

Weaving magic in Textile Sampling with Theory of Constraints

by Chandrachur Datta



The business of textile and fashion have always been about currency and choice. To stay on top of their game, companies have to constantly come up with new designs and products. So, the textile business environment is defined by continuous change in the product portfolio. Brands prefer to change their product portfolio at least twice a year. Most tend to offer a spring-summer (SS) collection and an autumn-winter (AW) collection. Some offer several collections per year. Suppliers who do the production for these brands vie with each other to get more and more business each season from the brands. Typically, the brands design concepts they would like to showcase in a collection, and the manufacturers create the samples from these concepts for the brand to choose from. The selected ones are then manufactured and supplied in the quantity ordered by the brand.

In textile, supply lead-time to brands varies from 80 to 200 days. Sampling is just a sub process in this overall supply cycle. And there are many types of sampling - Offer, Prototype and Gold Seal or PPS (pre-production sample) in the life cycle of a product and in each type, multiple 'delivery - submission - approval' cycles exist. A single sample request can travel to and fro between the factory floor and the customer several times before the sample gets its final shape. Many a time, the merchandising team of the customer is loaded with continuously delayed submissions increasing the time they need to respond. So, significant time is required to deliver samples, especially when the customer is offshore. Out of the overall time, bulk production lead-time takes away 50% - 80%. In the remaining time, different types of sampling, and their multiple iterations, have to be accommodated in spite of the fact that the touch time of most sampling production processes (such as dyeing) is similar to bulk.

Many manufacturers may also employ a team of designers to create their own offering for the market. These designs, when showcased to current or future customers, can improve manufacturer's reputation in the market, which, in turn can enlarge their share of business. Therefore, the sampling load experienced by the manufacturer's plant is an aggregation of demand from both these routes - customer-initiated and self-generated. As multiple customers have a similar season structure (SS/AW), the inflow of sample requests and their delivery deadlines tend to coincide. Therefore, the overall demand on the plant goes through peaks and troughs. Nowadays, brands want to keep their collections fresh, and so are increasing number of collections offered every year. This is also adding load on sampling of suppliers.

Like any other capacity, sampling capacity is also planned at an average level of load, and thus it gets easily overloaded during the peak periods. Because of queuing delays in the pending samples, quite often, the time taken easily surpasses the customers' expected lead-time.

Paradoxically, the same capacity is also significantly underutilized during troughs. To avoid this underutilization, many manufacturers prefer to have a common setup for sampling and bulk production. Inevitably, certain chronic issues follow:

- 1 Conflict between bulk orders and sampling requirements - In a shared capacity, bulk always gets priority as it is for current business, any delay results in immediate loss (Airfreight and penalties).
- 2 Conflict between multiple customers - The team that shouts the most gets priority.
- 3 Conflict between in-house designing and customers' requirements - Another current vs future business tussle in which current customer orders always get preference.
- 4 Conflict between sampling for a confirmed order (Gold seal/PP) and a prototype sampling
- 5 Conflict between existing and new customers

As a result of these unresolved conflicts, the sampling work packets travel through these work centers in a START-STOP-START-STOP manner. Even when there is a dedicated setup for some 'important' activities downstream, these setups suffer from poor supplies from upstream, and are on a continuous expediting mode. For instance, for a garment supplier, the garmenting work center does not get fabric, trims etc. in time to complete the individual requests. Mistakes and missed elements are often overlooked under these high-pressure conditions.

Due to all these issues, customers often have a sorry experience with the suppliers' sampling process. They come to view sampling outcome as unreliable in the following terms:

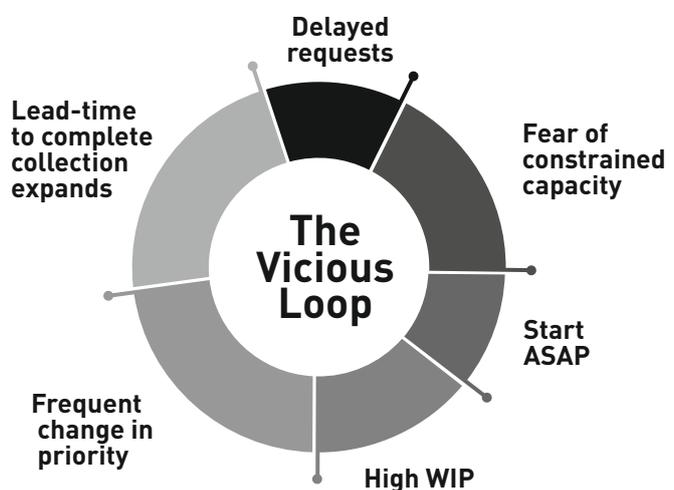
- 1 Timeliness – Samples are mostly delayed. Samples of same collection reach at different points of time.
- 2 Quality – At times, quality deteriorates beyond acceptable levels. This is especially important when samples are used to get orders from channel partners/customers.
- 3 Adherence to instructions – Not all comments given in earlier submission are incorporated.
- 4 Bulk replication – Sample and bulk do not match. Samples are of higher precision whereas in bulk, the finesse is lost.

Core Issue

Over the years, pressure to meet deadlines for everyone in the system (Merchandisers/Customers/ Sales team/Top management) escalates. So, they insist that sampling teams start work on sampling requests as soon as possible with the belief that an early start would lead to an early/on-time finish. Therefore, at any point of time, the system has multiple collections in various stages of completion and different stakeholders intervene to expedite work on their samples. As a result, priorities are subject to constant and frequent change. This leads to high and varying lead-times. And, even if there is a credible output from a few work centers, timely completion collections can still be derailed owing to severe de-sync in the downstream processes.

Soon, a vicious loop sets in. Even if a work packet arrives well in advance, apparently allowing the plant plenty of time to meet the deadline comfortably, it is eventually delayed. This is evidenced by the fact that, in such environments, the rate of closure of sampling requests is always lower than the rate of opening of new work packets.

Vicious loop of the Textile Sampling Environment



Elements of Solution

In order to break free of this vicious loop and deliver samples reliably, manufacturers have to shift from a myopic focus on completion of an item at a work center level to completing a customer's collection. The enabling steps needed for this are:

1 Standard execution lead-time and WIP control

A standard lead-time for execution of all types of requests needs to be fixed based on the processing time required at different work centers. To prevent capacity stealing (i.e. future orders taking up capacity required for immediate orders), requests which have a future delivery date need to stay unreleased till their scheduled release date (Delivery date - execution lead-time) unless capacity is idling. Moreover, the number of releases have to be limited to ensure that work centers are forced to complete work on items at hand. With this step, not only will lead-times be more reliable, it will help improve sync of collections downstream.

For a smooth transition from the old way of working to the new, expectations of current customers have to be reset in terms of the lead-times they experience. They have to be assured that, unlike the ongoing scenario in which the reliability is pathetic with lead-times varying wildly between say X and 10X, they will now get their samples at a high reliability (OTIF in the high 90s) and within a fixed lead-time of say, 3X.

2 Visible and common priority system

The next step to ensuring that work proceeds without interruptions and that the sampling team is not pulled in different directions by the marketing, design, and customer teams is to equip the team with a visible and common priority system. Implementing a simple delivery date-based priority mechanism ([read more on DBR](#)) at all stages will resolve this priority conflict among the sampling requests.

But to resolve bulk versus sampling conflicts faced by shared capacities, an agreement on average daily output (in a horizon shorter than the execution lead-time) should be in place to compel shared work centers to handle requests on a daily basis.

3 Tracking

Even when the above two steps are in place, the iterative nature of Sampling can present a major challenge. Once submitted for approval, a request may move on to the next step or may enter the resubmission queue after receiving comments. A systematic tracking system which collates all requests along with the customers' 'required by' dates is essential to cut down ball dropping, prevent mistakes and rework in the life cycle of individual requests.

4 Daily management and issue resolution

Short daily meetings are required to discuss and quickly resolve issues that could be delaying completion of items needed to finish a collection.

5 Continuous improvement

With modified customers' expectations on lead-time, strict release control, single priority system, quick issue resolution, and fixed share of output for all sampling requests, the system reliability will significantly improve. But it is also important to keep an eye, on a daily basis, on the queue size or total pending load to be released, and WIP to ensure that the system meets customers' expectation. If the sampling lead-time extends beyond expectations, order flow will reduce even if sampling supply is reliable. Hence, ongoing improvement is required to ensure lead-time is kept down. The opportunities for ongoing improvement in the sampling process which can be implemented without hampering quality include:

- 1 Exploring opportunities to offer shorter lead-time for a small segment of requests (urgencies/short lead-time orders etc.)
- 2 Eliminating occasions wherein sampling requests arriving from customers are missed out due to systemic lacuna
- 3 Exploring opportunities to cut down lead-time by stocking of intermediate products
- 4 Checking if process can be processed from available yarn/fabric/trims etc before releasing a request,
- 5 Cutting down instances of increased lead-time due to unavailability of consumables or resources
- 6 Close follow-up to procure quick approval on submitted requests.

Conclusion

Samples demonstrate the future capability of a manufacturer. Thus, an effective sampling process is crucial to help manufacturing companies stay at par with the continuously evolving global trends. So, showcasing superior sampling capabilities can help them establish a decisive competitive edge (DCE) in the market and to gain more customers.

Vector Consulting Group (www.vectorconsulting.in), is the largest Theory of Constraints (TOC) consulting firm in Asia. The firm has been working closely with well-known companies across industries to help them build unique operations and supply chain capabilities that can be leveraged as a competitive edge in the market. Vector now has the highest number of success stories in Theory of Constraints Consulting and has also won several national and international awards for their work.