Quality Management

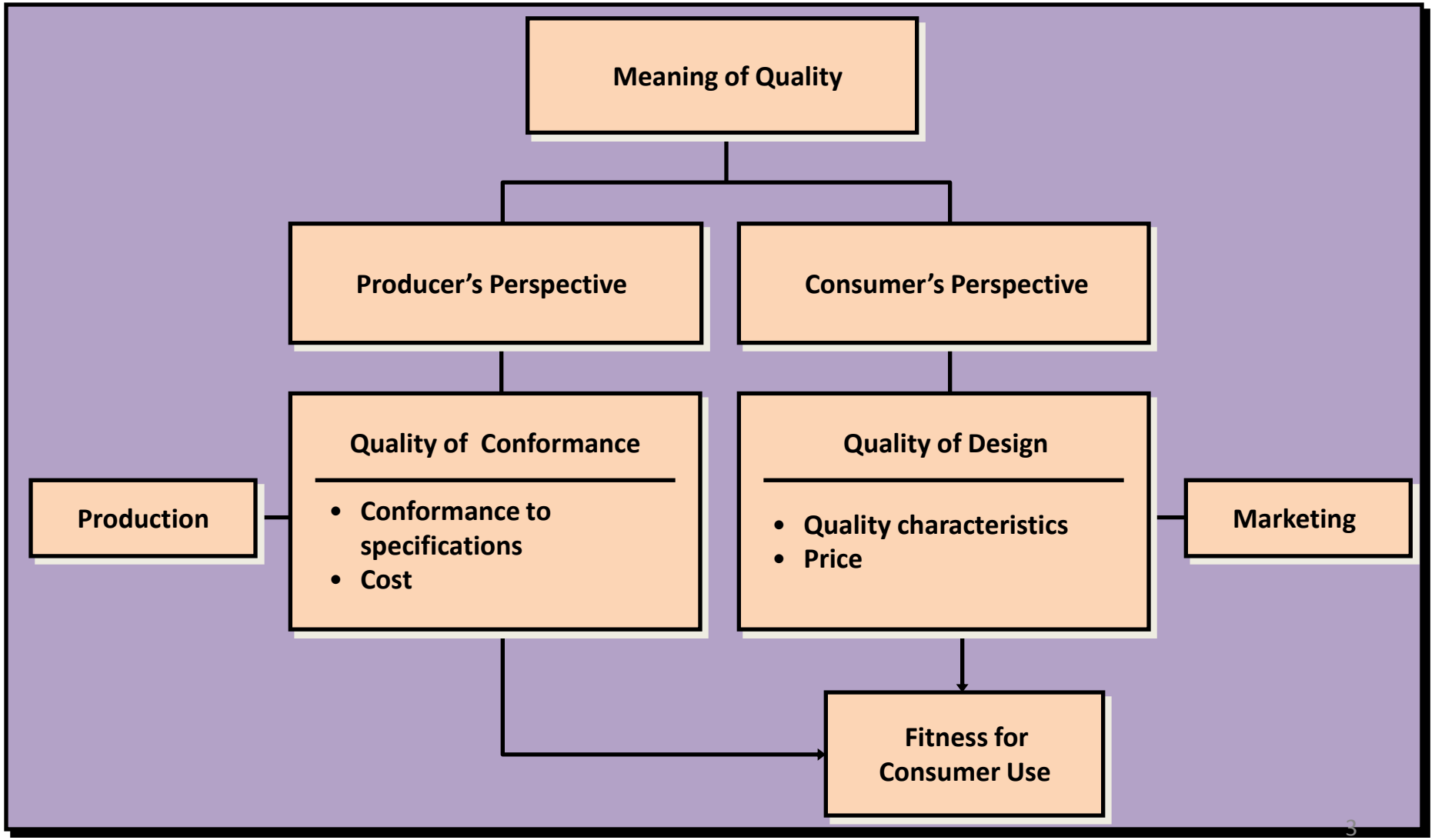
EOE-072

"It costs a lot to produce a bad product."

Norman Augustine

Unit-1
Quality Concept

Meaning of Quality



- What is quality management all about?

Try to manage all aspects of the organization in order to excel in all dimensions that are important to “customers”

- Characteristics of Quality

Usability, Functionality, Maintainability, Reliability, Portability, Efficiency of product

- Quality Control Vs Quality Assurance
- Total Quality Management

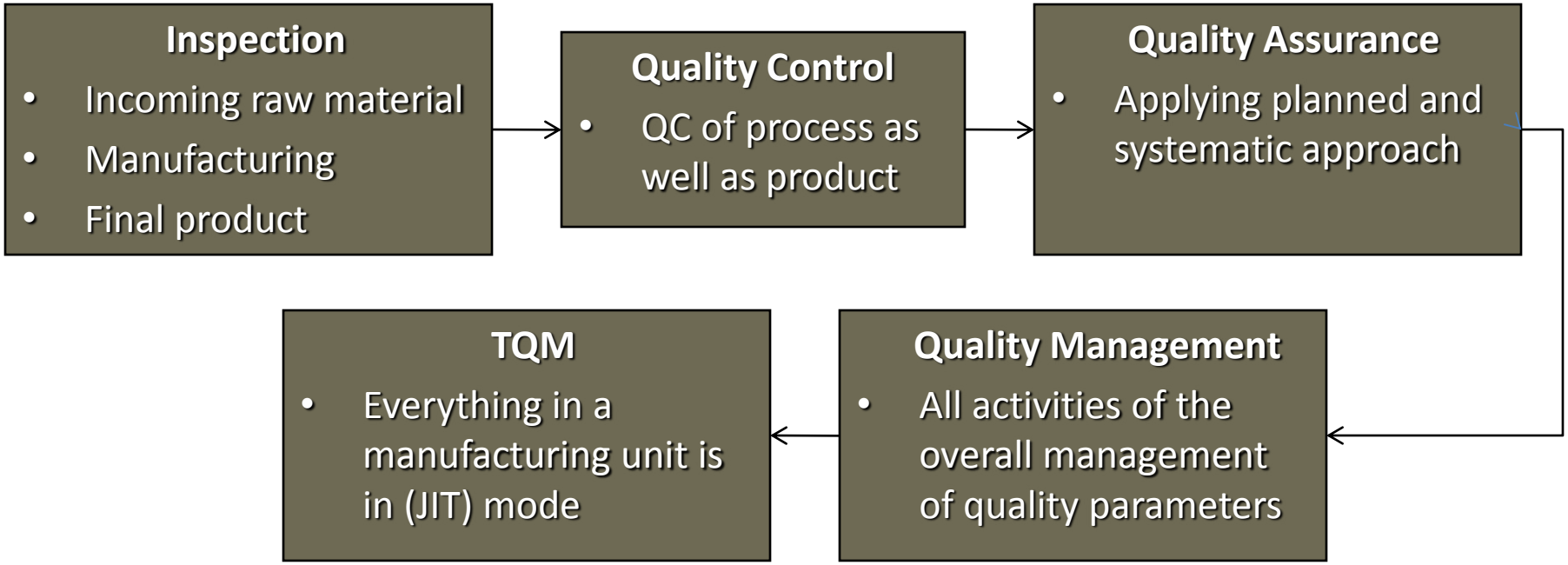
TQM is a management philosophy:

- continuous improvement
- leadership development
- partnership development

Principles of TQM

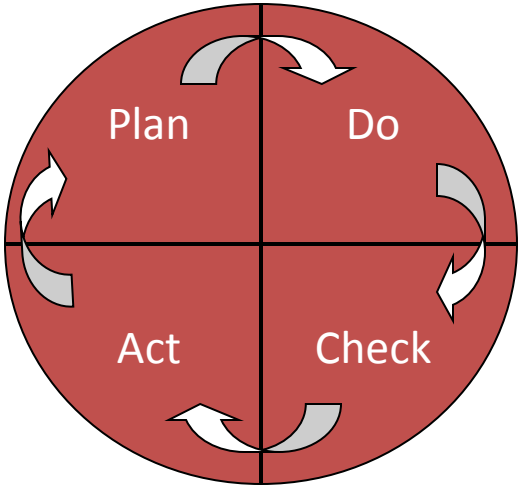
- Customer-oriented
- Leadership
- Strategic planning
- Employee responsibility
- Continuous improvement
- Cooperation
- Statistical methods
- Training and education

Evolution of Quality Control



Continuous improvement philosophy

1. Kaizen: Japanese term for continuous improvement. A step-by-step improvement of business processes.
2. PDCA: *Plan-do-check-act* as defined by Deming.



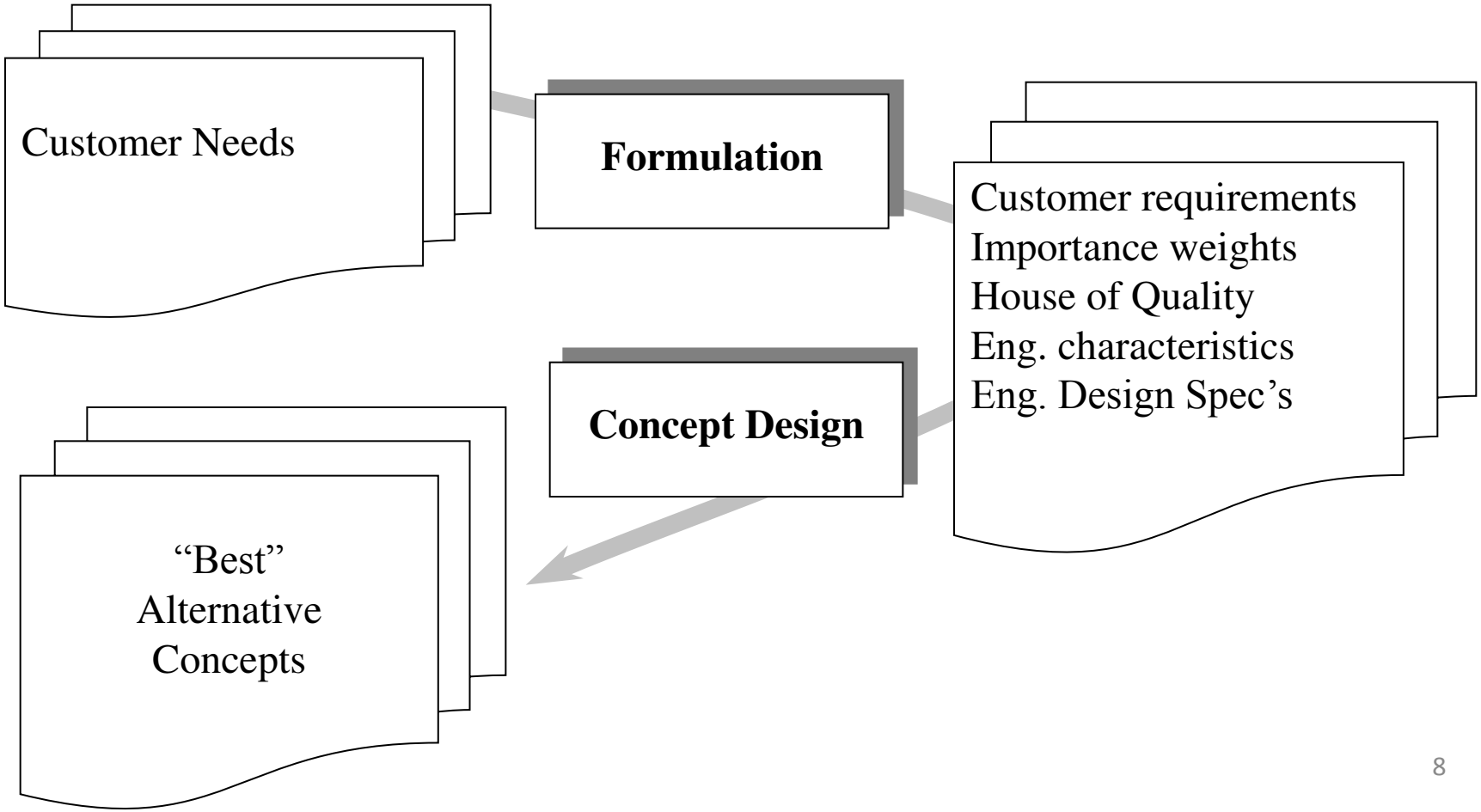
3. Six Sigma
4. Lean
5. TQM

Deming's 14 points

1. Create constancy of purpose
2. Adopt philosophy of prevention
3. Cease mass inspection
4. Select a few suppliers based on quality
5. Constantly improve system and workers
6. Institute worker training
7. Instill leadership among supervisors
8. Eliminate fear among employees
9. Eliminate barrier between departments
10. Eliminate slogans
11. Remove numerical quotas
12. Enhance worker pride
13. Institute vigorous training and education programmes
14. Develop a commitment from top management to implement above 13 points

Quality concepts in design

House of quality (HOQ): A technique used in either product development or product redesign, to ensure that the customer's wants and needs are the basis for the design



Quality inspection of supplier

- Also known as pre-shipment inspection (PSI).
- When a company places an order and sends “inspectors” or unqualified middle men that are employed by a third party vendor.

Factors to evaluate a supplier

- Price
- Quality
- Services
- Location
- Emergent cases
- Inventory policy of supplier
- Flexibility
- Periodic supplier audits

Procurement methods

1. Restricted tender
2. Competitive Negotiation
3. Direct Procurement
4. Open Tender

Capacity Verification

1. Quality of raw material
2. Prevention of defects
3. Evaluation of machine capacity
4. Reliability in delivery
5. Flexibility in design change
6. Work environment and facilities
7. Trading and awareness

Advantages of single source of supplier

1. Reduces communication gap between supplier and company.
2. Better product with low cost and less variability.
3. Assurance of long term supply of raw material so that investment in new machine purchasing for good quality raw material.
4. A long term relationship.

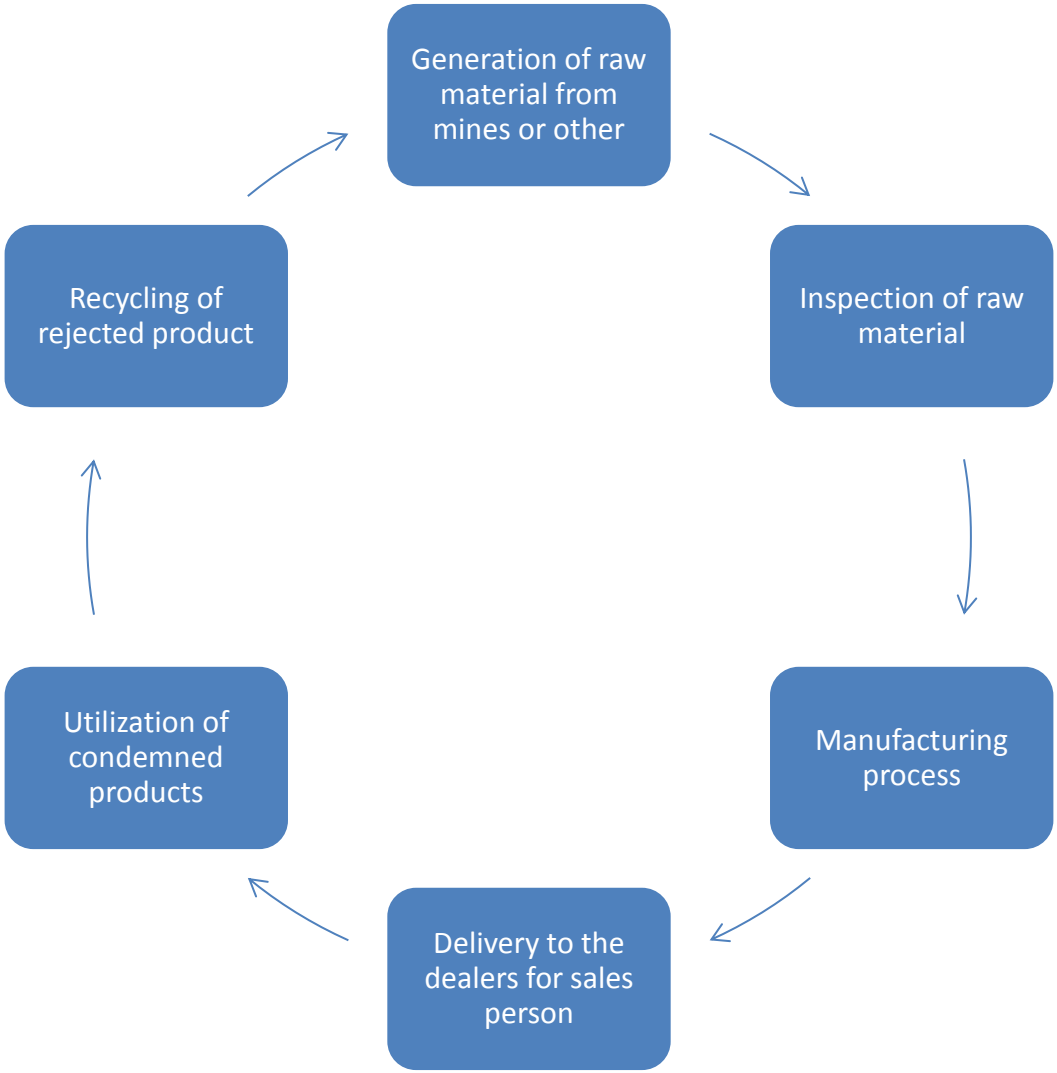
Disadvantages of single supplier

1. Blackmailing the company by supplier for increasing price of raw material.
2. Disruption of delivery of raw material.
3. There may be a huge loss and planning for increasing the production will be disturbed if supplier is unable to meet the desired capacity.

Advantages of multiple source of supplier

1. Switching to other supplier is possible if quality degrades.
2. Increment in production capacity by purchasing raw material from multiple suppliers.
3. Timely delivery of raw material may be ensured.
4. Cost reduction programme of final product can easily be taken up.

Methods of manufacturing



Traditional production process

1) **Just in Time Manufacturing (JITM)**

Objectives:

1. Reduces the over all rejection of products.
2. Reduces the rework cost at material which save the money to company.
3. Develop an optional manufacturing process for good quality product.
4. Increases the process capacity and efficiency of workers.
5. Creates an environment of team work.

2) **Lean Manufacturing**- Also known as Umbrella concept
   - Cuts down the human efforts in factory
   - Cuts down half the manufacturing space
   - Cuts down investment in tools
   - Cuts down time taken in development of product inventories etc

3) **Cellular Manufacturing**
   - Used for speed up the manufacturing process and minimal material handling

Quality Manufacturing Techniques

SPC may be broadly broken down into three sets of activities-

1. **Understanding the process**
   - The process is typically mapped out and monitored using control charts.
2. **Understanding the causes of variation**
   - The tools used include Ishikaka diagrams, designed experiments and Pareto chart to determine cause of variation.
3. **Elimination of the sources of special cause variation**
   - This include development of standard work, error proofing and training.
   - Additional process change or align the process with the desired target

Manufacture control the process for three reasons-

1. **Reduce variability**
   - To ensure consistently high quality product
   - To save money
2. **Increase efficiency**
   - Some process need to be maintained at a specific point to maximize efficiency
   - Save money by minimizing the resources
3. **Ensure safety**
   - Need of precise process control

Quality control in services

1. Customer relationships
2. Customer retention
3. Quality service
4. Word of mouth
5. Service profit chain

Guarantee Policy

The Guarantee policy of a company should consist the following points in the documents:

It should be clearly mentioned in policy documents that if product fails during guarantee period, will it be replaced or repaired

If a customer wants to extend the guarantee period by paying extra cost it should be mentioned in the guarantee policy document

If the guarantee period of the product expires then what is the next remedy for its replacement and repairing

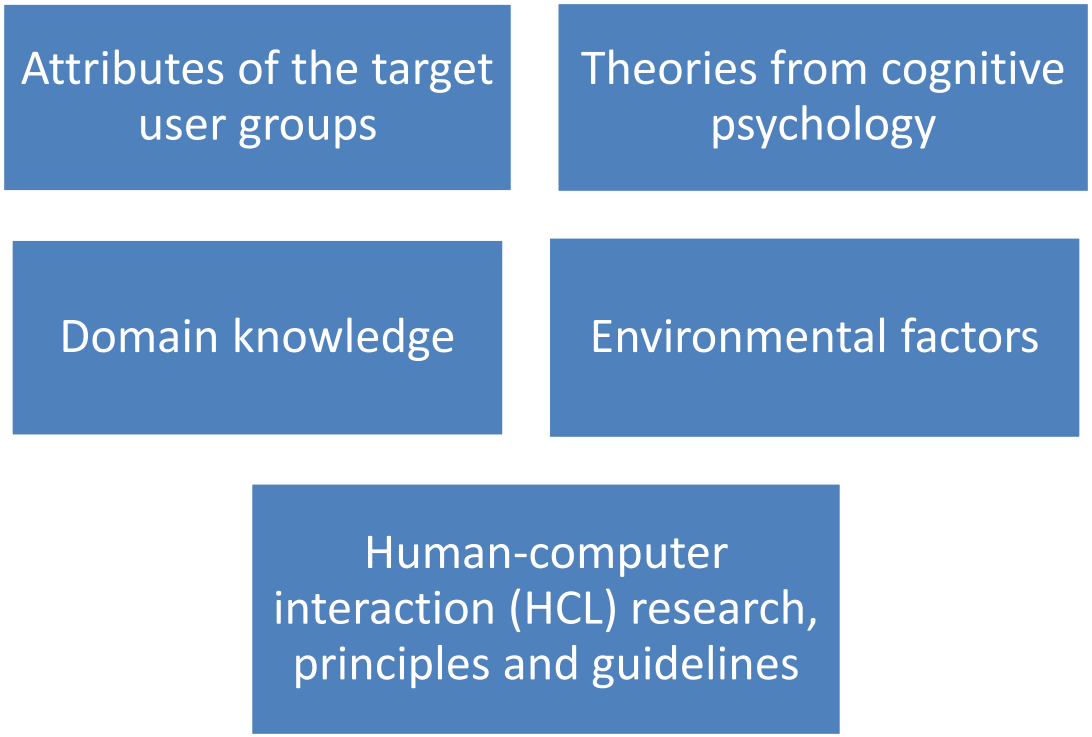
If there is any minor defect in the product then guarantee policy should also describe about its onsite repairing and off site repairing

If there is any feature change in the product and a customer is desiring implement the same feature in the old product then a nominal cost should be levid on the customers

Claims analysis

- It is technique for examining the positive and negative consequences of design features that are described in current or future scenarios of use.
- A “Claim” is a statement of the consequences of a specific design feature or artifact on users and other stakeholders.

Criteria for determining whether claims are positive or negative for particular scenario:



Thank you