

❖ "Manufacturing Strategy"



Scuola di Ingegneria

THE COSTS OF QUALITY

Carlo Noè

LIUC – Università Cattaneo

e-mail: cnoe@liuc.it

❖ THE COSTS OF QUALITY

It is possible to classify the costs that are involved in achieving quality objectives as:

- 1. Inspection and control costs:** to verify if the product quality reaches the desired level.
- 2. Costs of defects:** due to failure in meeting set quality standards.
- 3. Prevention costs:** to eliminate the causes of failure in meeting quality standards.

❖ THE COSTS OF QUALITY

Inspection and control costs

1. Costs for acquiring the measurement and control tools (investment);
2. Costs for the development of measurement and control methods and procedures (investment);
3. Costs for tests and control of supplied materials (operating costs);
4. Costs for the control and test of work in progress and finished products (operating costs).

❖ THE COSTS OF QUALITY

Area A:

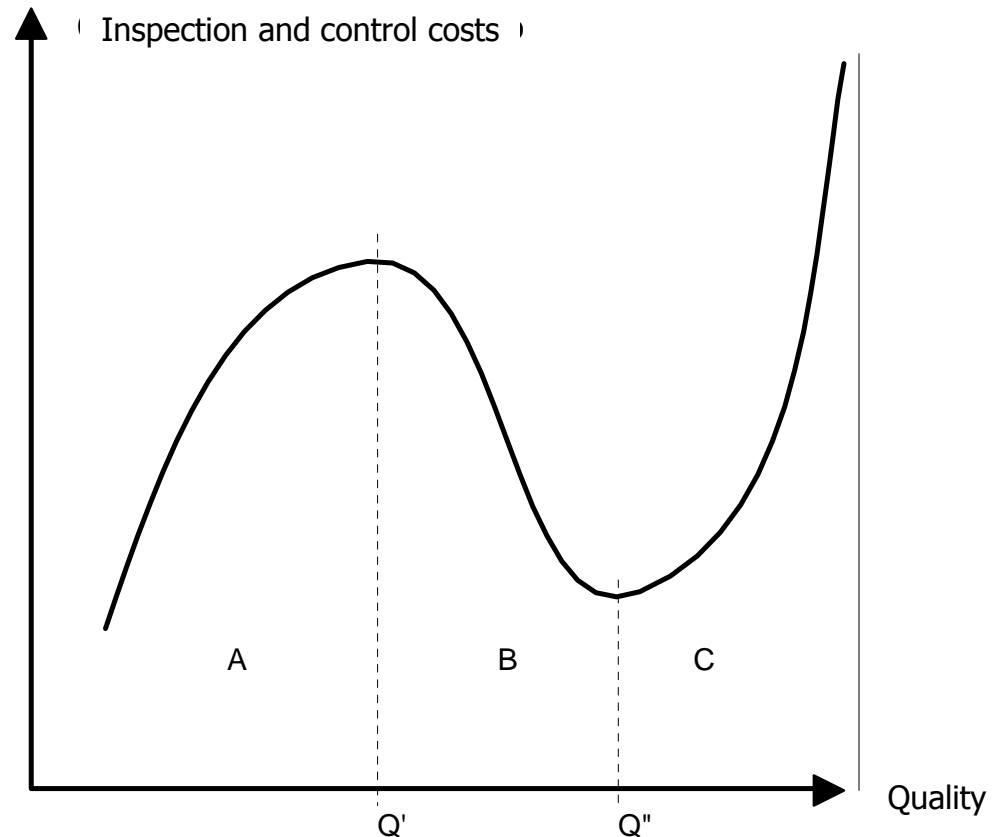
Higher Quality = Higher Control

Area B:

As the quality level 'Q' is reached the previous control level is no more necessary

Area C:

As quality is close to 100% (Q'') the reach of higher quality requires big effort



Inspection and control costs pattern

❖ THE COSTS OF QUALITY

Costs of defects

Internal Costs of defects

Cost of scrap

Cost of rework

Cost of product and process review

Cost of supplied materials and components non acceptance

External Costs of defects

Costs for repair and substitution in case of guarantee

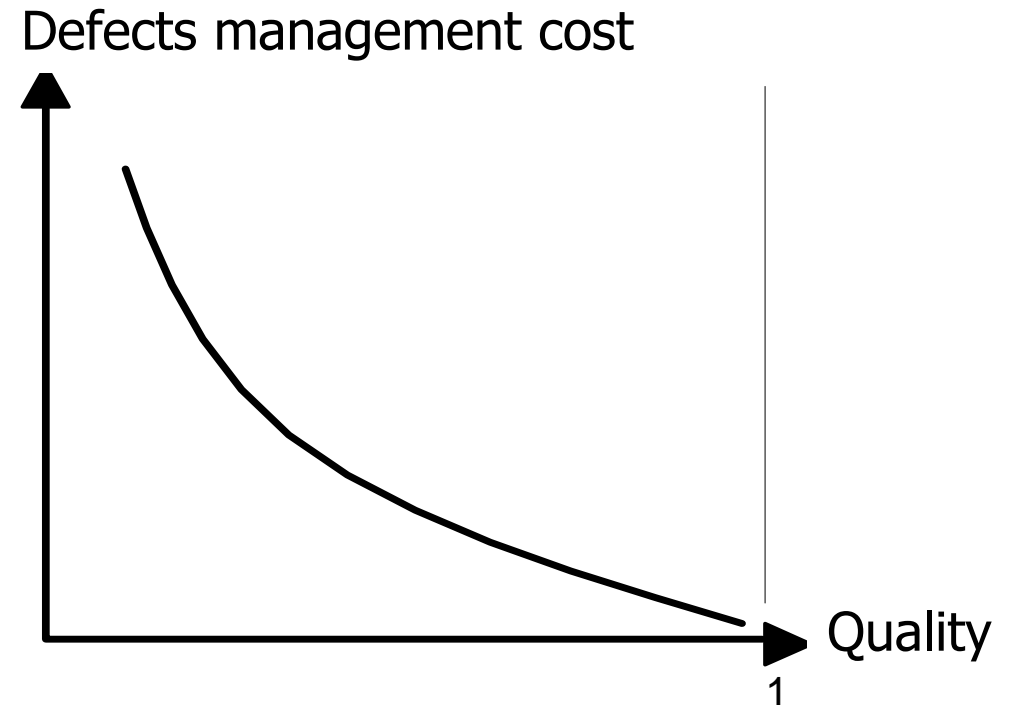
Product recall

Bad worth of mouth

❖ THE COSTS OF QUALITY

Higher quality implies:

- Lower scraps
- Lower number of internal rework
- Lower number of external repair and substitution in case of guarantee
- Lower product recall likelihood
- Lower bad worth of mouth



Costs for defects pattern

❖ THE COSTS OF QUALITY

Prevention costs (investments)

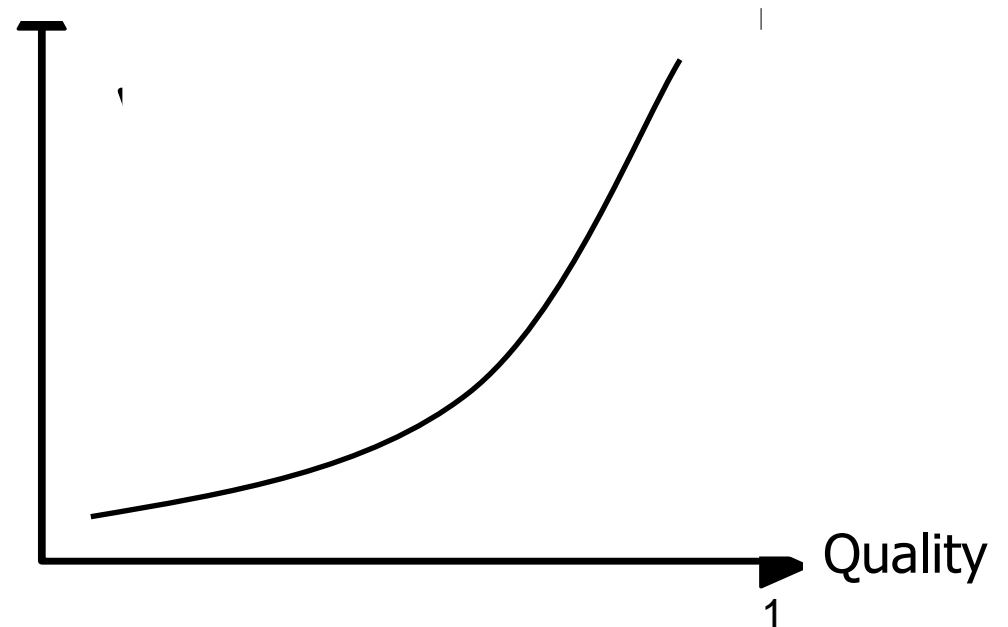
- Cost for quality management planning (definition of general quality principles and guidelines to be adopted to reach the set quality levels: quality management system)
- Measurement and control tools design and development cost
- Quality acceptance and inspection values set cost
- Operators education and training cost

❖ THE COSTS OF QUALITY

Higher quality implies:

- higher investments
- higher costs of inspection and acceptance
- higher costs of education and training

Prevention costs



Costs for prevention pattern

❖ THE COSTS OF QUALITY

