technology building blocks help your company make the transition from push-based to demand-driven.



Growing Revenue from CPFR and VMI: Building the Demand-Driven Supply Chain
Updated October 2006

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200
oracle.com

Copyright © 2004, 2006, Oracle. All rights reserved.

This document is provided for information purposes only and the contents hereof are subject to change without notice.

This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission. Oracle, JD Edwards, PeopleSoft, and Siebel are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.