

Think Lean to Escape the Planning Loop Trap

Willie L. Carter

Underlying the operations of every company is its value delivery system. It is the central processing unit of the entire company. For example, what does it take for a computer manufacturer to receive an order, process the order, produce the computer, deliver it, and collect payment? What are all the steps that a mortgage company goes through in processing a mortgage application and delivering a timely and accurate loan decision? How does Toyota design a new vehicle made up of thousands of component parts, manage the daily flow of orders and shipments with suppliers and assembly plants? Each business operation is different, but all of them share one common trait: all are systems for creating customer value—value delivery systems.

A company's performance is the direct consequence of how effective the system is managed. Companies that operate more efficiently and responsively than their competitors have better managed value delivery systems. Many company value delivery systems perform poorly because of time traps. One of the most formidable time traps is the planning loop.

The Planning Loop Trap

A fundamental test of the quality of a company's value-delivery system is whether or not it is caught in the *planning loop*. All businesses must do some sort of planning for the future to ensure they are ready to fulfill customer orders. Manufacturers are challenged by the need to order raw material, schedule facilities, and add labor, and so on. Traditional manufacturing requires long lead times to settle conflicts between various jobs or activities that require the same resources. The long lead times, in turn, requires sales forecasts to guide planning. Because sales forecasts are predictions they are inevitably wrong, however well intentioned. Naturally, as lead times increase, the accuracy of the sales forecasts deteriorates. With more forecasting errors, the need for safety stocks and excess capacity at every level increases, and inventories swell. Forecasting errors also mean more unscheduled jobs have to be expedited, thereby squeezing out scheduled jobs. The need for even longer lead times become greater, and the planning loop expands—driving up costs, increasing delays, and creating inefficiencies in the value-delivery system.

Managers trapped in the planning loop often react by asking for better forecasts and longer lead times. However, this is treating the symptom rather than the cause of the problem. The only way to break the planning loop is to think Lean and reduce the time wasted activities throughout the value-delivery system, thus reducing the need for lead times. After all if you could drive lead times down to zero, you would only have to forecast sales one day in advance. The really forward thinking companies understand this concept and are breaking the devastating loop that strangles much of traditional manufacturing and nonmanufacturing organizations.

While lead times of zero is idealistic successful Lean organizations have at a minimum kept their lead times from increasing and many have reduced them, thereby lessening the planning loop's damaging effect.

Escape from the Planning Loop Trap

To escape from the planning loop companies have two choices.

1. Produce to forecast and ignore the fluctuations in demand that would cause them to do otherwise.
2. Reduce the time delays in the flow of information and product throughout the value stream.

The real solution is to reduce the consumption of time throughout your value-streams to become more flexible. Flexible factories consume significantly less time than traditional managed factories. The improvement in response time from being more flexible is even more impressive than in the improvement in the productivity of labor and costs. Many companies have dramatically improved their manufacturing response times by streamlining their processes and becoming more flexible.

Consider this example of one of Toyota's suppliers. A Toyota supplier had a lead time of 15 days to ship parts to a Toyota assembly plant. Dissatisfied with this level of response to its changing needs, Toyota went to work to help the supplier reduce its lead time. By reducing lot sizes, they cut the supplier's lead time to six days. After streamlining the factory layout to reduce much of the work-in-process inventory, the lead time fell to three days. Finally, the elimination of all work-in-process inventories resulted in the supplier being able to respond to Toyota with only a one-day notice.

Companies can become more flexible (reducing wasted time) by applying the basic principles of Lean thinking. Some of the key techniques are explained below. All of these tools attempt to create continuous flow and pull at the rate of customer demand, thereby shortening lead times and reducing inventories.

Continuous Flow

This requires sequencing production or service activities so that they move in a flawless manner. In continuous flow, the processing of a part or document happens in time with the demand from the customer. Production happens when needed—no more, no less. Continuous flow is based on the principle of moving one item at a time (or a small and consistent batch of items) through a series of processing steps as continuously as possible, with each step making just what is requested by the next step. The concept of continuous flow can be summarized in four words—"make one, move one."

Line Balancing

Line balancing is evenly distributing work among the people in the process with the objective of meeting customer demand (Takt time). This tool optimizes the utilization of personnel so that all people in the process are doing more or less the same work content.

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Buffer and Safety Stocks

The focus of all lean process improvement is to remove any constraints and ensure all processes run flawlessly. Sometimes this is not always possible for the following reasons:

- Removing all the process bottlenecks at once may not be feasible but has to be done in phases
- Stabilizing the process may take longer than anticipated
- Wide swings in customer demand

Under such circumstances buffer and safety stocks are used. In a manufacturing situation buffer and safety stocks could be pre-determined levels of raw material, sub-assemblies, etc. In an office environment it could be overtime, temporary workers, holiday pay, etc.

Takt Time

In order to become flexible you must understand your customer ordering patterns (demand). Once you determine customer demand you can determine Takt time or the pace of customer demand. Takt time is the rate at which an organization must produce a product to satisfy customer demand. Producing to takt means synchronizing the pace of production with the pace of sales.

Standard Work

Standard work is the “best known way” of doing the work. It can be based on the experience of the workforce, industry benchmarks, and current process capability or technology requirements. Standard work ensures that workers are following the same process every time. The method is documented in writing so that everyone understands how the job is done.

Work Cells

The objectives of work cells are to create independent, optimized, all inclusive operating units that use minimum space with all activities sequentially placed next to each other, usually processing for a product family. This allows product to be processed in a continuous flow.

Pull

Providing what is needed, when it is needed, on time, in the stipulated quantity. In a pull system production is triggered by a signal (Kanban) based on what has been consumed, unlike a push system, in which production is based on historical trends or sales forecasts. A pull system enables work to flow without detailed schedules.

There are many other lean tools available but implementing these few will help you escape the planning loop trap.

The challenge of becoming more flexible by reducing the time consumption in your value streams is not only related to the factory but also white collar or office areas. Typically the

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majority of time for producing a customer order is consumed beyond the factory—by decision makers and by information processors. In many cases 85% to 90% of the total value delivery time of a manufactured product is eaten up by administrative processes. This is a significant observation because it helps makes the case for lean process improvement in service organizations and offices.

Conclusion

The *planning loop* trap is the relationship between forecasting errors and long lead times. Changes in customer demand results in forecast errors which impacts the lead times in a traditional manufacturing environment. As the forecasting errors grow inventories increase; more unscheduled jobs are expedited squeezing out the scheduled jobs. Forecasting errors also increases the need for even longer lead times, and the *planning loop* swells—driving up costs, increasing delays, and creating inefficiencies in the value-delivery system.

You can overcome the planning loop trap by utilizing lean tools and techniques to produce at the rate of customer demand and enjoy the following benefits:

- Dramatic reduction in inventories
- Reduced operating costs
- Reduction in delays
- Improved customer response time
- Improved efficiency

The planning loop is a time trap. Lean thinking forces you to look at this time trap and develop solutions to eliminate the trap and never get caught in it again.

The opinions expressed in this article are those of the author only and do not represent the views of the Techman/Kanata or of any of its directors, officers or employees. The author, Willie L. Carter, can be reached at wcarter@quantumassocinc.com or by phone at 847-919-6127.