

## Quality Management

### Quality Management Principles:

- Customer Focus
- Leadership
- Group Involvement
- Process Management
- Continual Improvement
- Continual Improvement
- Effective/Factual Decision Making
- Beneficial Relationships with outside organisations

### Quality Characteristics vs Quality Attributes

Quality characteristics refer to what the product is intended to do.

- E.g. quick phone charging or LCD watch display

Quality attributes refer to more detailed specifications regarding a certain quality characteristic.

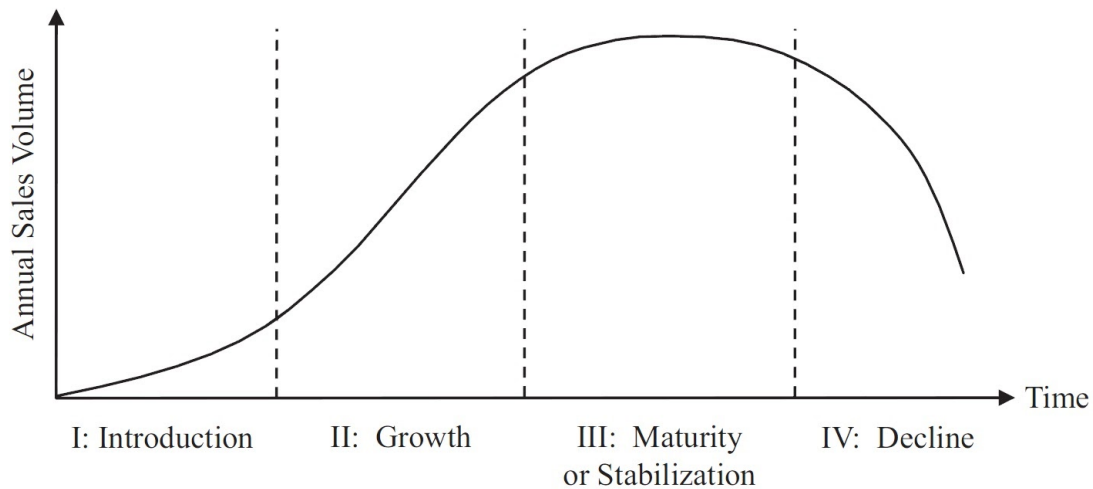
- E.g. phone charges in 45 mins or LCD display with resolution of 1280x1024 pixels

## Aesthetics

Aesthetics refer to the physical and visual design of the product. Aesthetics is concerned with the shape, feel, smell and taste of the product.

# Product Life Cycle

Every product manufactured has a life cycle. Each life cycle consists of the following



Stages:

- Introduction
- Growth
- Maturity
- Decline

## Introduction

When a product is initially introduced there will usually be a large advertising campaign surrounding it. This generates interest and generates sales.

## Growth

If a product is well received and of good quality then by word of mouth and advertising sale numbers should increase and grow.

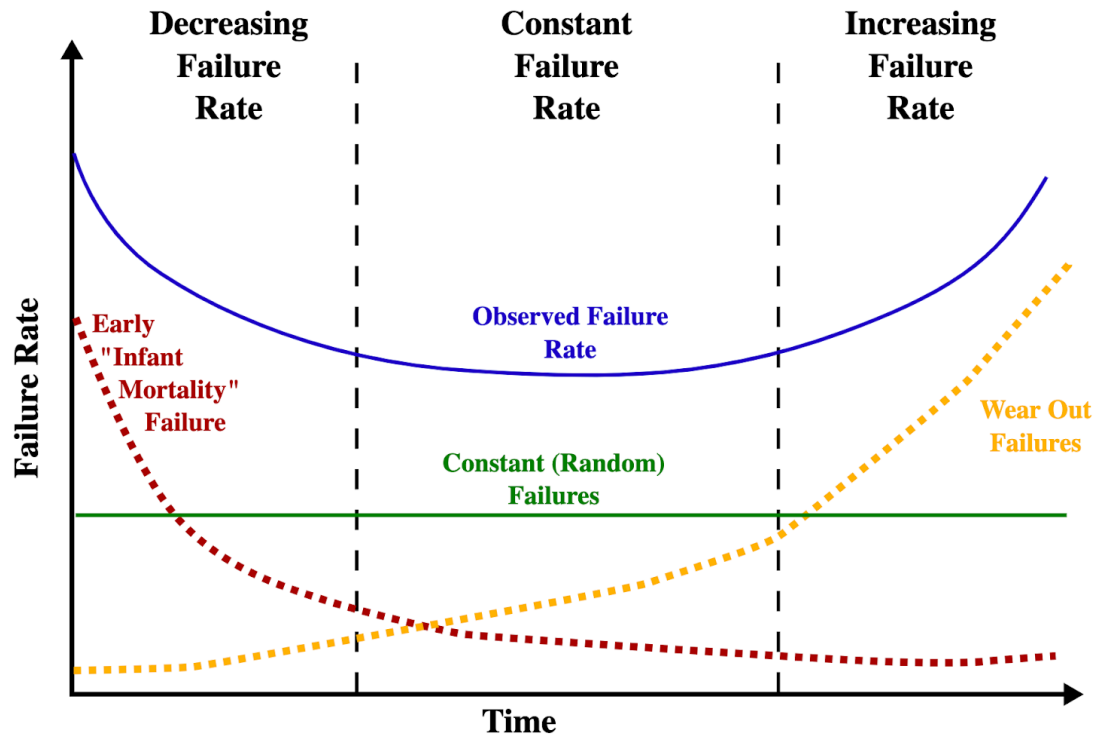
## Maturity

During this stage sale numbers begin to level out and remain constant. People are buying the product still but many may already have the product and thus do not need to purchase it again.

## Decline

The product will begin to age with time and faults may begin to appear in the units sold. New emerging technology could also result in the product becoming outdated and newer, cheaper and better alternatives may come onto the market. Sale numbers gradually decline with time.

# Bathtub Curve



The bathtub curve is designed to show the likelihood of products failing over time as they age.

When a product is first released the failure rate can be high due to unforeseen circumstances and “teething” problems may arise.

These problems are quickly rectified and fixed and the failure rate quickly declines and levels out low and constant. Small numbers of random failures take place during this stage.

As the product ages and with wear and tear setting in the likelihood of failures increase for the remainder of the product life cycle.

\*Remember - it will cost more time and money to manufacture a high quality product, but it will last longer & will be of higher quality than its competitors. The likelihood of additional costs for repairs being incurred on the company will be less and the company will gain a good reputation\*

## Manufacturing Costs:

- Labour
- Materials
- Overheads
- Testing & Quality Control

# PDCA/PDSA Cycle (Deming Cycle)

This quality problem-solving tool was coined by W. Edwards Deming. It stands for “Plan, Do, Check, Act” or “Plan, Do, Study, Act”. This process is used by many companies to problem solve and to ensure the continuous improvement of their manufacturing processes.

## Plan

Recognise the problem and the solution, conduct research, develop a plan for improvement.

## Do

Begin the plan and try to carry it out as efficiently as possible.

## Check/Study

Examine the early results and see if they are desirable.

## Act

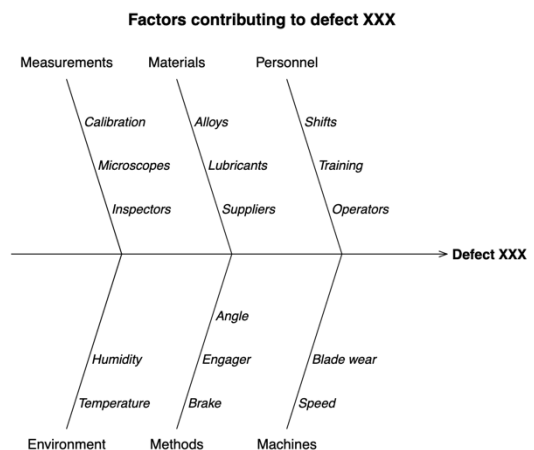
If the results are not desirable then go back through the cycle and alter various different elements until you get the results you are looking for. If nothing is wrong then do not fix what is not broken.

# Cause and Effect Diagram

Cause and Effect Diagrams are used by companies to organise the various possible causes of a problem they are presented with in a logical fashion. The smaller arrows are more precise areas within a large problem.

What Causes a Problem?

- People
- Hardware
- Materials
- External Weather Conditions
- Location
- Methods



## Scatter Diagrams

Scatter Diagrams show various relationships between different variables in a variety of settings

### Planned Obsolescence vs Poor Quality

Planned obsolescence is when a company designs a product to fail after a certain number of uses or after a certain length of time. This ensures that customers will have to buy their product again generating sales.

Companies need to find the balance between planned obsolescence and appearing to have poor quality products.

Continual software updates that eventually slow down your phone to an unusable condition is an example of subtle planned obsolescence.

