

## **LEAN IS A PHILOSOPHY**

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### **1. What is Lean Philosophy?**

Lean is a philosophy with well-known and tested results, that nowadays is very common and, moreover, used globally. The essence of Lean lies in the thinking way of the relentless pursuit of the elimination of wastes throughout all aspects of the business with the main aim of achieving the highest quality, lower costs and shortest lead time (delivery).

Recently, it seems that every manufacturing company is now trying to adapt Lean Philosophy, developed at Toyota. Moreover, Lean Manufacturing has also spilled over into non-manufacturing industries and service industries.

Many people believe that Lean is just a set of tools such as Just-In-Time, Pull systems, Kaizen and 5S, which can be applied in order to reduce / eliminate waste and therefore reduce cost. Lean, however, is not only a set of tools, Lean is a culture. Thus, *Lean Philosophy* - is purely the culture, which is based on a thinking way and behaviour. Philosophy is a comprehensive system of ideas and nature of reality we live in (William R Thomas, iweb). In other words, Lean Philosophy – is a nature of reality where people live in.

Both Monden (1983) and Shingo (1989) emphasize that the Toyota Production System (TPS) is, in fact, a system where philosophy lies behind the system.

Shingo states (1989):

*“Most of the existing publications are filled with flowery descriptions of the Toyota Production System. Yet little effort is made to reveal the true essence of this system. However, the Toyota Production System is an extrapolation of an idea, a way of thinking about production management in terms of fundamental-oriented views of plant improvement.”*

As such, Shingo gives an understanding that TPS is not a set of tools, but it is a philosophy which is geared towards any plant improvement.

## **2. Traditional production vs. lean production**

It can be argued that there are many tools and approaches that distinguish conventional, also known as mass production, and lean production. The main principle of traditional production is to build/produce as many goods as possible at the same time, based only on sales forecast. Consequently, mass production creates batches, where economies of scale are achieved by producing or purchasing many goods at the time. Due to this fact, the company cannot base its activity planning on customer orders, since customer often order small quantities of goods. The company must therefore make a sales forecast and use forecasting as a basis for its production needs, as a rule three weeks ahead. The consequences of such inventory (batches) are significant due to the fact that company's cash flow is tied in inventory levels. Secondly the company often becomes locked into producing or purchasing batches for a certain period. Ultimately, this approach leads to falling stock turnover for finished goods, component and raw material.

Unlike mass production, in lean production all the above described is waste, something that does not add any value to the product. Thus, the main difference between traditional and lean production lies in the fact that lean's main principle focuses on the elimination of waste in all processes, which in turn will minimize the overall costs. The basic tenet is that waste is unnecessary, does not add any value and inherently should be eliminated from the process, since the client/customer does not want to pay for it.

Evidently, over-production, which is common to conventional production companies, creates batches, i.e. inventory. Whereas inventory itself covers-up or hides problems which are inherent in the production system, such as defects, poor quality of finished goods, poor quality of raw material, machine break downs and so forth. Shingo (1989) says that overall performance of production can be achieved only by removing inventory and uncovering the problem.

### **3. Benefits and disadvantages of lean production**

#### **3.1. Benefits of Lean**

This classic book “The machine that changed the world” explains the evolution of lean manufacturing practices in the automobile industry, from craft, to the mass-production era and now, the lean production era. Womack, Jones 1989:

*“The most striking difference between mass production and lean production lies in their ultimate objective. Mass producers set a limited goal for themselves. This translates into acceptable number of defects, a maximum acceptable level of inventories and a narrow range of standardized products. To do better, they argue, would cost too much or exceed inherent human capabilities. Whereas, Lean producers set their sights explicitly on perfection: continually declining costs, zero defects, zero inventories, and endless product variety. No lean producer has achieved perfection, and none ever will. But the endless quest for perfection on the part of lean producers, continue to generate surprising results”.*

The work which was conducted by Krafcik in 1988 showed that lean plants tend to perform much better than other plants which do not use lean methods in their manufactures. The benchmark showed that lean companies were able to achieve higher level in both quality and production through reducing/eliminating non-value added elements from all over the processes. Womack (1989) writes in his book “the machine that changed the world”, that lean production uses less of everything. He elaborates, that in lean it needs less of human factor in factory, less manufacturing space, half investment in tools. Nevertheless, it also requires keeping far less than half the inventory on site, what, in turn, leads to result in many fewer defects and can allow to produce a greater variety of products.

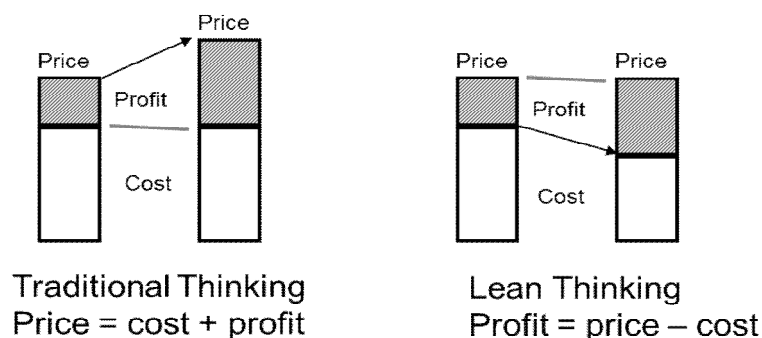
In 1996, Womack and Jones argue that lean doubles labour productivity, reduces lead time by 90%, reduces inventory by 90%, moreover, increasing quality by 50% and improve labour safety by same rate. Alongside, Claudius Consulting (2004) insists that lean manufacturing can help to reduce the wastes by 40 per cent, cut costs by between 15 and 70 per cent, decrease space and inventory requirements by 60 per cent, push productivity up by between 15 and 40 per cent, whilst cutting process changeover by 60 per cent.

Consequently, the tangible benefit associated with lean business process can be documented as follows:

1. Financial – decreased operating costs, potential capital avoidance
2. Customer – better understanding of their needs
3. Quality – more robust processes leading to less errors
4. People – empowered multi-skilled teams
5. Knowledge – increased understanding of the whole supply chain including the manufacturing processes and all over the processes within value stream

The result of such improvement is evidently lead to the organisation’s financial savings. The financial benefit is depicted in a Figure 1. Benefit of lean

**Figure 1: Benefit of Lean**



Source: own production

Moreover, it is worth to mention about intangible benefits of lean, which are difficult to quantify and convert into financial result. They can be seen in Figure 2. Lean intangible benefits

**Figure 2: Lean intangible benefits**



Source: own production

- **Target driven:** Employees know what their goals are. Poor knowledge causes lack of focus on what's important to the company.

- **Motivated work force:** Reduced absenteeism through work related incidents. Lower employee turnover.

- **Clear business direction:** Policy deployment cascaded down to all levels of management. Implemented using tactical activity implementation plans, visualised and reviewed on a regular basis.

- **Strong problem solving culture:** Structured, methodical with robust containment and corrective actions which are reviewed and confirmed for their effectiveness therefore reducing repeating concerns.

- **Effective resource utilisation:** Manpower planning against activities. Not working on repeat issues, structured review times bring together key support function areas reducing need for separate meetings.

- **Process and system focussed:** By getting the processes and systems right the results will be automatically improved.

• **Continuous improvement lives:** Management support improvement activities by ensuring time, materials and space are available. They reward and recognise success (not always necessary to be financial).

### 3.2. Disadvantages of lean

In order to fully understand a comprehensive concept lean, one must look at all the aspects of it and how it works. Not only taking into consideration the benefits but to go further and find the negative aspects, which will be elaborated further.

Lean management is a great innovation which helps companies save time, which enables you to do more things in the same period of time, but companies are run by people and pressure is a factor to take into consideration when implementing Lean, the workload sustainability can be affected by employees who might end up feeling burned out.

1. **Saving Inventory** the element what most of the companies want to achieve, but however very rarely can achieve just in time delivery of raw material due to the traffic, etc

2. **Supply problems.** Due to the need of having small amount of inventory in-house, lean manufacturing depends heavily on suppliers that can provide products for the manufacturing process dependably and without interruption. Unanticipated events like employee strikes, transportation delays and quality short-comings on the part of the supplier can create manufacturing holdups that can be fatal. Suppliers may be unable or unwilling to supply parts or products on a tighter schedule or in smaller amounts. These requests can create tensions between the supplier and the Lean manufacturer and unwanted cost burdens that can damage the relationship by becoming unprofitable. Changing the supplier generates more problems regarding the difficulty of finding ones that can provide these requests, not to mention the time cost to synchronise the two activities.

3. **High cost of implementation.** Implementing lean manufacturing often means completely dismantling previous physical plant setups and systems. Training employees can be lengthy and acquiring managers experienced in lean manufacturing process can add considerably to company's payroll expenses. The purchase of machinery that increases efficiency, and the setup of smaller work cells can add to long-term debt. Small and medium-sized businesses, in particular, may find the cost of changeover to lean manufacturing processes prohibitive.

4. **Lack of acceptance by the employees.** Lean manufacturing processes require a complete arsenal of manufacturing systems that may cause stress and rejection by employees who prefer old ways of doing things. Moreover, lean manufacturing requires constant employee input and feedback on quality control, which some employees may feel unwilling or unqualified to do so. Older employees may prefer previous methods and can cause resistance among others in the work group. This is where good managers become crucial to the changeover to lean manufacturing. There

may also be some difficulty finding managers with sufficient leadership and persuasion skills to overcome this resistance.

5. **Customer Dissatisfaction Problems.** Because lean manufacturing processes are so dependent on supplier efficiency, any disruption in the supply chain--and therefore, on production--can be a problem that adversely affects customers. Delivery delays can cause long-lasting marketing problems that can be difficult to overcome.

### **Summary**

Lean philosophy can be applicable to any type of production, type of business and in recent years it gains its popularity in governmental and service sectors. Moreover, Lean has three main benefits such as delivery on time with the highest quality and it all lead to a cost minimisation.