



RESPONSIVE SUPPLY CHAIN

Abstract

Short product lifecycles, fickle consumers and dispersed supply chains characterize today's Retail, Apparel and Footwear environment. While companies have made advancements in improving execution and cost efficiencies, lack of synergy across functional areas has prevented them from maximizing the impact of their initiative to the company bottom line. This paper presents insights on supply chain practices to reduce cycle times based on industry observations, discussions with supply chain leaders and client experiences.



RFA companies' concerns have evolved with the evolving marketplace realities:

"My 'supply chain' and distribution channels are spread across so many locations and systems, it's impossible for me to have a single view on what's going on"

"Today's consumer expects the best of both worlds – convenience and flexibility offered by online channels and the sensory experience of the traditional store-based environment"

"For many items, our lead times are so long compared to the fashion cycle it's very difficult to plan"

Henry Ford remarked about the Model T "Any customer can have a car painted any color that he wants so long as it is black". Unfortunately for manufacturers, today's consumers have too many choices and high expectations to stand for this kind of a dictate. Unlike 1909, when Henry Ford said this, the current business environment is replete with a dizzying array of product offerings, sudden shifts in consumer preferences and behavior, and long lead-times and short product lifecycles – especially in the Retail, Footwear and Apparel (RFA) sector. Yet if we analyze the prevalent retailer and wholesaler practices, we will find more similarities to Ford's 1909 processes, where the focus is on efficiency

and cost minimization, than responding to changing market conditions through supply chain flexibility.

Retail Footwear and Apparel Business Challenges

As retailers strive to cope with consumer needs and behavior, they realize that inventory freshness has become more important now than ever in the past. The need to mass-market trend-driven products has resulted in pressures to gage market trends and forecast demand without reliable historical information. Forecast errors at the SKU-week level for many new products can often be over 100%. Consequently, stockouts

and markdowns are routinely as high as one third of sales. Additionally overseas manufacturing and proliferation of distribution channels have put further strain on the supply chain.

In order to meet consumer needs in this environment, companies must be able to read market shifts and supply chain developments quickly, and react continuously. Fragmented planning, sourcing and manufacturing processes are inept at handling pressures caused by short product lifecycles and geographical dispersion of the supply chain. Key supply chain limitations that have led companies to this state are:

- Lack of visibility to demand and supply situations, and inefficiencies in communicating them
- Planning, sourcing and manufacturing process silos that prevent supply and demand synchronization
- Rigid supply chain practices that are focused on efficiency alone

Supply Chain Responsiveness through Flexibility

Predicting what trends will be hot next season, or the sales lift caused by a TV celebrity endorsement are almost as hard as forecasting the weather. While RFA companies have made significant improvements through use of increasingly advanced forecasting processes and algorithms, items with unacceptably high forecast errors are still commonplace. According to a study conducted by The Wharton School, the average forecast error for fashion items is 55%. It is worth noting, however, that the same study finds that this error rapidly reduces if the forecast is

done later in the season. In other words, if planners are given the option to postpone their final buying decision, they can achieve lower forecast errors, and hence lower stockouts and markdowns.

The impact of implementing a supply chain strategy that leverages scientific risk management techniques for prepositioning and decision postponement on a company's financial metrics is too significant to ignore. An athletic brand recorded the following metrics for a group of styles operating on this model:

- Inventory Reduction > 25%
- Cycle Time Reduction > 50%
- Stock-out Improvements of > 70%
- Markdown Improvements of > 20%
- Operating cost savings > 50%

Resulting impact on Net Profit Improvement > 100%

To address the problem of profitably meeting consumer demand, RFA

companies must integrate postponement strategies in their supply chain approach. The foundational components of this approach are Consumer Centric Development, Responsive Planning and Collaborative Execution.

Even though many retailers have implemented Planning, Supplier Collaboration and Product Lifecycle Management (PLM) systems to develop these capabilities in recent years, most have failed to leverage their full potential by not implementing a supply chain responsiveness strategy that these systems can help enable. By integrating these systems and the processes that they support at key points, and applying scientific risk management techniques one can enable postponement strategies and address key questions such as "When?", "How?" and "How much?" inventory to carry to maximize profits.

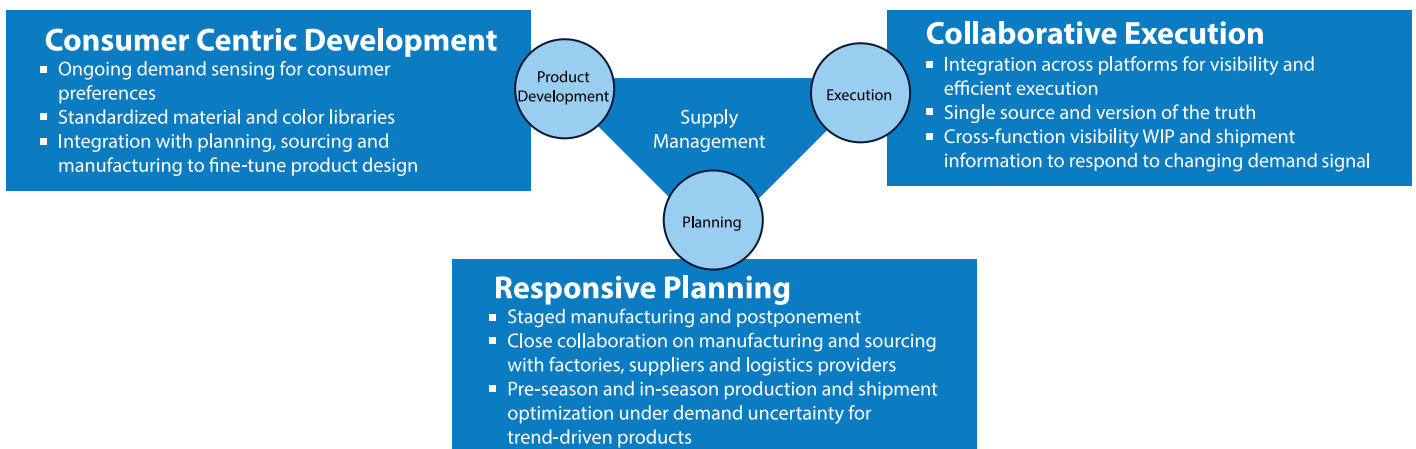


Figure 1: Key Capabilities

Focus on Profit Maximization

The three essential elements of a responsive and integrated supply chain focused on maximizing profits while meeting consumer needs are:

1. Collaboration across product development, planning, sourcing and vendors functions to enable efficient processes and information handoffs
2. Decision postponement to synchronize supply with latest demand signals
3. Application of risk management techniques to supply chain decision making with the goal of maximizing profits

The goal of this approach is to gather

supply chain information at different stages of the product lifecycle, apply risk management techniques and produce actionable information around key supply chain events. Figure 2 below illustrates a process that can help reduce risk while at the same time improving inventory performance. Traditionally RFA companies place finished goods orders on the factory in one shot after a 5-8 month long product development and planning process. The factory then procures raw materials, produces finished goods and ships them as per the pre-defined shipping mode (usually by sea). In this mostly sequential process there is very little opportunity to alter order quantities during the 3-4 month long production and shipping

period or replenish product during the selling season, especially for short lifecycle products. It is not hard, then, to imagine how this can lead to unacceptably high stockouts and markdowns for trend-driven products.

A more effective approach is to make supply chain decisions based on the product lifecycle stage and insight gained from the latest demand signal. For instance for a garment order, some part of greige fabric or yarn can be ordered at the completion of base fabric approval, bulk fabric can be processed after colors have been approved, finished goods can be ordered when line planning and product

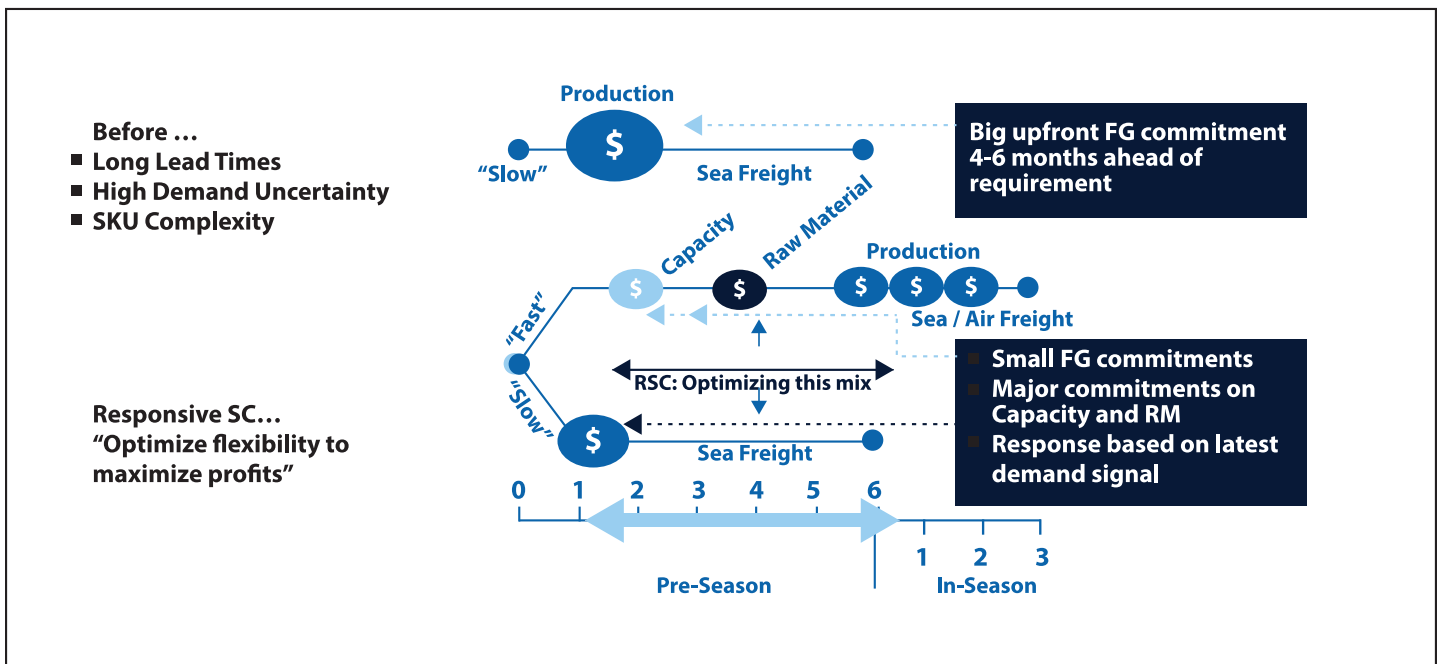


Figure 2: Postponement Process



approvals are completed, shipping decisions can be made closer to the ex-factory date, and so on. This approach provides the opportunity to methodically make changes till late in the product's lifecycle, hence postponing the decision timetable to when the company has a better understanding of demand. To orchestrate this staged manufacturing

process, intelligent flow of information between PLM, Planning and Execution systems is an obvious IT requirement.

However, a purely process oriented approach solves only part of the problem. While it does help manage downside risk and upside opportunity to a certain extent, it does not account for the scale of demand

uncertainty or product economics while doing so. In addition a technique that scientifically manages downside risk while providing for upside opportunities must be applied to maximize benefits.

As opposed to the deterministic approach that treats all products alike, the probabilistic approach illustrated in the

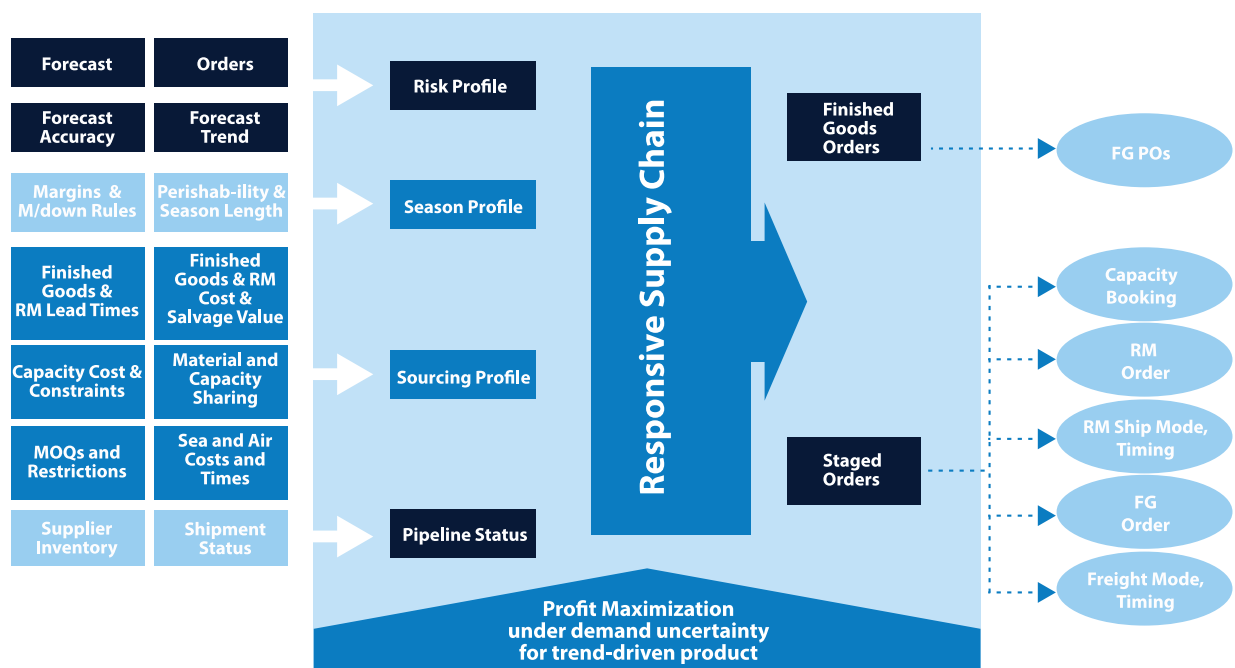


Figure 3: Responsive Supply Chain Inputs and Outputs

figure above treats products differently based on their risk profile, product economics (profit margin, markdown rules, cost, etc.), demand perishability and time remaining in the selling season. Here, demand is treated as uncertain and supply chain decisions are optimized based on the factors above while taking into account supply chain considerations such as raw material fungibility and alternative sourcing and shipping options to maximize profit potential. The example below illustrates how this approach would propose different raw material quantities and supply chain alternatives for products with different risk profiles and profit potential, but the same demand forecast:

1. Product A has low demand uncertainty and low profit margin
2. Product B has high demand uncertainty and high profit margin

The probabilistic approach might recommend:

1. For Product A

- i. Buy raw material close to the quantity needed to produce the forecast quantity
- ii. Manufacture quantity close to forecast
- iii. Ship by sea

2. For Product B

- i. Buy more raw material than what is needed to produce the forecast quantity
- ii. Manufacture first quantity less than the forecast quantity
- iii. Ship first quantity by sea
- iv. Manufacture additional quantities if needed later and ship by air

The Infosys Approach for Responsive Supply Chain

PLM, PO Execution and Planning tools that companies have implemented in the last few years are essential components of the overall supply chain landscape. Companies must now implement new practices to unlock the latent potential of these systems.

While each company and its supply chain challenges are unique, the core tenets of trend-driven products are common across supply chains. Infosys recommends that to achieve their Supply Chain goals, RFA companies should:

- Acknowledge that demand forecast for trend-driven products is almost always wrong

- Recognize that responsiveness is the largest source of profit in trend-driven industries
- Utilize upstream inputs to make incremental supply chain decisions, and
- Invest in a range of supply options to minimize risk, not just focus on buying finished goods

We recommend setting up a responsive supply chain task force composed of executives from each functional area, led by a senior executive. This task force should focus on understanding the company's supply chain pain-points and identifying supply chain opportunities that will yield the most benefit based on the company's unique situation.

Infosys has gained significant experience and made substantial investments in developing process and implementation accelerators, apparel supply chain practitioners and software tools during the course of helping our other clients become more responsive. With the right partner, you can achieve your supply chain vision by focusing on the key people, process and technology related drivers.

About the Author



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