# END4651
# QUALITY MANAGEMENT

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# Quality Planning

The following are the important steps for quality planning.

1. Establishing quality goals.
2. Identifying customers.
3. Discovering customer needs.
4. Developing product features.
5. Developing process features.
6. Establishing process controls and transferring to operations.

# Results of Poor Quality

- *Losing work:* typically happens gradually and if it happens, it takes long time to get over it.
- *Loan:* Lead the firm to bankruptcy.
- *Loosing productivity:* Inspection, rework, return, handling of additional stock.
- *Costs:*
  - Internal and external breakdown costs
  - Additional inspection costs
  - Additional safety stock costs

# The Importance of Quality

***Reputation of the business***

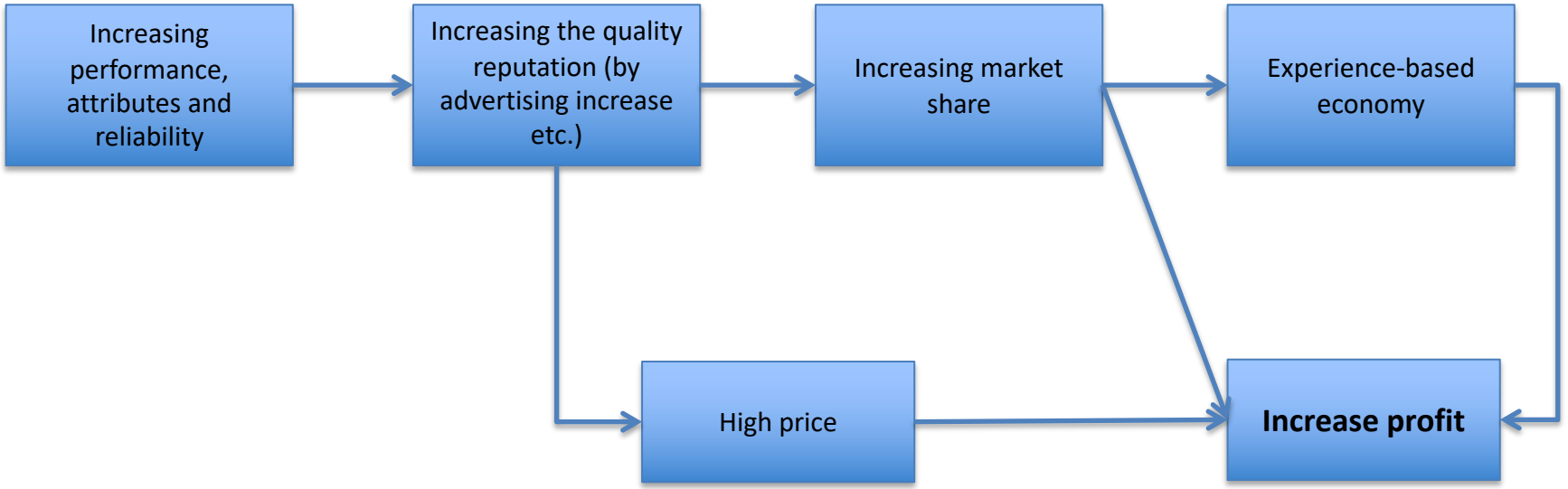
- An organization maintains its reputation according to its quality.
- New products, experience of employees and relationships with suppliers determine the reputation of the organization.
- Any business that has gained a low quality reputation will either abandon this bad image by improving the quality of the product or service, or it will go bankrupt in a short time.
- Developing the product also affects the image of the business positively.

# The Importance of Quality

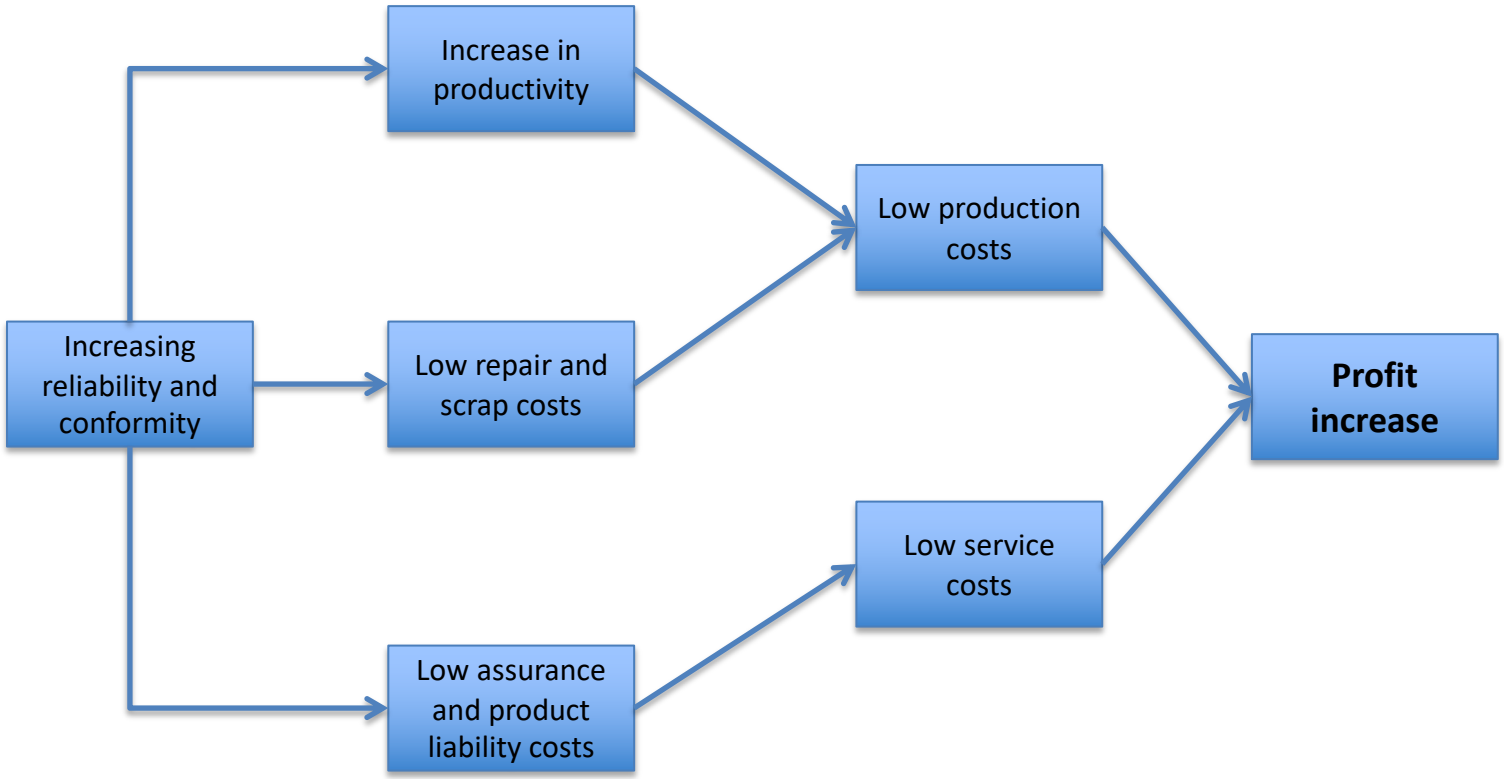
***Costs and Market Share***

- Increasing the quality increases market share and provides cost savings.
- Both market share and costs are factors that affect profitability.
- In a similar manner, the development of reliability and compliance creates less errors and lower service costs.
- High-quality enterprises are five times more productive than low-quality enterprises.

# The Importance of Quality – Market Gain



# The Importance of Quality – Cost Savings



# The Importance of Quality

**Product Liability:**

- Organizations that produce defective products or services are directly responsible for damages or injuries resulting from their use.

- For this reason, businesses are producing high quality products or services, which are removing the risk of injury.

# The Importance of Quality

**International Meaning:**

In today's technology age, quality has created an international interest.

For a competing business and country in the global economy, the products or services produced should be of appropriate quality and price.

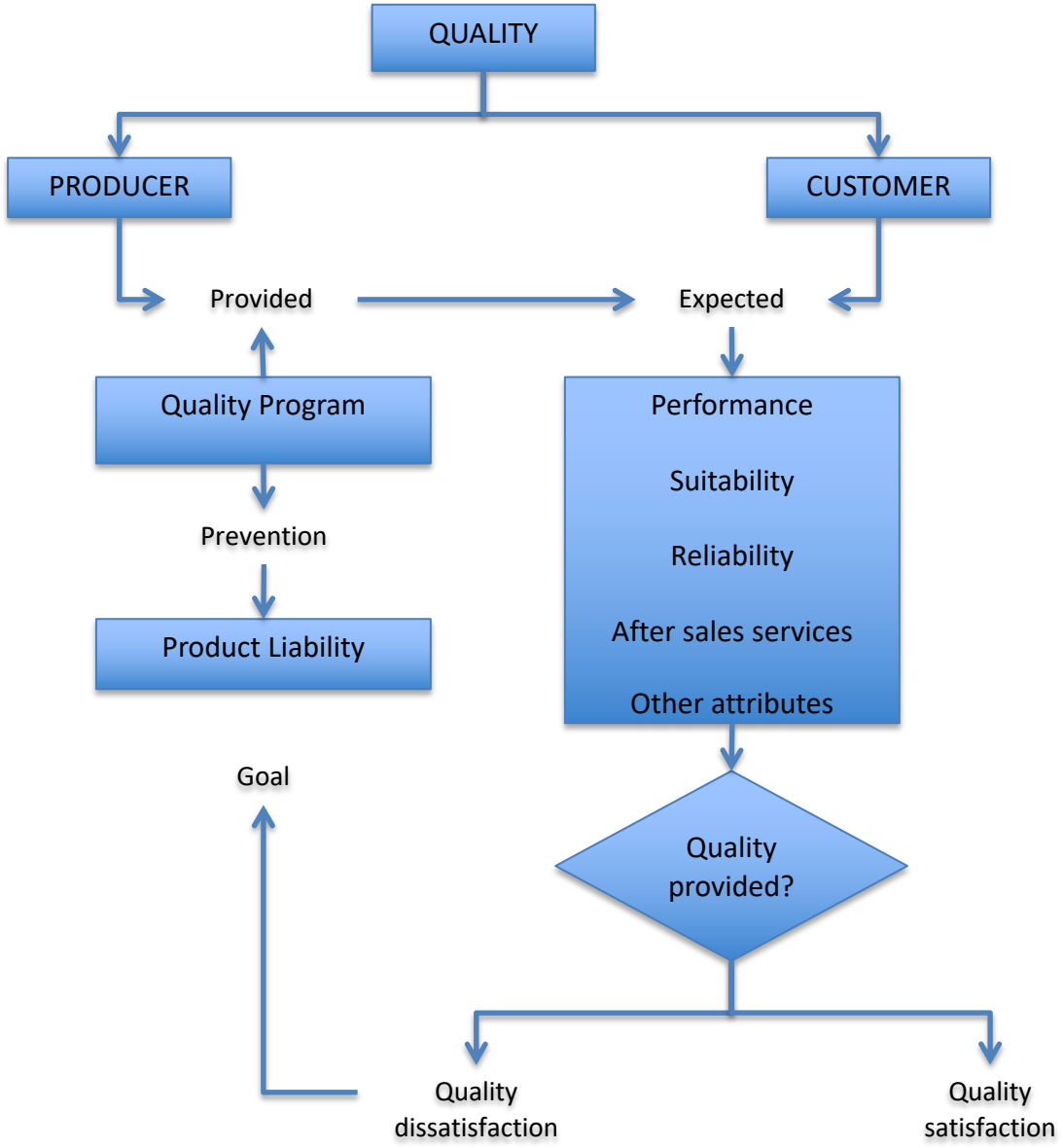
Poor quality products or services are damaging both domestic and overseas operations.

# Critical combination of producer and customer

As seen from the figure, quality is a concept that producer and customer created together.

A satisfied customer is the one who gets the expected quality.

Otherwise, the trust of customer to producer will lose and the product liability will be reviewed.



# Quality in Fact and Quality in Perception

- *Quality in fact; is* the quality achieved when the effort and costs of the organization that provides a good or service reaches its specified characteristics.

- *Quality in perception;* is a subjective concept and it is the quality that the customer perceives. When a good or service meets the customer's expectations, the perceived quality is achieved.

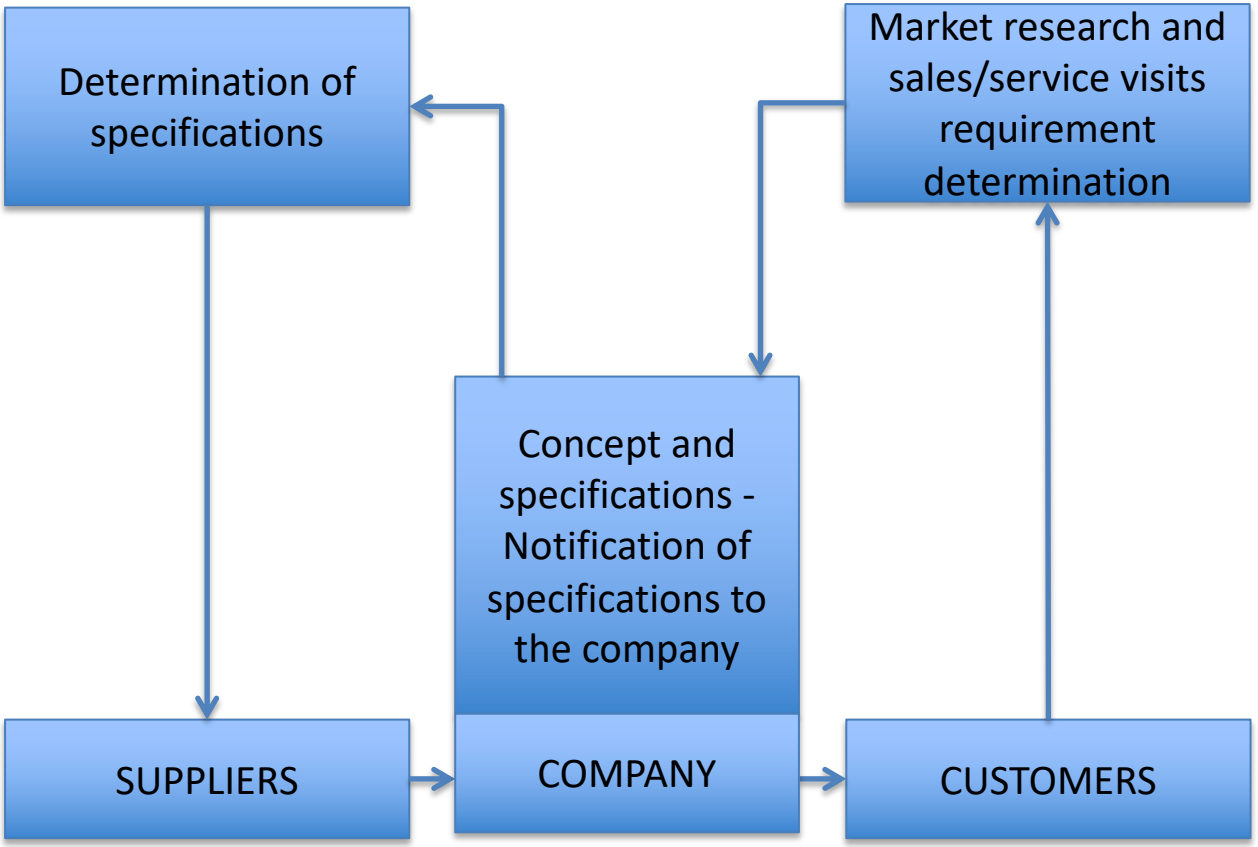
*'In order to achieve success in improving quality, it is necessary to attach equal importance to both quality concepts.'*

# Main Categories of Quality

Three main categories of quality are:

1. Q.o Design
2. Q.o Conformance
3. Q.o Performance

# Quality of Design



# Quality of Design

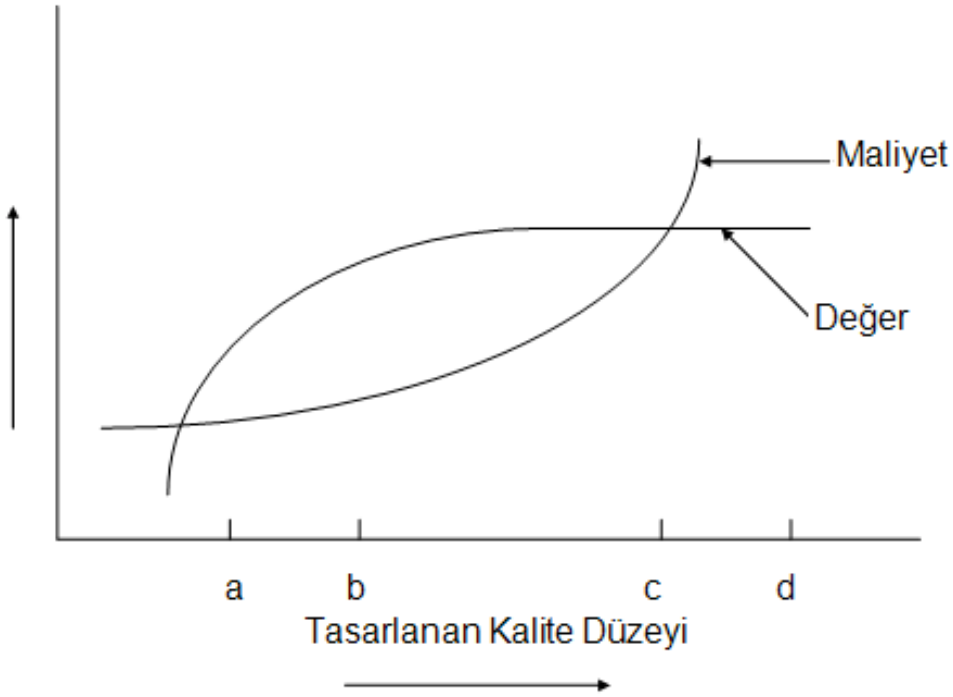
In general, design should meet customer expectations,  be simple and inexpensive. Design quality is affected by lots of factors.

In many cases, an increase in the quality level being designed increases the cost in the exponential range. However, the value of the product increases at a low value after a certain design quality.

# Quality of Design

If it is assumed that the smallest customer need is met at ***a*** level, it may be possible to choose the ***b*** quality level with the greatest difference between value and cost. This choice is based on the idea of maximizing the return rate.

According to figure, the cost and the value are equal at the quality level ***c***. For any level after ***c*** (mean ***d***), the cost value is exceeded. This information in quality design is very useful in choosing the quality level.

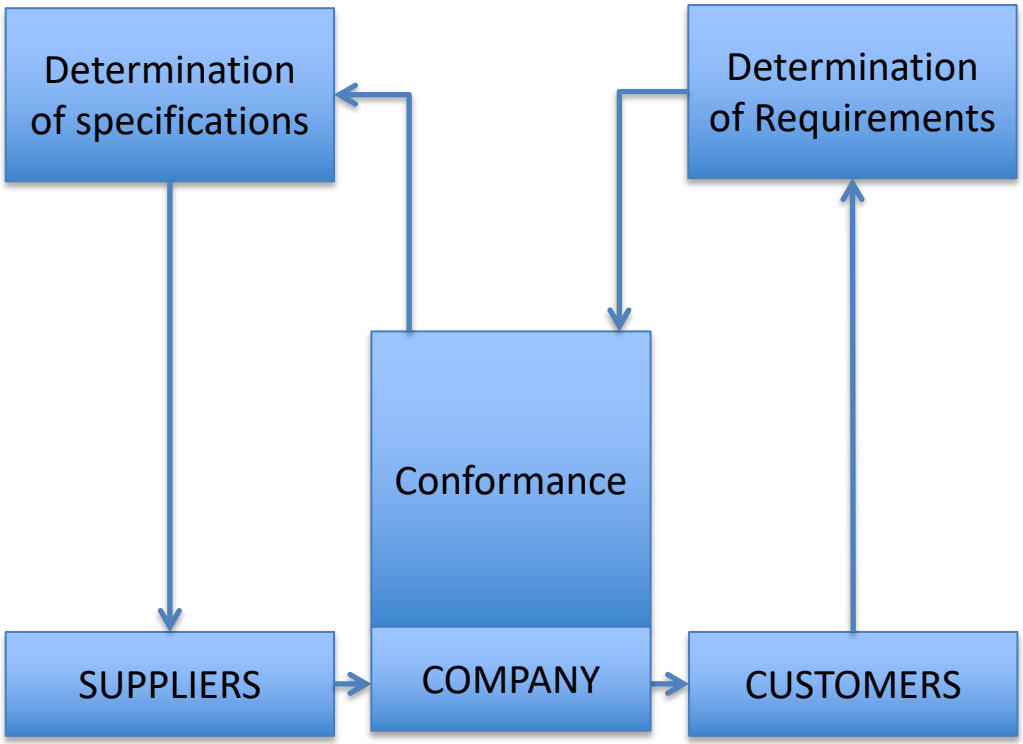


# Quality of Conformance

Quality of conformance refers to the degree to which a service produced or offered services meets the selected standards at design stage. Once the quality of the design is determined, the operators concentrate their work in the direction of meeting the specified specifications.

Figure shows the general structure of the qualification quality. In the manufacturing sector, this stage is more concerned with the degree of quality control, from the acquisition of raw materials to the shipment of finished products.

# Quality of Conformance



# Quality of Conformance

This phase consists of three basic subjects. These are specified as:

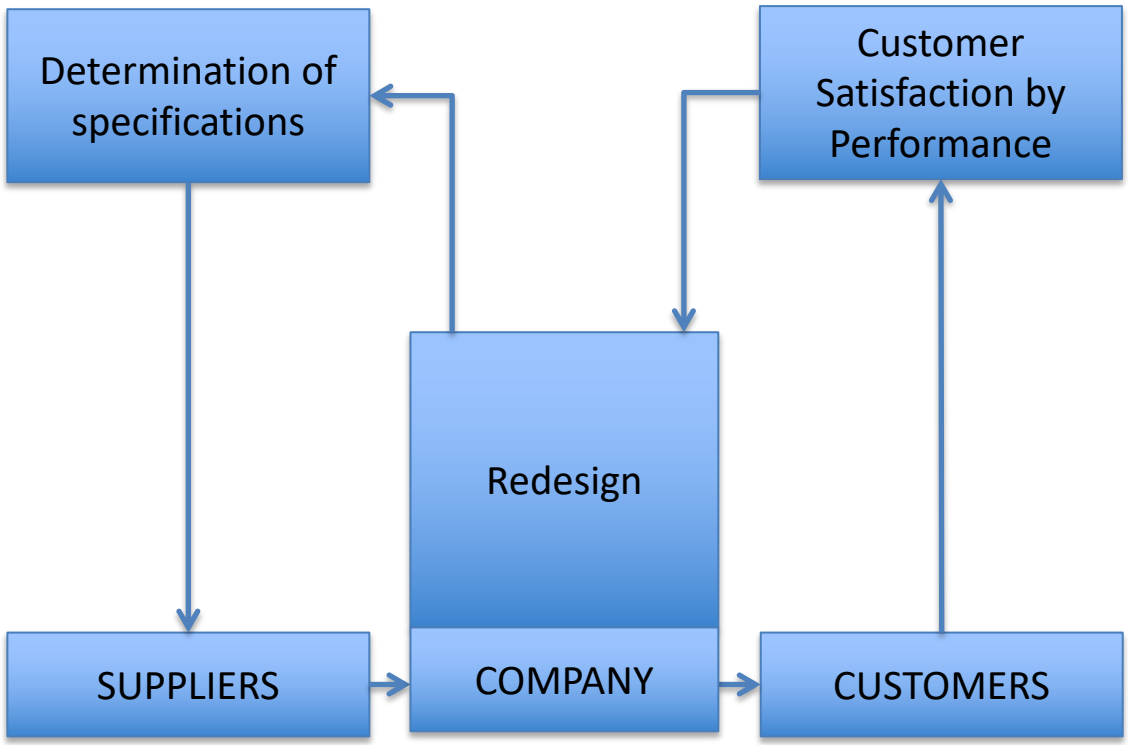
- *error prevention:* takes into account methods to prevent errors. This is generally accomplished using statistical process control techniques and other techniques.
- *error detection:* is accomplished by statistical analysis of the data obtained from examination, testing and procedure.
- *error analysis:* the causes behind the occurrence of the error are analyzed, the factors that cause this error will be discussed and preventive actions will be determined and applied.

*'Conformity quality is more of an extension of design quality, resulting in performance qualities.'*

# Quality of Performance

- Performance quality refers to;
  - the function of the product or service in use,
  - measures the degree of satisfaction of the customer.
- This quality is determined by the market performance levels of the products or services of the company, customer research and sales / service visit analysis.
- Performance quality is a function of quality of design and quality of conformance.
- If a product does not act to meet these expectations, or if a service offered does not meet customer standards, then necessary adjustments must be made at design or conformity level.

# Quality of Performance

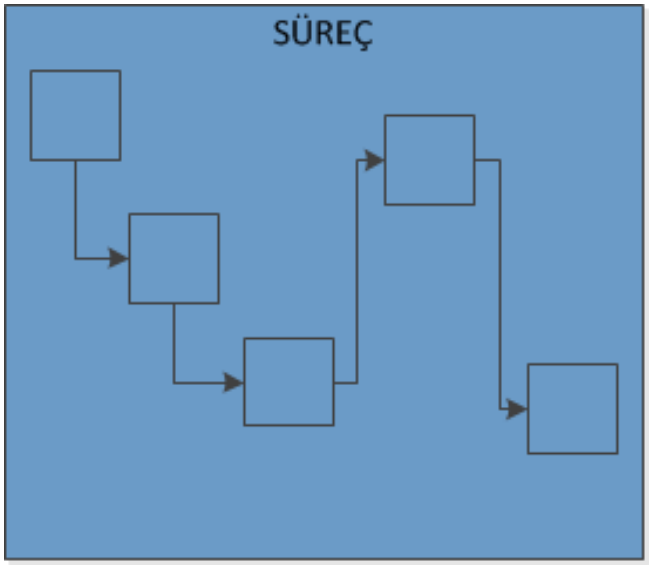


# TOTAL QUALITY MANAGEMENT

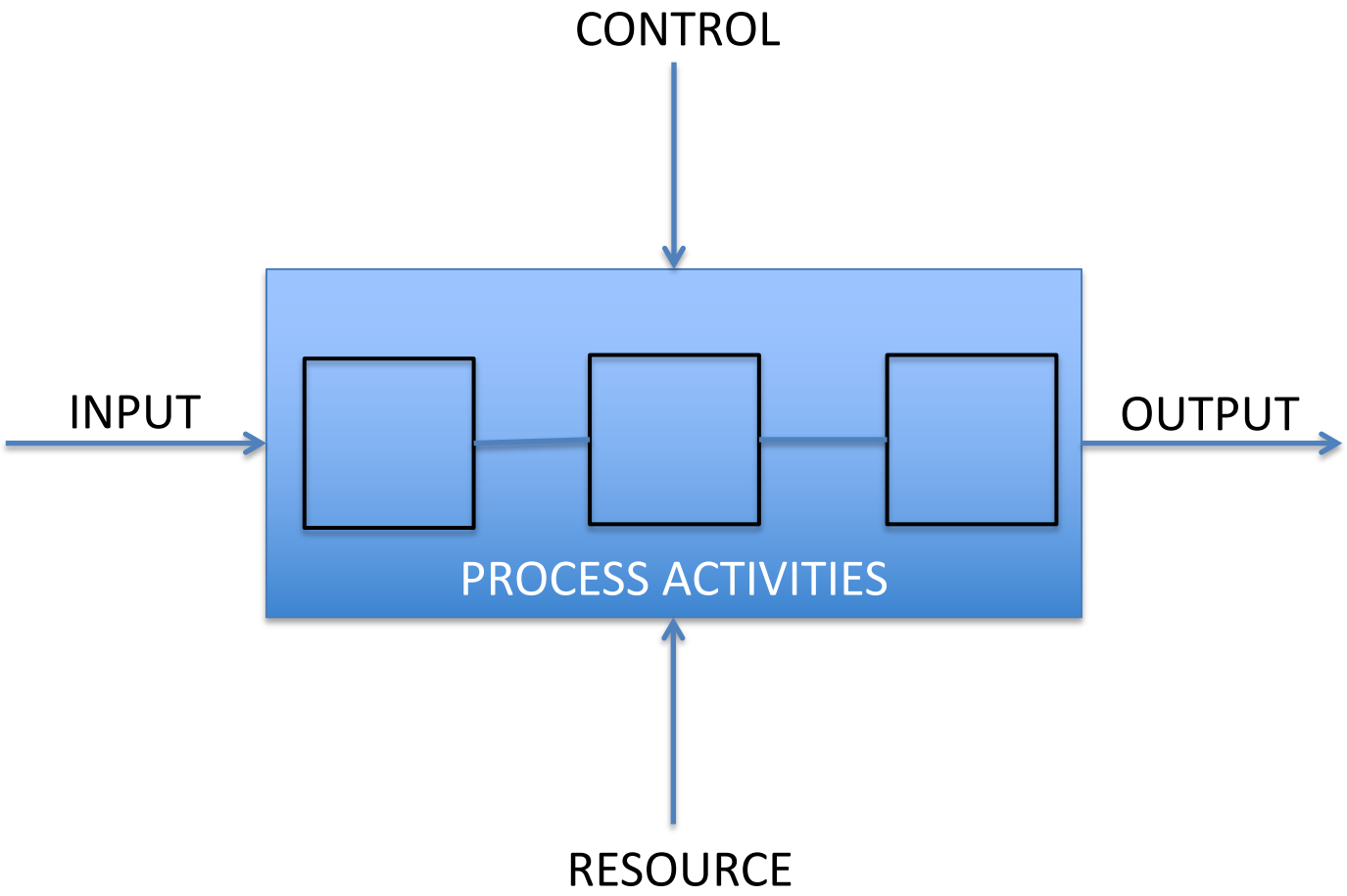
# What is process?

Process is a ***series of activities*** which;

- Transforms a particular set of ***inputs*** into a set of ***useful outputs*** for the customer;
- Create value depending on each other.



# Basic Process Scheme



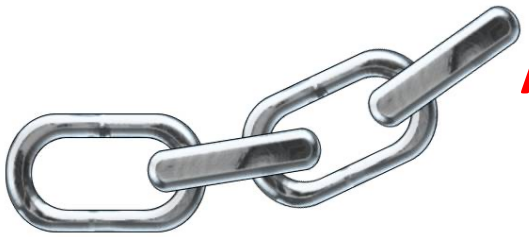
# Process Management


Processes are activities performed by particular department. This is wrong: processes are not confined to the walls that divide the rooms of a company, rather they spread through various departments. This is called *"end-to-end"*. An end-to-end process considers the mainstreaming of different positions of managers of an organizational structure.

Companies design their processes through interviews with the heads of each department , who disclose all activities under their responsibility and their subordinates. After drawing all streams, it is necessary to unify the flow of each department. With the unified flow, now we can talk about the processes because until then, the designed flows were just mere activities of departments.

# Relationships Between Processes

- The output of a process affects the system as an input to the next process.
- Internal customer – External Customer
- Main processes – Supportive processes – Sub-processes – Door to door processes



**A chain is as strong as its weakest ring.**

# Listening to the Voice of Customer

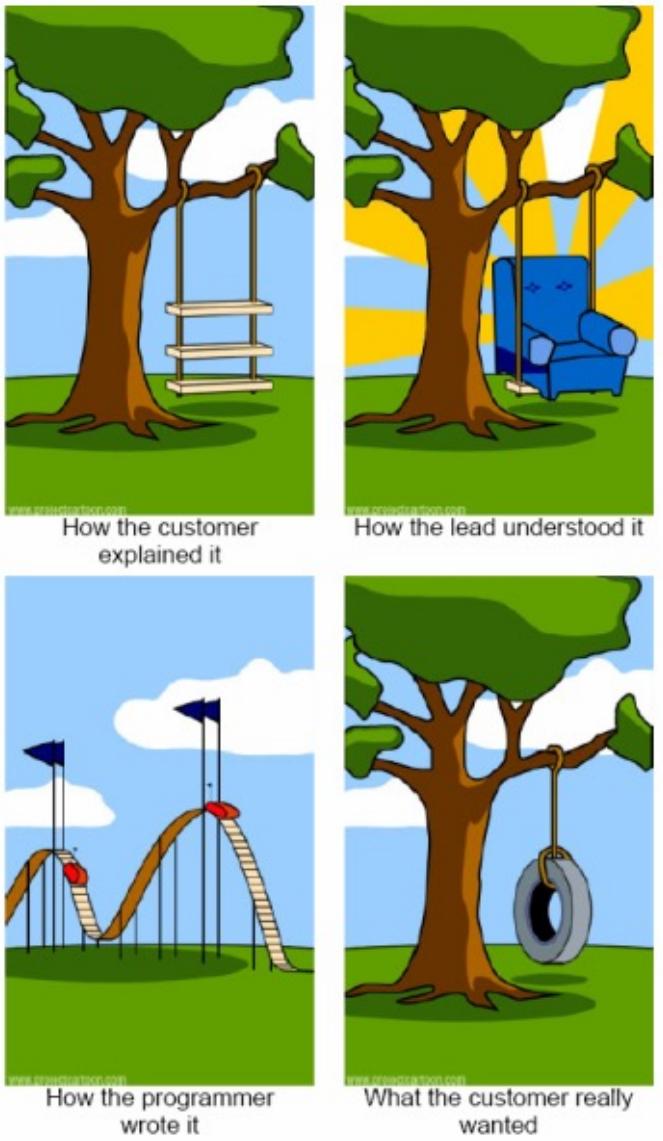
- 94% of customers with complaints do not report them to the company.
- Winning a lost customer is 5 times more expensive than getting a new customer.
- 48% of customers are having trouble with the products / services they receive from the companies.
  - 3% is reporting complaints.
  - It's a 15% problem, but it's not shared with the company.
  - 30% is having problems but does not complain.

***Reaching customers***

- Customer satisfaction surveys
- Focus groups
- On-site observation
- Individual interview
- Suggestion systems and feedback
- Performance / destination management systems
- Customer complaints and recommendations

# What the customer wants?

***«If I had asked my customers what they wanted they would have said a faster horse.» Henry Ford***



# Process Performance

The success of process to actualize its goals

The aim of process; provide useful output for the customer

**Customer's voice:**

✓Who is the customer?

✓What does the customer want?

✓How do I know?

✓What does this process serve?

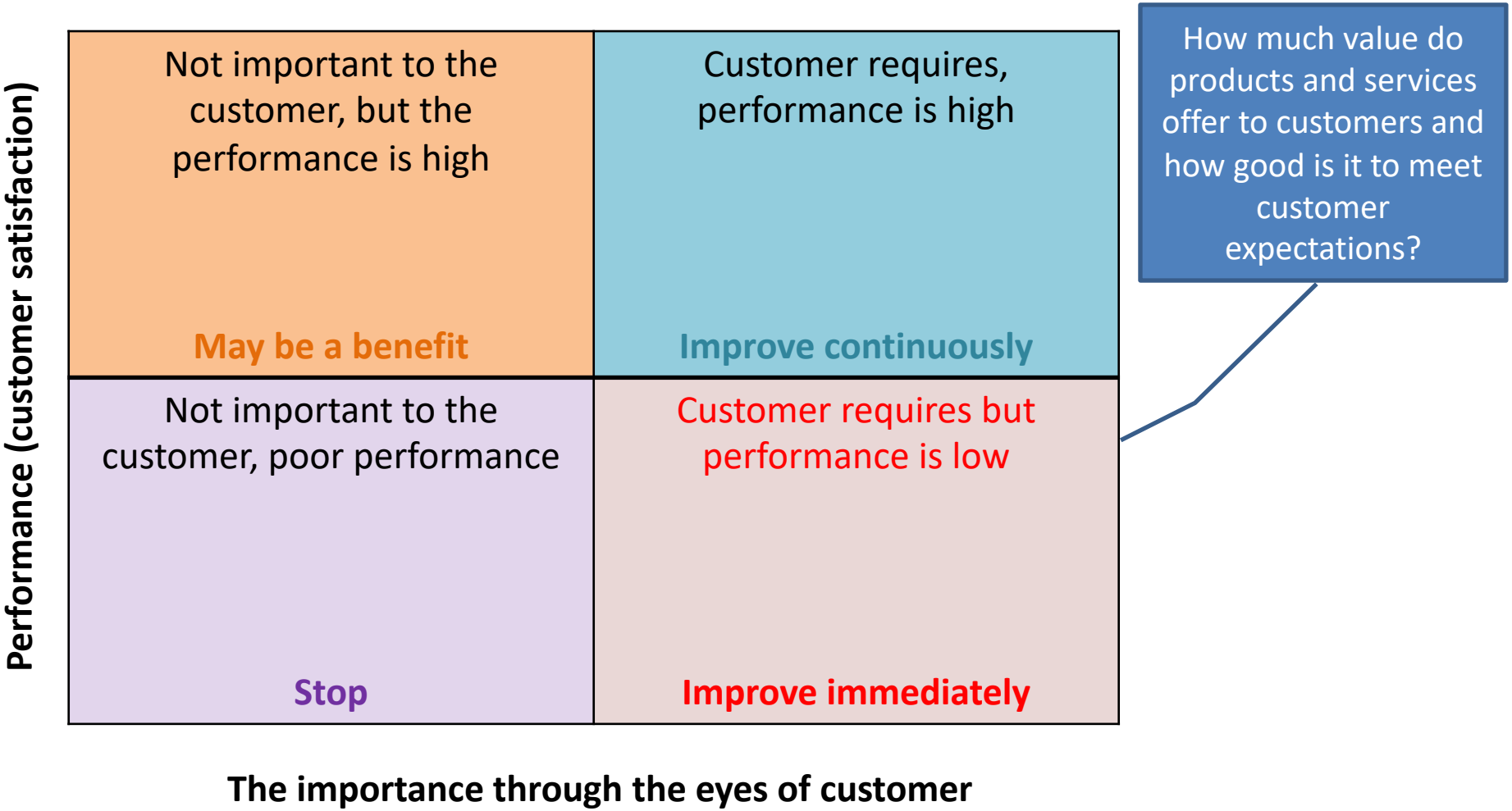
**The voice of the process:**

✓Who is my internal customer?

✓What do you expect from me?

✓Why should I do that?

# Customer Satisfaction - Performance Matrix



# «Value» through the eyes of customers

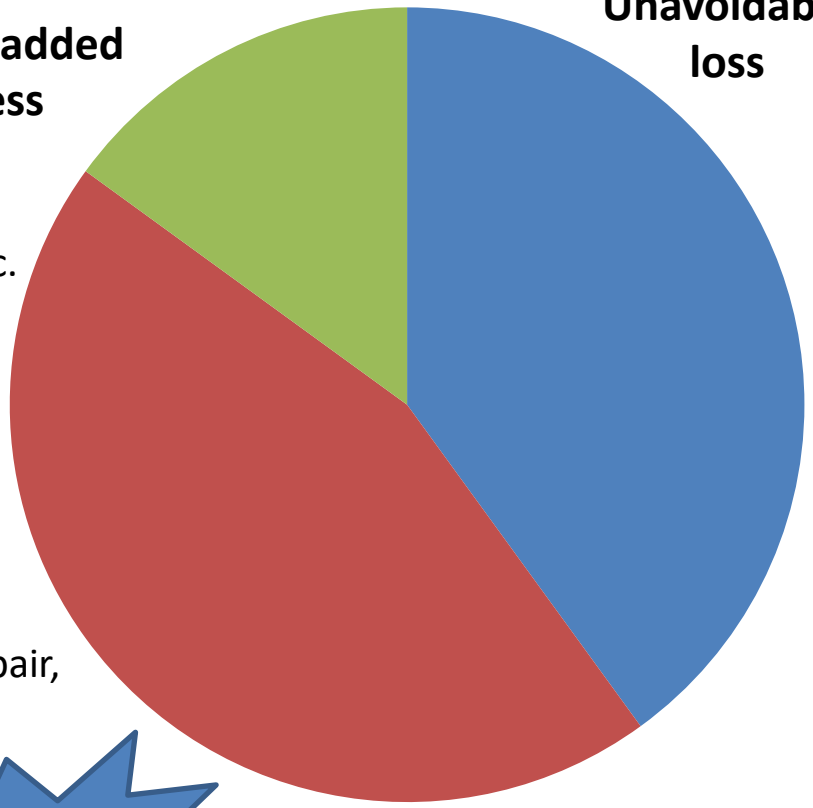
- It is the service that brings out the desired result for the customer.
  - Action for ultimate benefit
  - Right the first time
  - Appropriate time and place
  - affordable prices
- Customers are different, the product / service that pleases a customer may not satisfy the other.
- Critical to Customers (CTCs) should be identified for different customer profiles.

# Value and Loss

Transforming activities that the customer desires

**Value-added business**

To do the dying, cutting, promoting, giving receipt, etc.



**Unavoidable loss**

Activities that are not meaningful for the customer but are necessary for the business

Clean, change the screen, financial report and so on.

DECREASE

**Loss**

Unnecessary activities in terms of customer and business

Search, sort, transfer, repair, move, approval etc.

ELIMINATE

# Quality Control

- Quality control refers to developing, designing, producing and maintaining a quality product that is most economical, most useful and always satisfying the consumer.

- Quality control can be defined as making preventive actions to achieve objectives.

# Quality Control

There are some concepts that are important in fulfilling quality control. These are:

- *Standards*
- *Consumer Orientation*
- *Quality*
- *Price*
- *Quantity and Delivery Time*

# Measures of Quality

The criteria that are beneficial for the improvement of quality are:

1. Non-financial measures
2. Financial measures

# Non-financial measures

- Supplier performance
- Production activity performance
- Customer performance

# Financial measures

**Financial measures mean revenue growth and cost efficiency.**

**Quality Costs**

- Prevention costs
- Appraisal costs
- Costs of error due to production activities
- Costs of error due to non-production activities

# Evaluation of Total Quality Control

The quality of a product or service is determined by the judgment of the user, as long as it is the customer evaluating the quality.

For this judgment, certain quality characteristics must be known.

- Structural characteristics
- Sensual Characteristics
- Time-Dependent Characteristics
- Subjective Characteristics

# Total Quality Management

- Involvement of employees
  - makes use of their expertise
  - avoids antagonistic relationships promoted by Taylorism
- Management and employees work together
- Understanding needs of
  - Employees
  - Consumers

# Total Quality Management

***The basic condition;*** this topic should be adopted by both top management and employees or consumers/service waiting groups.

***The necessity is;*** to make the training activities continuously in all the processes of management.

# Philosophy of Total Quality Management

*Continuous improvement and development.*

# TQM Basic Concepts

- ✓ *Management Involvement:* Participate in quality program, develop quality council, direct participation
- ✓ *Focus on customer:* internal and external, voice of the customer, do it right first time and every time.
- ✓ *Involvement and utilization of entire work force:* All levels of management
- ✓ *Continuous improvement:* Quality never stops, placing orders, bill errors, delivery, minimize wastage and scrap etc.
- ✓ Treating suppliers as partners: no business exists without suppliers.
- ✓ *Performance measures:* creating accountability in all levels

# Comparison of Old Quality Idea and TQM

| **Quality Element** | **Old** | **TQM** |
|---|---|---|
| Definition | Product | Customer |
| Priorities | Service and cost | Quality |
| Decisions | Short term | Long term |
| Emphasis | Detection | Prevention |
| Errors | Operations | System |
| Responsibility | Quality control | Everybody |
| Problem Solving | Managers | Teams |
| Procurement | Price | Partners/JIT |
| Manager's Role | Plan, Assign, Enforce | Delegate, Coach, Mentor |

# Barriers in TQM Implementation

- ✓ *Lack of commitment from top management:* avoiding training for self and employees, meeting
- ✓ *Lack of employee involvement:* particularly at managerial level, supportive attitude, trust
- ✓ *Lack of team work:* Co-operation and co-ordination within workers.
- ✓ *Lack of customer oriented approach:* Know the customer need, demand, taste, shortcomings
- ✓ *Lack of attention to feedback and complaints*
- ✓ *Supplier control:* in terms of materials, cost, quality, delivery etc.
- ✓ *Review quality procedures:* up gradation, correct past errors. Learn from experience

# Benefits of TQM

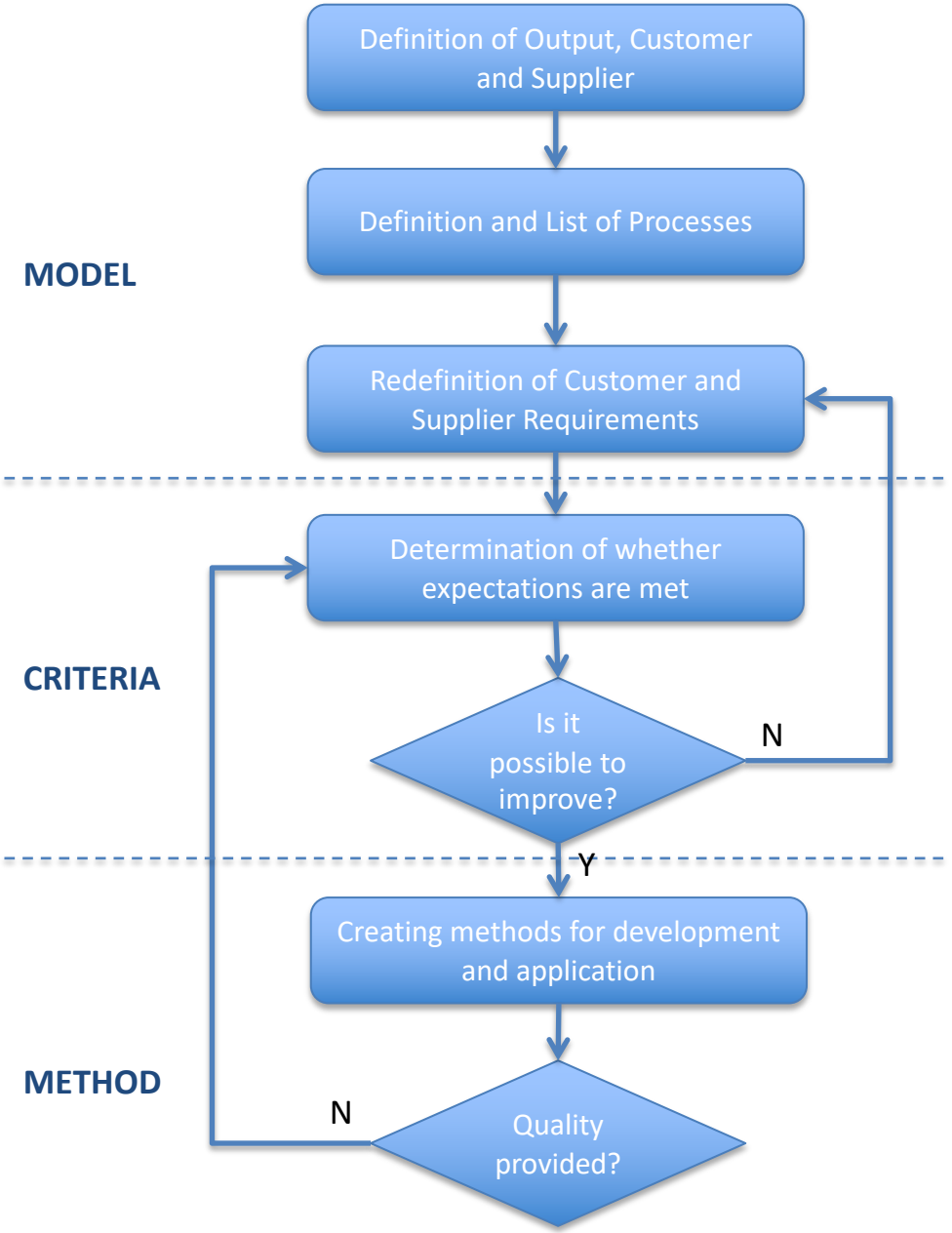
***Customer satisfaction oriented benefits:***

- Improvement in product quality
- Improvement in product design
- Improvement in production flow
- Improvement in employee morale and quality consciousness
- Improvement in product service
- Improvement in market place acceptance

***Economic improvement oriented benefits :***

- Reduction in operating costs
- Reduction in operating losses
- Reduction in field service costs
- Reduction in liability exposure

# *TQM Changing Process*

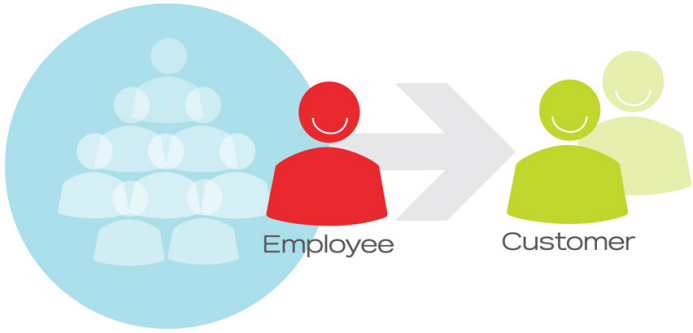


# Total Quality Management Basic Concepts

1. Customers (Internal and External)
2. Continuous Improvement
3. Business Process Control
4. Unnecessary Activity Preventive Management
5. Continuously Preventive Management
6. Leadership and Teamwork

# 1. The Customers

- ✓ In terms of organizations, not only the people to whom they sell products or services, but also the staff of the organization should be considered as customers.
- ✓ Employees in the organization are also in contact with the suppliers, as well as those who sell or service the business.
- ✓ This creates an interconnected quality chain. This chain can be broken at any point according to unmet needs of internal and external customers.
- ✓ The quality chain covers all employees and must be implemented throughout the organization.



# 1. The Customers

**Who is the Customer?**

**External Customer --** those who receive the final products. Occurs normally at the organizational level

**Internal Customers --** occur at the process and cross-departmental levels within the company

**Identifying Customers:**

- What parts or products are produced?
- Who uses our parts or products?
- Who do we call, correspond/interact with?
- Who supplied the inputs to the process?

# 1. The Customers

**Checklist to improve satisfaction:**

1. Who are my customers?
2. What do they need?
3. What are their measures and expectations?
4. How is my product or service?
5. Does my product or service exceed expectations?
6. How do I satisfy those needs?
7. What corrective action is necessary?
8. Are customers included on teams?

# 1. The Customers

**Customer Feedback:**

1. Comment cards and formal surveys
2. Focus groups
3. Direct customer contacts
4. Field Intelligence
5. Study complaints
6. Monitoring the Internet

# 2. Continuous Improvement

Achieving the main objectives in Total Quality Management is provided by continuous improvement for every performance indicator.

Development is a process that does not require stopping. Once the objectives have been identified, new objectives should be established for higher product, process and service effectiveness.

In this way, a more realistic competitive power can be achieved than with static or slowly changing competitors.

# 2. Continuous Improvement

**The Goal is to achieve perfection:**

- Eliminate waste and rework
- Investigate non-value added activities
- Eliminate nonconformities
- Use benchmarking to stay competitive
- Hold gains
- Lessons learned
- Use tools such as SPC, design of experiments etc.

# 2. Continuous Improvement

**Problem-Solving Method:**

1. Identify the opportunity
2. Analyze the current process
3. Develop the optimal solution(s)
4. Implement changes
5. Study the results
6. Standardize the solution
7. Plan for the future

# 3. Business Process Control

The quality of the products or services of any organization is determined by the basic work or production process that constitutes them.

If the process chain is created effectively, the resulting products or services will also be effective.

For this reason, work should be directed at the control of processes rather than the specific controls of the product or services.

When examining process control, it is very important to determine process responsibilities.

These are the people who affect and control the process for minutes and days.

The effective use of the knowledge and skills of these people is the basis for effective process control and is the essence of Total Quality.

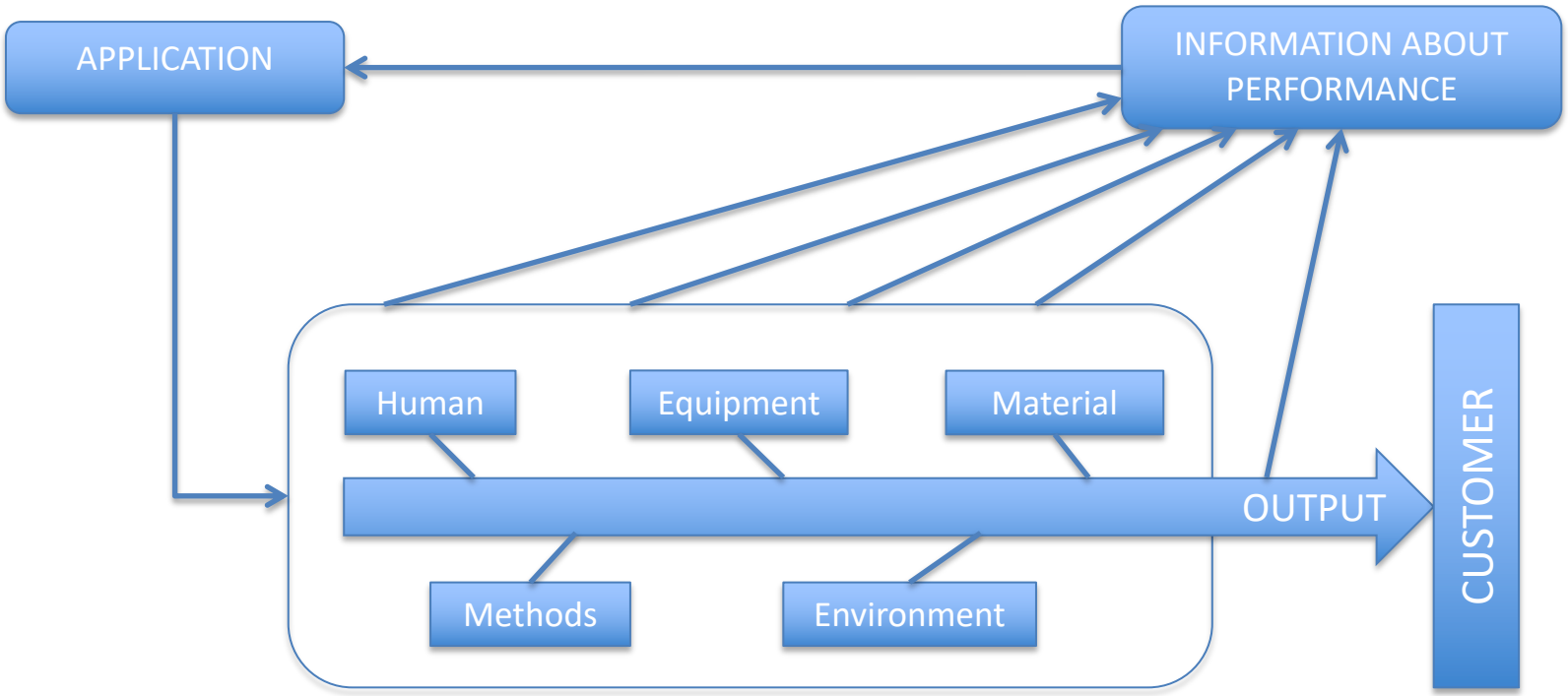
# Business Process Control

The basic features that arise in process control can be generally given as:

- Process definition
- Employees understand that whole work is a process (many inputs turn many common outputs)
- Responsibility for each process
- Process planning, control and monitoring
- Criticism of every process

# 4. Unnecessary Activity Preventive Management

According to successful organizations, improvement is not to identify the area of development while waiting for the failure, but to investigate potential problems (development opportunities).



# 5. Continuously Preventive Practice

- ✓ Successful organizations are trying to find the root causes of employees' problems or potential problems.
- ✓ Employees should be able to easily identify events that prevent them.
- ✓ Management and employees as a whole must decide and implement appropriate corrective and preventive action.
- ✓ The practice here is to either remove or minimize the root causes of the problems and prevent the recurrence of problems.

# 6. Leadership and Team Work

- ✓ Total Quality philosophy requires high standard leadership and teamwork.
- ✓ This concept is based entirely on participation and teamwork in all activities.
- ✓ Purposeful organizations instead of rules and regulations based organizations.
- ✓ The involvement of top management to TQM processes is a key element for ‘superiority’.
- ✓ The only way to implement and maintain Total Quality culture is the quality commitment of management.

# Leadership and Team Work

- ‘It is the process of motivating people to unite for common purposes, to achieve their goals, and before all else is an art.’ (Bennis & Nanus)

- ‘It is the cluster member who can make more of the positive effects of the cluster members on themselves.’ (İ.E. Başaran)

# Leadership and Team Work

In all the definitions of leadership, the following four elements are seen as functioning as leaders:

**Objective:** It is the first condition of the formation of the group.

**Leader:** Each group has a leader.

**Followers:** The group is the other members.

**Environment:** leadership can only be created in a favorable environment.