Lean in the Electronics Supply Chain: Five Common Mistakes to Avoid

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Lean manufacturing continues to receive significant attention in the electronics industry. Success breeds imitators and so it is no surprise that companies would want to learn from Toyota, one of the most successful companies in the world, and the recognized leader in Lean. The concept is simple: Lean manufacturing is all about running your business successfully with less – less inventory, less waste, less time. Taiichi Ohno, founder of the Toyota Production System, put it like this: *"All we are doing is looking at the timeline from the moment the customer gives us the order to the point when we collect the cash. And we are reducing that timeline by removing the non-value added wastes."* It is natural for electronics companies to want the same thing. How you get there is another question. In the next few paragraphs, we outline some of the common mistakes or misperceptions we have noticed in the electronics industry.

1. **Kanban is not Lean**

   One element of Lean is the idea that production should be gated by customer demand. This approach is commonly called a "pull system" because customer demand pulls production forward. It turns out that a pull-system (a.k.a. Kanban, JIT, etc.) can have as much fat and sloppiness as an MRP-based push system. You should not assume that you are implementing Lean just because you are implementing Kanban. When creating a pull-system, you are still relying on estimates of demand; you still need to make assumptions about replenishment lead-times; and you still need to plan buffers to account for demand variation. For example, what demand will you use – historic, future, or a combination? What will you include in your replenishment lead-time? How will you estimate demand variation and what service level will you use? None of these are black and white questions and how you choose to answer them will make a difference in how much inventory exposure you have and how close to Lean you get.

Another issue with Kanbans is that you must maintain them. As demand or other factors change, you need to adjust your system. When you consider dozens of products, hundreds of sub-assemblies, and thousands of components, you can see that there is ample opportunity for things to go off track. Granted things might look good when you first implement a demand-pull program but without careful maintenance and attention, even the best program will become stale. As business conditions change, stale decisions lead to problems.

So that our message is not misconstrued, let's be clear about one key point: we think that a pull-type model should be part of a company's evolution towards Lean. But a pull-system by itself does not get you there. More importantly, if it is done incorrectly, it can leave you in worse shape with respect to inventory risk and your ability to respond to market changes. Lean is not about so much about mechanism as it is about a mind-set.

2. Customer lead-time is not a one size fits all undertaking

One of the tenets of Lean has to do with focusing on the customer and delivering value that is important to the customer - no surprise there. What some people miss in this teaching is that this also means do not deliver too much. In other words, do not take risks and add costs to give something to customers that they do not prize. For some reason, when companies start down the path of Lean, they immediately assume that all products must be delivered "off-the shelf" with no lead-time to their customer. If you are in a tight competitive market and availability is a top criterion for the buyer, then that may be the right decision. For most companies, however, the strategy will vary based on the product or product family.

The benefit of using lead-time is that it has an impact on the amount of inventory that you need to carry. The formula for your pull system actually changes when you incorporate lead-times that you offer to your customer.

> *Inventory Required = Daily Rate * (Replenishment Time + Buffer Time – **Net Customer Lead-Time**)*

From the formula, there is direct correlation between customer lead-time and inventory. There are some other minor adjustments that you have to make to your pull system to make this work. The key message is that you should not adopt a single off-the-shelf strategy when you move towards Lean. You will remove more inventory fat from your system by adopting a varied approach that considers the needs of your customers.

3. Do not ignore forecast alignment and demand smoothing

Somehow companies have the idea that when they adopt Lean, their supply chain suddenly becomes ultra-flexible. They assume that every time they pull the magic Kanban card, the next batch will just appear. If demand doubles, you just pull the Kanban card more often and inventory appears – right? One of the goals of Lean is to make your supply chain more responsive and remove barriers to allow agile response to demand. But you are making a mistake if you do not pay attention to your forecast and do not smooth demand to create level loads. This is called Heijunka in Lean terminology.

It may seem counterintuitive to level a factory load and potentially build some inventory or make a customer wait. Remember, Lean is about the effectiveness of the whole system. When you have uneven demand, you may be forced to rush and cut corners when demand spikes and run idle with excess capacity when demand drops. This stop and start, "hurry then wait" method of business creates different inefficiencies that far outweigh the small amounts of inventory that may result from leveling production. The key is to do the level loading in a smart way. Ideally, you will be set-up so you can efficiently run a mixed mode of smaller lots. You will want to fill the schedule first with product that is aligned directly with customer demand and the forecast. For those spaces in between, you build products where you want extra buffers to deal with seasonality or other uncontrollable demand events.

4. Lean is not a program

What we mean is that Lean is not something that you implement and then you are done. It is an on-going process where you continue to push and challenge the organization to get closer to a lot size of one. For example, weight-loss experts stress that you cannot lose weight long-term if you jump from diet-to-diet. You need

to change your lifestyle to see sustainable benefits. Lean should be a lifestyle change for your organization. If you treat Lean like a diet - something to focus on for a few months – you will suffer the obvious fate. You may see inventory numbers drop initially but your company's old, unchanged habits will eventually land you in the same place.

There is always something you can do in Lean. It might be decreasing the costs of a transaction so you can efficiently process more frequent and smaller orders or increasing the reliability of a process so you need less buffer to meet service level goals. The options will be plentiful. The key is to have a universal theme that allows you to stay focused on the mission for the long-term.

5. Technology is not evil

Purists among the Lean enthusiast advocate going back to basics and shunning ERP systems and other modern tools. There is something to be said for that position especially when you see how companies make a large investment in a special application or tool and it takes on a life of its own. People start to feed the monster and build their processes around the investment rather than focusing on the end goal.

That being said, purists can take the argument too far and lose sight of technology that can help reach the end goal. Keep in mind Ohno's description of Lean and as the drive to reduce the time from customer order to cash. Two promising areas may lead to new breakthroughs towards this end goal. The first has to do with a class of tools that speed the gathering of information on both the demand and supply side and help companies make faster more accurate decisions. We call this information velocity. Companies are inundated with all kinds of data. The pile gets even larger when you begin pulling data from your supply chain partners. To get any benefit from all of this data, you need a way to synthesize it into key decisions and actions.

The second is somewhat related and has to do with collaboration amongst the various levels in the supply chain. In a traditional pull-system, there may be a cascading set of pull triggers that makes its way all the down the supply chain in a serial fashion. How long this takes will depend on how Kanbans are sized and what medium companies are using to communicate demand. New tools that focus on cross company collaboration hold the promise of being able to simultaneously communicate supply and demand issues to all levels of the supply chain. Instead of focusing on the time from order to cash for one company, you could begin to focus on the whole supply chain. This allows a broader take on the Lean thinking. In the

end, technology just for the sake of having the latest stuff does not add any value but technology that furthers the goals of Lean should stay in the mix.

Conclusion

It is right for electronics companies to want the benefits of Lean. Toyota and other practitioners describe Lean as a journey. Our purpose in writing this paper was to keep companies from being sidetracked along the way by common mistakes. Even if you avoid the big mistakes, Lean takes time. Like most things worthwhile, Lean takes work and a long-term commitment. If your company chooses this path, there are ample benefits in this new organizational lifestyle.

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