Lean Kaizen Business Consulting

Toyota Production System-Lean Production System

Become a least cost producer with world class Quality & Delivery

Key to the future Survival

Ask ‘why’ five times about every matter - Taiichi Ohno

A Journey to World class organization……

Lean Kaizen Business Consulting

'Implementation is the Key'

The Toyota Production System is an effective tool for achieving the ultimate goal – Profit

1. **Least Cost Production**

Reducing the costs in the value stream.

2. **Flexibility**

Quickly adjusts to changes in the market demand without wasteful slack time.

3. **No Defective Production**

TPS demands and ensures no operator will accept defective goods, will not produce defective products and will not pass defective goods to the next process.

4. **Maintain Human Dignity**

Toyota cultivates and ensures respect for human dignity.

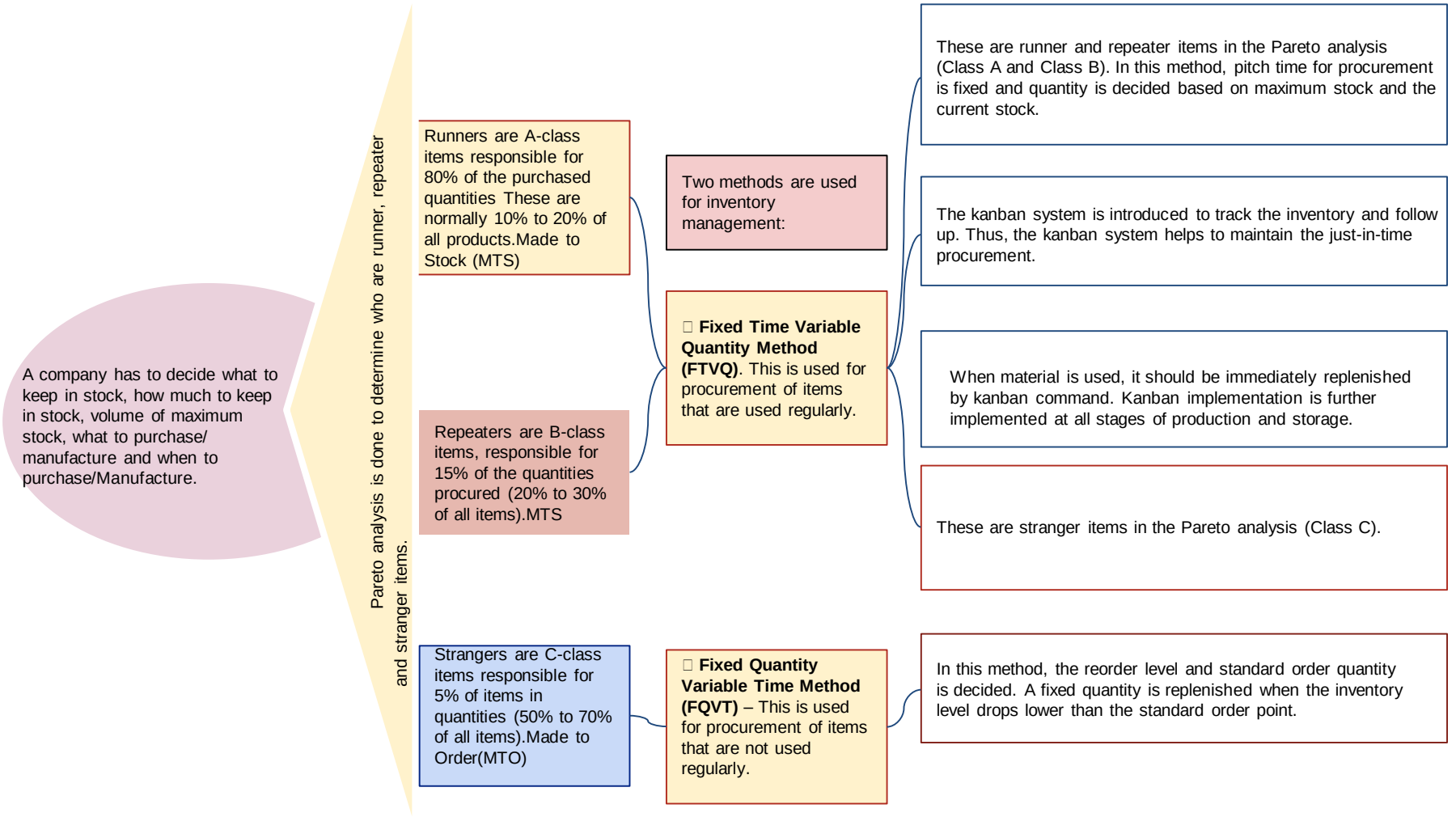
The Toyota Production System is the mother of all production systems.

Now all major companies in the world have their own production systems, which are nothing but an imitation of the Toyota Production System.

Following are some examples:
- ANAND Production System (APS)
- Production System BEHR
- DaimlerChrysler Production System
- Electrolux Production System
- Production System FAG
- Genoa-LPS
- LuK Process Optimization System (Fahrzeug Hydraulik)
- Beispiel: Produktionssystem Osram
- Stanley Production System
- Rolls-Royce Production system
- Boeing lean + journey

Efficient Inventory Management - How it is done?

Efficient inventory management ensures that there is no stockout of any item and there is just enough material in stock to maintain low cost of inventory.



Continuous Flow

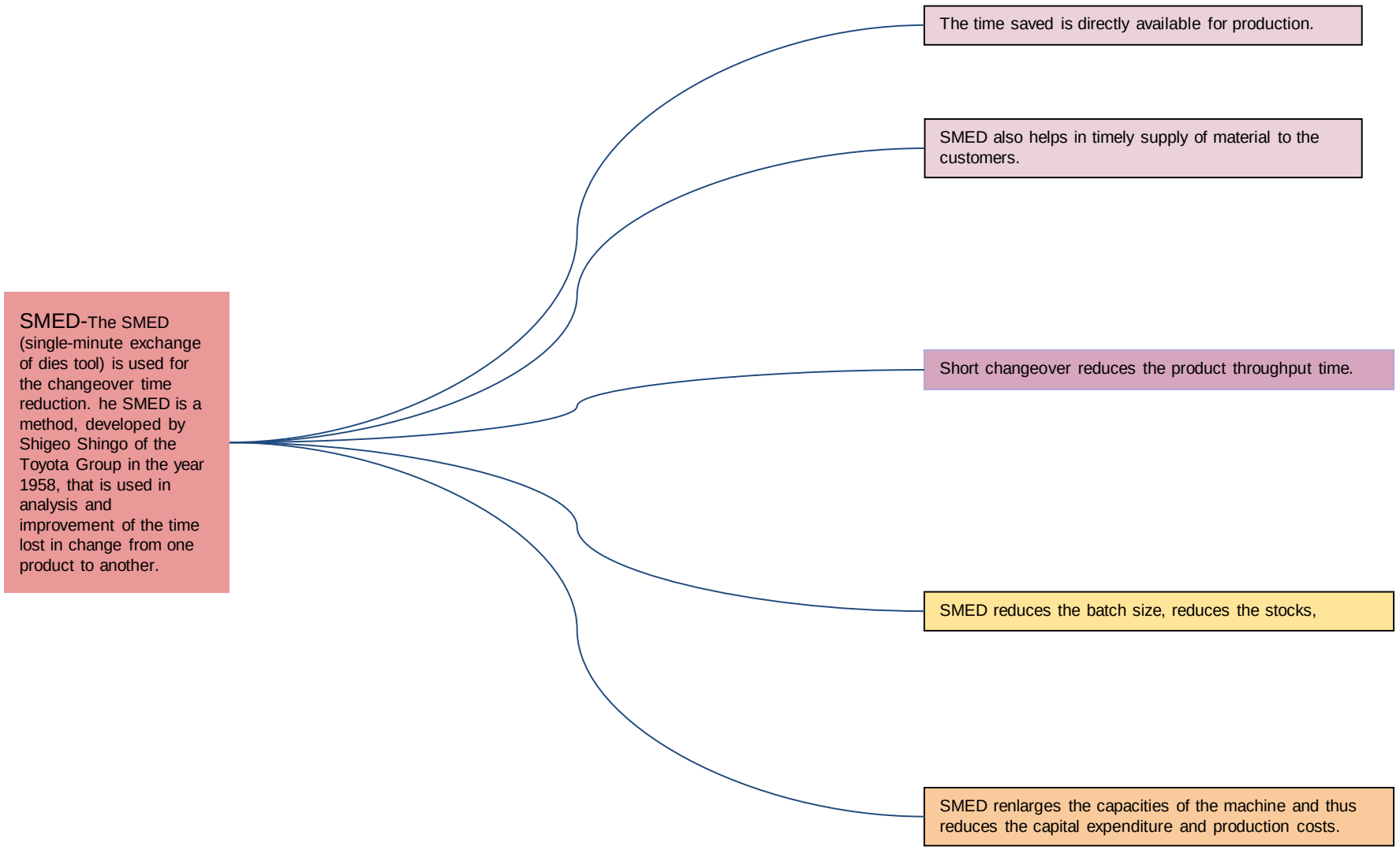
One Piece Flow/Small Batch Flow instead of Large Batch

Batch Size is Kanban Size

Pull and Flow System

Customer picks a product and thru Kanban the production/purchase start.

Single-Minute Exchange of Dies (SMED)-Changeover time is a non-value adding activity that can at times consume 20% of the total time available for production.



Standardization of the Daily Work Schedule

A system is required to tell people What to do and How to do daily activities. This system is known as "Daily Work Management"

Taiichi Ohno said, "Where there is no standard, there can be no Kaizen."

Standardization means practicing the

- Best
- Safest
- Easiest

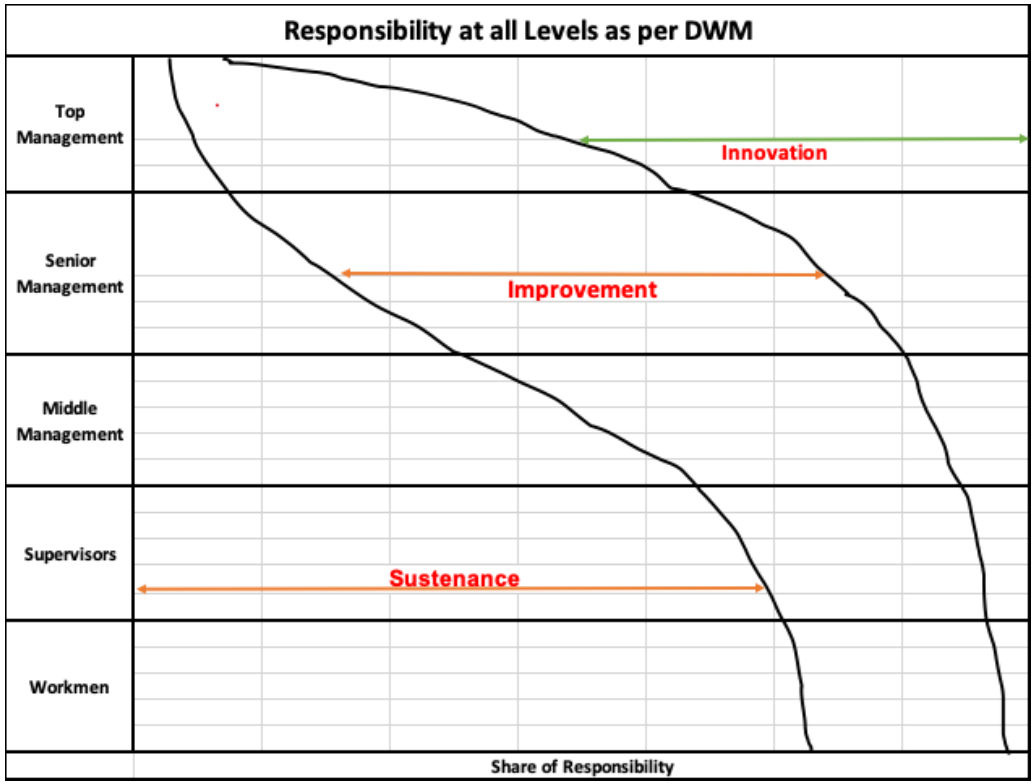
of doing work so that consistent results can be accomplished.

There are 3 elements of Standardization

- 1.**Takt Time** – Takt- ' Customer's Beat- maximum acceptable time to fulfill a customer's demand. This means its capacity to produce should be at least 20% more than the customer demand to prevent stockout.
- 2.**Work Sequence** – This refers to the sequence in which operations must be carried out to remain within the takt time.
- 3. **Standard Inventory** – It refers to the quantity of raw materials and machinery required to maintain undisrupted flow of operations.

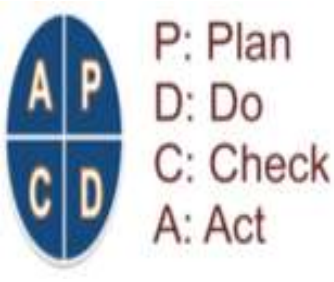
Standardization should continually evolve

- Process standards for man, machine, material, method and measurement will stop improving if continuous improvement is not carried out
- When kaizen is implemented, it calls for continuous improvement by PDCA-SDCA.

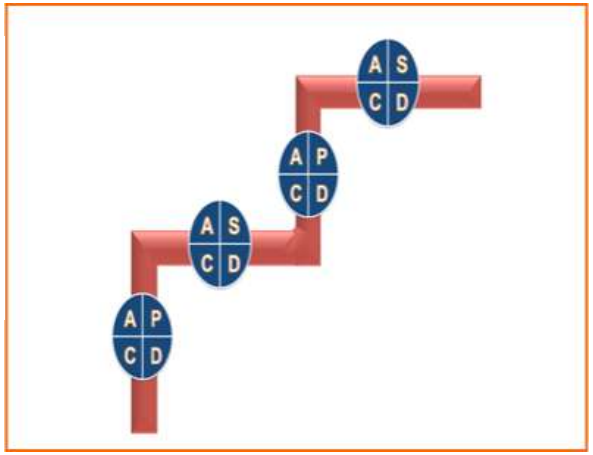


Continuous Improvement by PDCA-SDCA-

A continuous evaluation tool of management processes is plan-do-check-act (PDCA) to identify the problem in current processes for improvement. The problem is the gap between the actual situation and the desired results. PDCA works in the following manner:



4+4 Steps methodology



SDCA follows PDCA (see Figure 2.7), which depicts that when a company brings improvements in its operation by PDCA, then there is a need for standardization.

SDCA ensures sustenance.
'A' and 'S' stand for standardization
'D' means to work as per standard
'C' means to check as per standard
'A' means to revise the standard if further improvement in the process is required

The methodology ensures a continuous improvement cycle in the workplace. SDCA is an important concept of standardization to prevent deterioration:

Toyota Lean Production System Brings a Paradigm Shift that Forces You to Rethink

To identify waste and opportunities to maximize value in business operation, the lean production system forces you to reconsider the following questions:

T

Why Do We Have Defects?

What is the reason that 0.5% of the products produced are of poor quality?

M

Why Do We Have Breakdowns?

The company's breakdowns are roughly 2% to 5% of the total time.

P

Why Do We Need Quality Control?

The company needs to rethink that when the production department knows
what to produce, then why do we need a quality department and quality inspectors around?

N

Why Can't We Have SMED?

The changeover time can run into several hours. What methods can operators use to reduce it to half or one fourth of the time?

L

Why Is Inventory Piling Up?

But there are still stock outs? No time for maintenance afraid of m/c breakdown and high changeover time, produce more of products that are easier to meet internal target, sales loss for some products and excess inventory for other products.

T

Why Does Hourly Production Vary?

Why do the processes produce variable quantity per hour every hour of the shift when everything from raw material, manpower, machine and methodology are same?

A

Why Are Operators Watching the Machines?

Why can the machine operators not run more than one machine and multi-task? Why do they have to stand and watch?

R

Why Not Pull?

Why does the company not have a designed finished good products supermarket as one sees in the grocery stores? Whatever is withdrawn from the finished goods supermarket can be replenished from the production shop. There will be no sales loss or excess inventory.

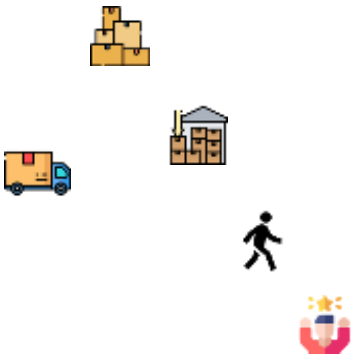
D

Why Not Involve Operators in Standardization and Daily Management?

When the plant floor workmen write something with their own hand and in their own language then that is considered as the best standard.

Visual meeting around the boards that are updated by hand always produce better results. The real point is the human interaction and sense of loyalty that goes with it.

Standing meetings around handwritten boards always work better than the sophisticated computer boards hooked up with the ERP (Enterprise resource planning) system.



T

Why Is Throughput Time Always Large in Traditional Companies?

1. The traditional companies run on material resource/requirement planning (MRP) invented by Joseph Orlicky and Oliver Wright in the early 1950s.

2. MRP was appropriate for large batch size production when economic order quantity (EOQ) and economies of scale were practiced for a low cost per unit.

3. But this led to higher throughput time because traditional companies check demand forecast, compute capital resources required for production through capital resource planning (CRP), create financial budgets for manpower and material and manufacture large batches for higher utilization of machine and manpower.

4. In addition to this, breakdowns, short stoppages and long changeover times add to throughput time.

5. Hence, throughput time and ad hoc inventory costs like storage, space occupied, and obsolescence should be considered before resorting to bulk buying.

Revolutionizing Manufacturing Operation: Toyota Production System?

1. Diverse product with limited quantity?

1. The lean management system is a system that is capable of producing diverse products in low quantities while simultaneously eliminating wastage in the processes to achieve low cost.

2. Flexible Mfg System

2. The industry must employ a manufacturing system that is flexible and reliable with quick changeovers and short lead times.

3. Market determines the product price

3. Market determines the product price. Market prices and product costs are not connected. The real issue is how to reduce the cost of manufacturing and services to maintain and enhance profits.

4. Lean and Kaizen

4. Lean is where the company wants to reach, and kaizen is the way to reach there.

5. Quality at Source

5. Quality has to be ensured at the source of production.

6. Oblivious of Customer

6. In traditional companies, most of the functions are oblivious to customer requirements.

7. Nothing is Static in this world.

7. Everything is either improving or deteriorating. If the processes stop improving at the workplace, processes standards will start dwindling with respect to man, machine, material, method and

. 8. All 5 Ms to be consistent

8. If the company manages consistency of the 5Ms, the output will be consistent.

9. This first M - Men drives all the other Ms

9. Employees are the principal assets because they create value, solve problems and improve the organization, and lean management system substantiates this.. A highly competent workforce is indis-pensable to a company's success.

10. TPT is the most important KPI

10. A company should prioritize throughput time over procurement cost per unit
in the initial lean journey.