

Lean Production (*kaizen*)

Definition: The idea of lean production encompasses theories of modern Japanese industrial management, which are all designed to achieve the reduction and removal of waste within a business.

Lean production aims to remove all these elements of waste from the production process and as a result increase productivity and reduce costs.

Example of waste include:

- raw materials lying around unused
- work in progress that is sitting in parts bins waiting to be used in production
- finished product sitting in a warehouse waiting to be delivered to customers
- skills and knowledge of workers not being used by management.

The most important component parts of an effective lean production system are:

- just-in-time
- *kaizen*
- cell production
- time-based management methods.

Benefits of Lean Production:

- ✓ productivity is raised
- ✓ costs are reduced
- ✓ do not hold stock if JIT adopted
- ✓ the number of defective products is reduced
- ✓ lead times are cut
- ✓ there is an improvement in reliability
- ✓ new products can be designed more quickly
- ✓ waste is reduced.

Just-in-Time

Definition: Just-in-time (JIT) tries to ensure that parts, raw materials and components are received and products are made only when there is demand for the parts and demand for the products.

'If it isn't wanted don't order it; if it isn't sold don't make it.'

JIT tools focus on supplier relationships, customer relationships, employee involvement, *Kanban* and management understanding.

Advantages:

- ✓ **improves cash flow** as very little stock is held
- ✓ **waste is reduced** as no obsolete or damaged stocks occur
- ✓ **factory space can be freed up** for more productive use
- ✓ **costs of stock holding** are radically reduced
- ✓ links with and the **control of suppliers are improved**, leading to better quality of components supplied
- ✓ **motivation is improved** as employees are given greater responsibility and encouraged to work in teams (as part of the lean production process).

Disadvantages:

- ✗ a lot depends on the reliability and flexibility of suppliers
- ✗ ordering and administration costs are likely to rise
- ✗ bulk buying advantages may be lost
- ✗ difficult to cope with sharp, unexpected increases in demand
- ✗ reputation can be damaged if customers are let down by late deliveries as no buffer stocks are held
- ✗ extra pressure on staff because of additional responsibility associated with a JIT system
- ✗ unforeseen interruptions in supply.

Cell Production

Definition: With cell production, the production line is subdivided into a number of cells. These cells are groups of workers involved in related tasks.

- The employees are trained so that they can fulfil a number of tasks within the cell. This allows job rotation.
- The skills of the employees mean that they can each play a role in improving quality and also create flexibility in the production process.
- Communication is improved and the job enrichment and enlargement elements of cell design improve motivation.
- It is possible for cells to be self-managing with regards to many human resource management issues such as shift arrangements, breaks and holidays.

Time-Based Management

Definition: With this approach, time is regarded as a key business resource. Speed of development, speed of response and speed of delivery are becoming increasingly important. Speed adds value!

With time-based management, emphasis is placed on reducing time taken in all aspects of the whole production process. It involves concepts such as **just-in-time**, the use of **CAD** (computer-aided design) and **CAM** (computer-aided manufacture), **critical path analysis** and **simultaneous engineering**.

Kaizen (Continuous Improvement)

Definition: Businesses take the view that one of the main objectives of their existence is to be continually making small incremental steps in the improvement of quality, design and waste reduction.

Using and applying *kaizen*:

The main working element of *kaizen* is the use of *kaizen* groups. These are groups of employees who have a common stake in part of the production process. These groups will meet regularly to discuss problems and to suggest improvements. Often improvements can be made at nil or minimal cost. This means that over time the whole cost base of the business can be reduced, whilst indicators of quality and levels of production increase. All this is achieved with minimal capital investment.

Key elements of *kaizen*:

- **All employees**, from the managing director down to the shop floor workers, should be asking, 'How can I do what I do better?' - 'How can we do what we do better?'.
- **Kaizen does not ignore the need for new technology** or large-scale capital investment, however it does recognise that these are not the only methods of achieving increased competitiveness.
- **A motivated workforce** – the employees must be committed to the business.
- **A management with belief** in the capabilities of the workforce.
- **A trained workforce** – the employees must have the ability to understand their roles and complete their tasks efficiently.
- **Effective communication systems** – employees must be able to communicate suggestions to superiors and other relevant employees. This can be done through *kaizen* groups, but other methods of communication must also be available.
- **Security of jobs**. Employees will not suggest process improvements if their jobs are threatened by these improvements. *Kaizen* does suggest that demand for labour will fall, although this should be achieved through natural wastage.
- **Management must have a clear understanding of the production processes** in order that they can organise, control and plan to enable employees to meet the needs and quality requirements of the 'customers' within the organisation.

Benefits of *kaizen*:

- ✓ improved labour relations
- ✓ improved quality
- ✓ increased productivity
- ✓ improved motivation
- ✓ increased competitiveness
- ✓ reduction in waste
- ✓ less large-scale investment.

