

Dizani Consulting

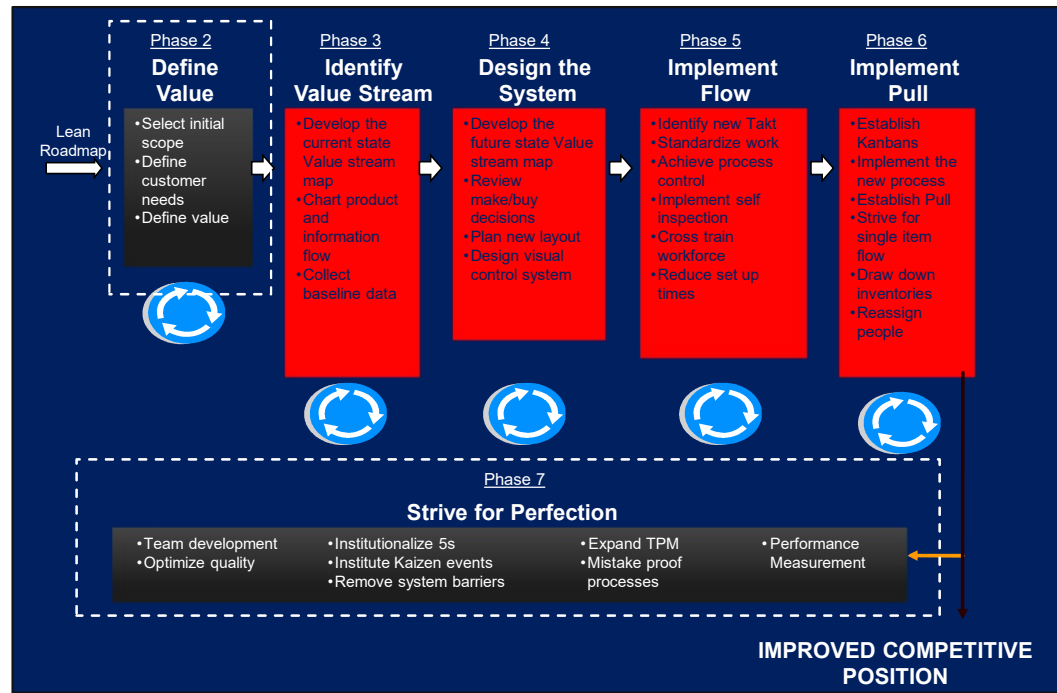


Course Overview



www.dizani.co.za

Where are we on the LEAN Roadmap?



Notes:

Waste is a LEAN discipline that is utilized throughout the LEAN Roadmap so there is no specific phase in which it fits completely, it is more suited to Strive For Perfection Tools that are used throughout. Therefore, we can look at in terms Define Value and Strive for Perfection as it is complimentary to one another.

Module Objectives

➤ **By the end of this section, you will be able to:**

- Understand what is waste
- Define the 8 wastes
- Identify examples of waste
- Identify contributors of waste

Waste (Muda)

Definition of Waste
The 8 Types of Waste
Overview of the 8 Wastes
Class Activity
Summary
Quiz

Definition of Waste

➤ WASTE IS...

- Any human activity which absorbs resource but creates NO VALUE – This is the direct translation of Muda The Japanese term for waste
- Use of resources over and above what is required to produce the product as defined by the customer
- If the customer does not need it or will not pay for it then it is waste



Notes:

Waste is anything which does not add value to a product or service in any activity, whether manufacturing or non-manufacturing.

Waste exists as two major types:

- Obvious waste
- Hidden waste

Obvious waste is easily recognizable. Some examples:

- Scrap, rework, offal
- Undisciplined meetings, excessive paperwork systems
- Working ahead of schedule, doing more than required
- Excessive energy consumption.

Hidden waste refers to work which is necessary under current methods of operation, but could be eliminated if improved methods were adopted. Some examples:

- Poor design, repair loops, waste handling and treatment facilities
- Buffer banks, poor layout, excess overtime, excess labor

We must always strive to minimize the amount of resources utilized to create products and services.

Identification and elimination of all types of waste is imperative to succeed.

Waste (Muda)

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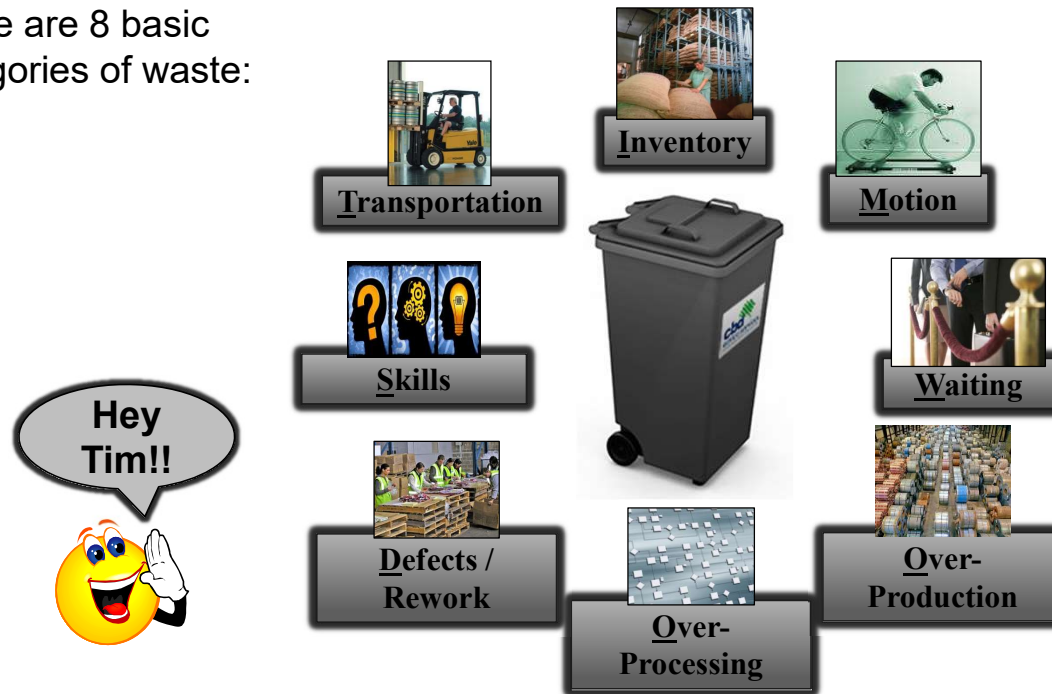
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8 Types Of Waste (Just Remember TIMWOODS)








There are 8 basic categories of waste:



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Notes:

"WHEN LOOKING FOR WASTE, BE LOOKING FOR 'TIMWOODS'"

TYPES OF WASTE		DEFINITION
<i>TRANSPORTATION</i>		Transportation handling more than once, delays in moving materials, unnecessary moving or handling
<i>INVENTORY</i>		Unnecessary raw materials in stores, work in process (WIP), & finished stocks
<i>MOTION</i>		Movement of people or machines that adds no value
<i>WAITING</i>		Waiting, hanging around, idle time (time when no value is added to the product)
<i>OVER-PRODUCTION</i>		Overproduction and early production producing over customer orders, producing unordered materials
<i>OVER-PROCESSING</i>		Over-processing, unnecessary processing, or procedures (work carried out on the product which adds no value)
<i>DEFECTS / REWORK</i>		Defective units producing or reworking scrap
<i>SKILLS</i>		Not listening to employees' ideas or not asking them to use their brain and help solve problems

Notes:

-The idea of 8 wastes is useful because it allows a company to categorize problems and then focus attention in the appropriate areas once they have been identified. There are many tools and techniques in the LEAN tool box which can be applied to many areas of production in order to tackle any one of these wastes.

Reference: http://www.swmas.co.uk/Lean_Tools/The_7_Wastes.php

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Waste of Transportation



Any excess material or information movement

INDICATOR	ROOT CAUSES
•Extra handling, inventory, paperwork	•Misallocated materials
•Large storage areas	•Unleveled scheduling
•Over-staffing	•Redundant inspections
•Excessive supply	•Supply chain management



Factory layouts can often be the fundamental cause of excess materials handling

When appropriate, re-laying out the machines within a factory from a functional to a cellular layout has been found by many companies to help not just reduce materials handling waste but also reduce WIP and waiting

Excess inventory levels can also lead to wasted handling

Waste of Inventory



Any supply in excess of customer requirements necessary to produce goods or services just in time

INDICATOR	ROOT CAUSES
•High work in progress	•Too much raw materials
•Extra storage and handling	•Not utilizing space appropriately
•Stagnant information flow	•Unbalanced Workload



Many companies order over and above what is required to fulfill the order, this may be due to quality problems along the production process, or the often mistaken belief that it saves money by ordering larger quantities

Tackling the root cause of the quality problems should also be a top priority

The true cost of excess inventory levels should be carefully analyzed before ordering excess raw materials simply because the purchase price is less

Inventory hides problems and waste

Waste of Motion



**Any movement of people / machines
that does not add value**

INDICATOR	ROOT CAUSES
•Reduced productivity	•Poor layout / ergonomics
•Large reach / walking distance	•Machine / process design
•Excess handling	•Poor workplace organisation and housekeeping
•People / machines waiting	•Inconsistent work methods



Notes:

What would your definition be for Waste of Motion?

What does this type of waste look like in your (work) world?

Keep in mind, just because a person is 'busy' does not mean they are doing value added work, or work that is necessary.

Don't confuse Motion with Work!

Waste of Waiting



Idle time created when people wait for machines or people and also when machines wait for people or other machines

INDICATOR	ROOT CAUSES
•Under-utilization of resources	•Unbalanced Workload
•Reduced productivity	•Unplanned maintenance
•Idle equipment	•Quality problems
•Large waiting / storage rooms	•Ineffective layout



Products waiting around in factories either as finished goods or work in progress (WIP) is another major cause of waste
WIP is commonly caused by producing large batch sizes where SMED techniques can help
Concentrating on keeping bottle neck processes going are also a good way of reducing WIP

Waste of Over-Production



**Producing more than needed, and
producing faster than needed**

INDICATOR	ROOT CAUSES
•Excessive raw materials	•“Just in case” logic
•Unnecessary work and rework	•Long process setup
•Unbalanced material flow	•Unbalanced work load
•Inventory stock piles	•Lack of communication



These kinds of issues can be tackled using mistake proofing methods (Pokayoke) and by understanding the machine process capabilities of the production equipment

Statistical process control (SPC) will also help monitor production outputs and give warning of problems before they occur

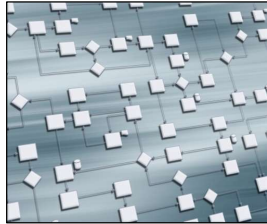
If the reason a company is overproducing is because of small orders and economic batch sizes then Setup reduction techniques such as SMED can help

If a company can reduce its changeover time then it is able to produce smaller batches economically

Often caused by quality problems, a company knows that it will lose a number of units along the production process so it produces extra to make sure that the customer's order is satisfied

Overproduction has been said by some to be the worst of the 8 wastes as it encompasses the rest of the wastes, often the main driving force for JIT (Just in time) systems.

Waste of Over-Processing



Extra effort which adds no value to the product or service from the customers perspective

INDICATOR	ROOT CAUSES
•Unnecessary work	•'Just in case' logic
•Extra equipment	•Lack of communication
•Longer lead time	•Undefined customer requirements
•Extra material movement	•Product changes without process change



Rework is a typical example of over processing

By reducing the root cause of the quality problem the solution is thus eliminating rework

Techniques such as 5 whys, SPC and mistake proofing are available to help identify and eliminate causes of quality defects

Waste of Defects / Reworks



Inspection and/or repair of a product or service

INDICATOR	ROOT CAUSES
•Rework, repairs, scrap	•Weak process control
•Added inventory costs	•Questionable quality
•Customer returns and loss of customer confidence	•Questionable quality
•Excessive waste generation	•Poor product design



Again caused by quality related issues

If you were to record all of the non-value added activities carried out in a typical manufacturing company do not be surprised to find out that 99% of all activities carried out are non-value adding, even the best manufacturers manage 96%

The elimination of waste, and not just reducing it, is a VITAL component of increasing competitiveness of your business

Waste of Skills



Intellect, skills, improvement ideas and learning opportunities lost by not engaging with or listening to employees

INDICATOR	ROOT CAUSES
•Delegation only and no listening	•Poor employee relations and management style
•Losing skilled employees	•Not listening to employees and their contributions
•Lost time, ideas, skills, improvements, and suggestions from employees	•Limited tools or authority available to listen to employees



This waste involves losing time, skills, improvements and learning opportunities by not engaging with or listening to employees

By viewing employees as an integral part of the competitive manufacturing process, they contribute to the generation of ideas needed to eliminate the other seven wastes

By knowing the other skills that your employees have, you will be able to utilize them in the business which will provide increased employee satisfaction.

Exercise

Identifying Waste in your Processes

Discussion



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When you see this symbol, please do not continue forward in the materials.

What wastes can you identify immediately without walking the shop floor – discussion

Waste (Muda)

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Exercise

Toast Video

Discussion



When you see this symbol, please do not continue forward in the materials.

Watch the Kaizen video on Toast and discuss

Exercise**Waste Walks**

	Issue	Possible Solution
Transportation	1	1
	2	2
Inventory	1	1
	2	2
Motion	1	1
	2	2
Waiting	1	1
	2	2
Over Production	1	1
	2	2
Over Processing	1	1
	2	2
Defects / Reworks	1	1
	2	2
Skills	1	1
	2	2



Create Two / More Teams

Send the Teams out to the shop floor to different areas

Each Team needs to identify Waste and give possible solutions

Exercise

Waste Walks Feedback

Discussion



When you see this symbol, please do not continue forward in the materials.

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Waste Summary

➤ What you learned during this Section:

- Understand what is waste
- Identify the 8 wastes and give examples
- Identify contributors to the 8 wastes

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Quiz

1. What are the 8 wastes?
2. Give a 1 sentence definition of each of the 8 wastes.
3. Name at least 2 indicators and root cause for each of the 8 wastes.
4. What is the waste called when you see a queue build up?
5. What is the waste of non-value moving called?
6. What is the waste of non-conforming units called?
7. What is the waste not utilizing human potential called?



Dizani – Your Partner in Productivity!

Thank You

