

Finding Mura (variation) in your Process

Variation exists in many forms and influences efficiency of a process in multiple ways. There is variance in customer demand, variance in product mix, variance in production methods within a plant or within processing times and variance in way of working.

Two concepts concerning (production) variance:

1. Variability will always degrade performance of a production system
2. Variability in a system will be buffered by some combination of inventories, capacity or time.

To reduce these types of buffers, there are roughly two things you can do: reduce variation in customer demand (1) or reduce variation in your processes (2).

Influencing the **VARIATION OF CUSTOMER DEMAND** has everything to do with cooperation in a supply chain. When organizations in a supply chain do not share information about customer demand or inventory levels, the **bull-whip effect** emerges whenever customer demand fluctuates. This effect describes how a small change in customer demand from end customers can lead to a high change in order size upstream in the chain, which in turn leads to large inventories in the overall supply chain. Each link in the chain will have the tendency to order “extra” when an order can’t be met due to an unexpected shift in customer demand, especially when a backlog exists. The longer the total lead time in the supply chain (hence, delivery times between the links), the higher the bull-whip-effect. Also, the higher the number of links in the chain, the higher the bull-whip-effect. In this sense, each link in the chain is a customer of the link upstream in the chain.

There are different methods to reduce **VARIANCE IN THE PROCESS**. The variation in product mix has relatively low impact on a production process when the processing times are balanced for different products. At the level of production design, the variation between products can be minimized by using **modular designs**. Using standard modules will reduce the number of possible material routings in the factory and a number of inventory items. One example of modular design is a series of wardrobes at IKEA where a choice between a number of drawers, doors and handles lead to a relatively large amount of combinations for end customers to buy.

Next to optimizing product design and production planning, the way products move through the plant should be optimized. Ideally, products **flow** through the plant, which means products never have to wait to be worked on as they move between the necessary workstations.

At workstation-level all operator handling should be optimized to minimize production variation. **Standardizing procedures and lay-out** prevents different work cycles for different operators performing the same task and employees to search for materials or tools they need.

Reducing Mura (variation) is important for every Lean organization. Variation is always buffered by either inventories, capacity, time, or a combination of those. More *Mura* therefore leads to more *Muda* (waste). Eliminating waste will lead to higher results if variation is also reduced. PEAQ Solutions can help reduce the impact of variation on any production process. The lower the impact of variation on your process, the higher the flexibility to respond to changes in customer demand and therefore less inventory you need to carry and tie up working capital.