

## **The Beginner's Guide to Lean – November 2003**

Toyota has just overtaken Ford as number two in the global motor industry. At the Tokyo motor show Toyota confirmed it intends to overtake General Motors to become number one by 2010. This has not been achieved through buying market share – far from it – Toyota is making record profits and could buy many of its competitors for cash.

A senior Toyota executive recently summarised the reason for their progress over the years. “Brilliant process management is our strategy. We get brilliant results from average people managing brilliant processes. We observe that our competitors often get average (or worse) results from brilliant people managing broken processes.” This just about sums up the real lean challenge: how to go beyond eliminating waste in broken processes to creating brilliant processes.

Toyota is now using this process advantage to introduce new hybrid engines that will redefine the core technology of the auto industry for the decades ahead. The rise of Toyota from nowhere fifty years ago to global leadership is a remarkable story that should make every industrialist stop and take notice. Why would you not want to be the Toyota for your industry? Creating solid revenue growth through the business cycle by creating real value for customers.

### **Learning from Others**

How do you start creating brilliant processes in your organization? The first thing to do is to learn from the experiences of the lean movement over the last decade. Many began their lean journey by recognizing that only a small fraction of the steps we carry out actually create the value the customer is paying for. The rest is Muda – the Japanese word for waste. So they went on Muda hunts and initiated 5S programmes to clear everything unnecessary out of the way. What they uncover is lots of low hanging fruit.

At the same time firms discovered that it was possible to make dramatic changes to an area in a short space of time through Kaizen breakthrough exercises. After a roller-coaster ride during the 5 days, teams typically report big leaps in performance. This breaks the “we have always done it this way” log jam and gets things moving. It also shows that you do not need to spend a lot of money to make these changes. Kaizen is hard work and exhilarating and a great way to open minds to change. However on

their own that they create islands of excellence – which if they are not linked together make little difference to the bottom line.

## **A Process Perspective**

Learning to see waste and that rapid change is possible are however only preparatory steps for lean. The second thing to do is to learn to see your organization from a process perspective. Lean is a business system focused on managing processes and improving them by compressing time rather than keeping each of the assets busy.

Every organization is a collection of several primary value creating processes (design and production) and a host of supporting processes (such as finance and maintenance). A process is a sequence of steps that must be carried out in proper order to create value for the customer and managed as a whole and not separately.

The best way to learn to see your processes is to take a product and follow its path from beginning to end – from order entry to delivery to the customer. Mapping what we call a value stream reveals how the current process operates today – not how it is supposed to operate. It also reveals all the wasted time and effort in the process. It is both a consciousness raising exercise for all those involved and a powerful diagnostic of how broken the current process is.

## **Creating Flow and Pull**

Value stream mapping is also a management tool to guide actions to create a future state. From it we can quickly see which steps are incapable of delivering quality products on time, which are not available when needed (because they are broken down), which are inflexible because of long changeovers and where the product has to queue to use a bottleneck process. Knowing this we can use quality tools to analyze the root causes of variance, productive maintenance tools to improve machine availability and set-up reduction to improve flexibility. In the longer term we might also replace bottleneck equipment with smaller right-sized tools.

However the object of improving the performance of each step is so we can begin to link them together so the order and the product can flow from value creating to value creating step without interruption. (Exactly the same logic applies to linking steps in the information flow.) In some cases we can physically co-locate steps into a continuous flow sequence –

in a cell or line. In others, which operate at different speeds and maybe serve several product value streams – such as stamping – we may have to link them using a Kanban pull system. This only triggers small batches of products to be made when the upstream step needs them.

Creating flow is half the story, linking the rate of flow to customer demand is the other half. For this we need to understand the rate and variability of demand for this product family. Then we can decide how much we can flex this flow and how much we need to buffer against demand fluctuations. Having done this we can set the rate of production that will satisfy the rate of demand and we can level the workload on production. Furthermore as we have linked operations into a flow we can now trigger production at one pacemaker process instead of sending schedules to each operation.

The first most important result of creating flow and leveled pull is to be able to respond more quickly, accurately and with significantly less effort and inventories to customer demand. Through a succession of future states we can approach the ideal, which is to be able to make and ship tomorrow what was sold today for products made in volume. The second result is that by improving the capability of each step and linking them tightly together any slippage in the system will immediately become obvious, as the whole system grinds to a halt. Time compression is a powerful way of ensuring that the grass does not grow back when you back is turned.

### **Managing the Value Stream**

Creating flow and leveled pull for each product family value stream that flows through your organization will entail a lot of cooperation from different departments. Almost invariably no one person will be responsible for managing the entire product flow, only parts of it. Therefore it will be necessary to appoint a Value Stream Manager to lead the change for each product family. Initially this might be someone from within production. However as soon as we extend flow and pull to our upstream suppliers and downstream distributors and begin to use our lean experience to design the next generation product and process this will have to be someone with broader experience who can report directly to stop management.

Together the value stream managers for each product family can assess the common problems with each process and can articulate the need for support from each function to solve it. They are actually the (internal)

customers for each of the support processes, typically the responsibility of a different department. Instead of managing these departments solely by budgets and asset utilization we can now begin to manage them by how well they support the improvement of each value stream.

### **The Lean Journey**

It is clear that lean is a journey which requires stamina and perseverance. Toyota made the fundamental switch from managing assets to creating flow and pull internally by 1960 and a decade later began to help their first tier suppliers do the same. This cascaded to their second and third tier suppliers during the 1980s and into their parts distribution system in the 1990s. Having made this switch they have been refining their processes ever since. They still set very demanding improvement goals for each new product generation.

We are still on the threshold between managing assets and managing process flows. The changes that are required are in part a physical reconfiguration of our operations, but much more a change in consciousness and behavior by our employees and managers. This can only come about by learning by doing and by working out your own answers for your own situation. It may be comforting to note that if you keep going down this path it will be very difficult for others to catch up. On the other hand if you are slow off the mark it might be difficult for you to survive!

Yours sincerely

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