



NSCET E-LEARNING PRESENTATION

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Electrical and Electronics Engineering



IV YEAR/7th Semester

GE8077-Total Quality Management

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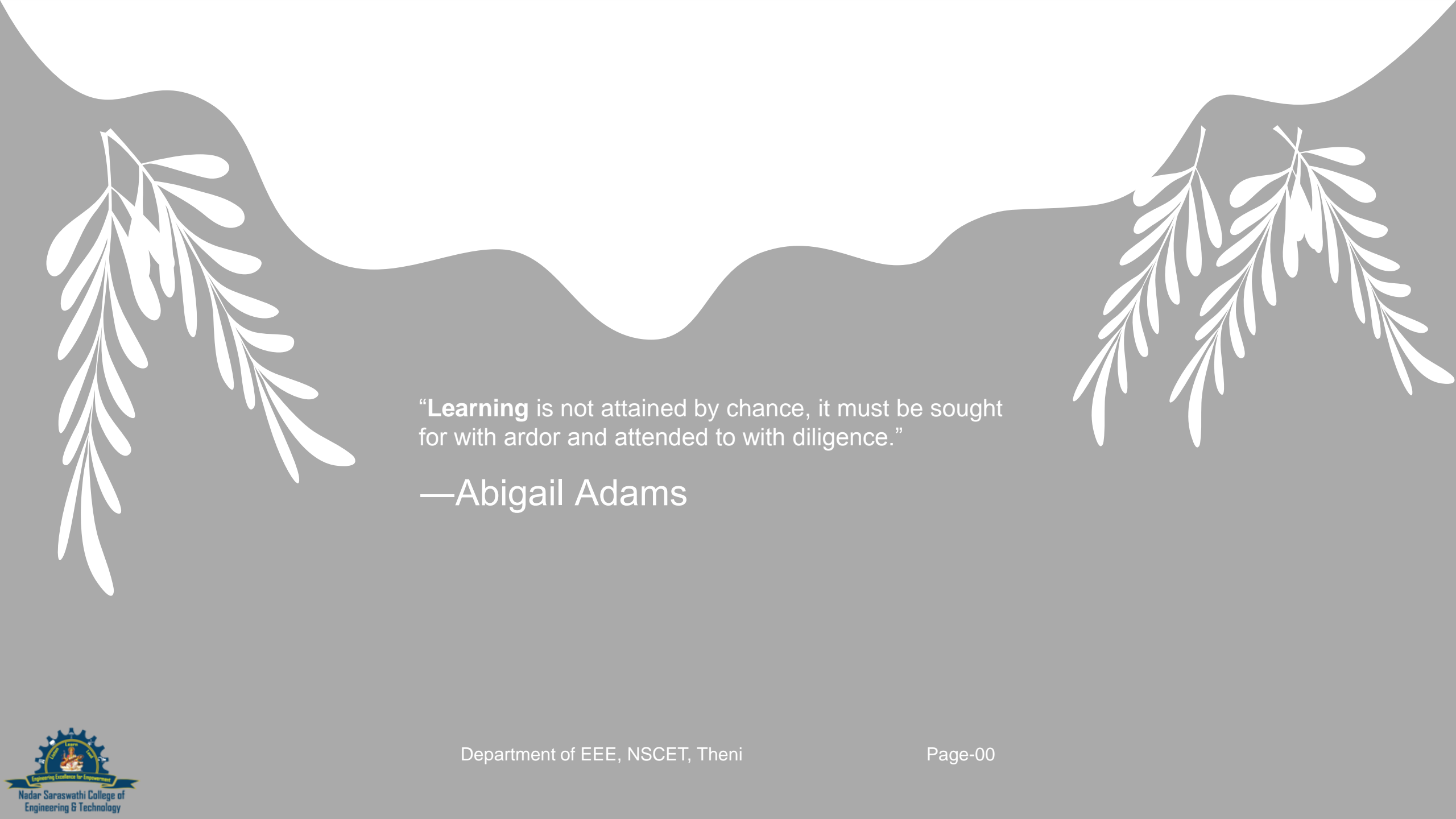
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UNIT-II TQM PRINCIPLES





“**Learning** is not attained by chance, it must be sought for with ardor and attended to with diligence.”

—Abigail Adams

Unit II - Syllabus

TQM PRINCIPLES

Leadership - Quality Statements, Strategic quality planning, Quality Councils - Employee involvement - Motivation, Empowerment, Team and Teamwork, Recognition and Reward, Performance appraisal - Continuous process improvement - PDCA cycle, 5S, Kaizen - Supplier partnership - Partnering, Supplier selection, Supplier Rating.

LEADERSHIP

- A leader is one who instills purposes, not one who controls by brute force. He strengthens and inspires the followers to accomplish shared goals. The important roles are,
 - Shape the Organization's value
 - Promote the Organization's value
 - Protect the Organization's value and
 - Exemplifies the Organization values

CHARACTERISTICS OR BEHAVIOURS OF QUALITY LEADERS

1. They give priority attention to external and internal customers and their needs.
2. They empower, rather than control, subordinates.
3. They emphasis improvement rather than maintenance.
4. They emphasis prevention.
5. They emphasis collaboration rather than competition.
6. They train and coach, rather than direct and supervise.

Cont.,

7. They Learn from the Problems

8.They continually try to improve communications.

9. They continually demonstrate their commitment to quality.

10. They choose suppliers on the basis of quality, not price.

11. They establish organizational systems to support the quality effort.

12. They encourage and recognize team effort.

LEADERSHIP ROLES

Effective teamwork requires effective leaders. Effective leaders are people who can perform different roles. Quinn lists the following eight leadership roles:

1. Producer role;
2. Director role;
3. Coordinator role roles;
4. Checker role;
5. Stimulator role;
6. Mentor role;
7. Innovator role; and
8. Negotiator role.

LEADERSHIP

- Develops skills of people
- Has a careful, helpful and systematic approach
- Gives compliments and honour to whom honour is due

- Realizes teamwork
- Participatory decision making
- Reaches consensus
- Openness, involvement and solidarity

- Watches over and guides achievements
- Takes care of details and documentation
- Checks if people stick to the rules

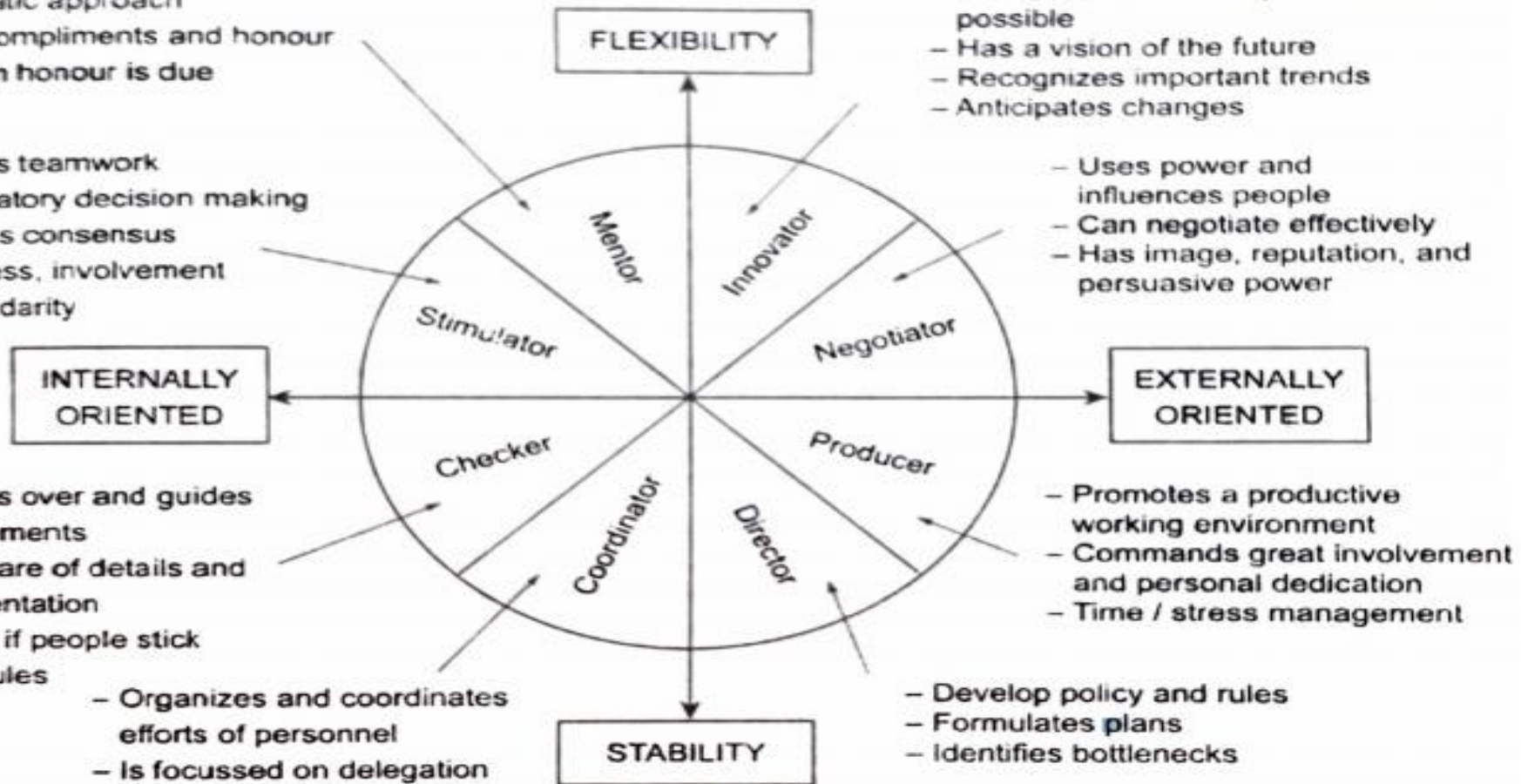
- Organizes and coordinates efforts of personnel
- Is focussed on delegation of tasks
- Pays attention to technological issues

- Makes continuous improvements possible
- Has a vision of the future
- Recognizes important trends
- Anticipates changes

- Uses power and influences people
- Can negotiate effectively
- Has image, reputation, and persuasive power

- Promotes a productive working environment
- Commands great involvement and personal dedication
- Time / stress management

- Develop policy and rules
- Formulates plans
- Identifies bottlenecks



QUALITY STATEMENTS

Three elements of quality statements are:

1. Vision statement,
2. Mission statement, and
3. Quality policy statement.

Vision Statement

- The vision statement is a short declaration of what an organisation aspires to be tomorrow.
- It is the ideal state that might never be reached ; but on which one will work hard continuously to achieve. Successful visions provide a brief guideline for decision- making.
- The vision statement should be coined in such a way that the leaders and the employees working in the organisation should work towards the achievements of the vision statement.

Mission Statement

- The mission statement, is usually a paragraph, describes the function of the organization. It provides a clear statement of purpose for employees, customers, and suppliers .
- **The mission statement** answers the following questions: who we are ?; who are the customers ? ; what we do ?; and how we do it ?.

Quality Policy Statement

- The quality policy is a guide for everyone in the organisation as to how they provide products and service to the customers.
- It should be written by the CEO with feedback from the workforce and be approved by the quality council.
- A quality policy is an important requirement of ISO 9000 quality systems.

STRATEGIC PLANNING

INTRODUCTION

* Strategic planning sets the long-term direction of the organisation in which it wants to proceed in future. This is depicted in Figure.

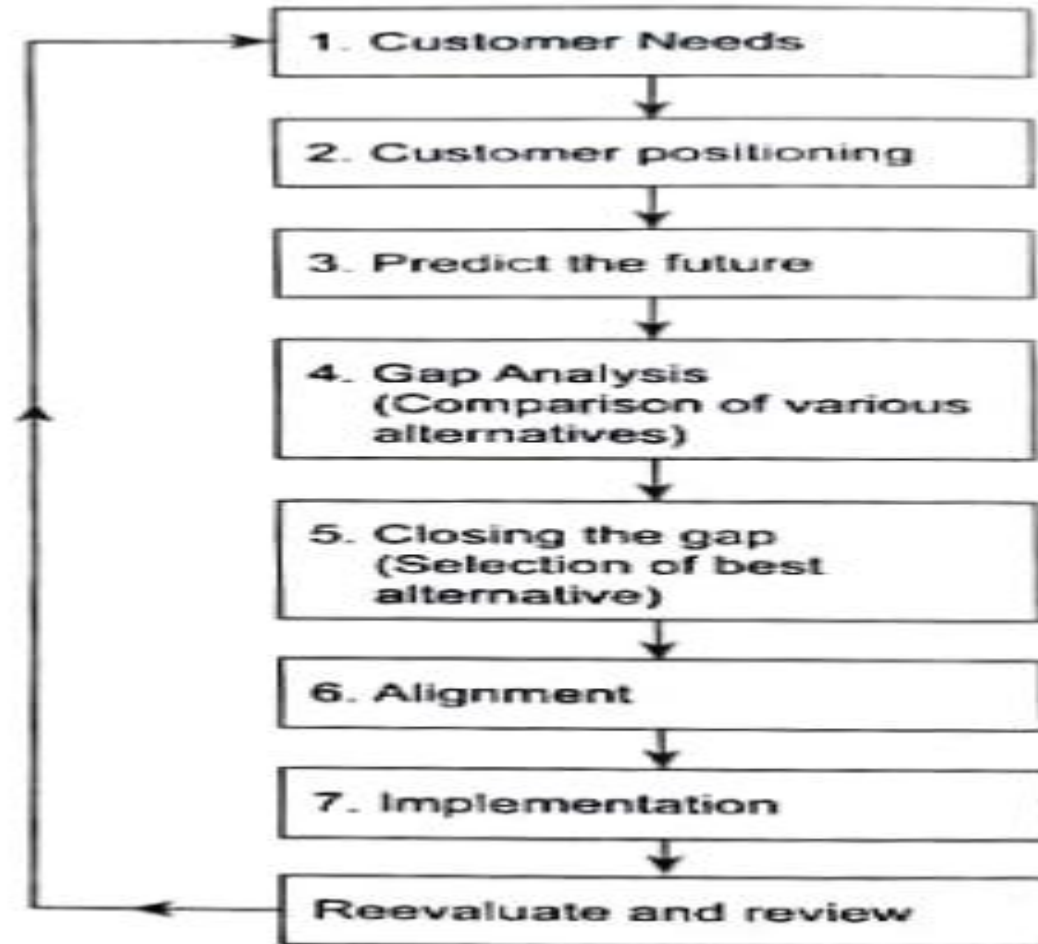


STRATEGIC PLANNING

Definition:

Strategic planning can be defined as the process of deciding on objectives of the organisation, on changes on these objective, on the resource used to attain these objectives and on the policies that are to govern the acquisition, use and disposition of these resources.

STRATEGIC PLANNING PROCESS



SEVEN STEPS TO STRATEGIC PLANNING)

Step 1. Customer Needs

Step 2. Customer Position

Step 3. Predict the Future

Step 4. Gap Analysis

Step 5. Closing the Gaps

Step 6. Alignment

Step 7. Implementation

QUALITY COUNCIL

- **A quality council** is a team to provide overall direction for achieving the total quality culture(TQC).

*** The quality council is composed of:**

(i) the chief executive officer (CEO);

(ii) the senior managers of the functional areas, such as design, marketing, finance, production, and quality , and

(iii) a coordinator or consultant

Duties of the Quality Council

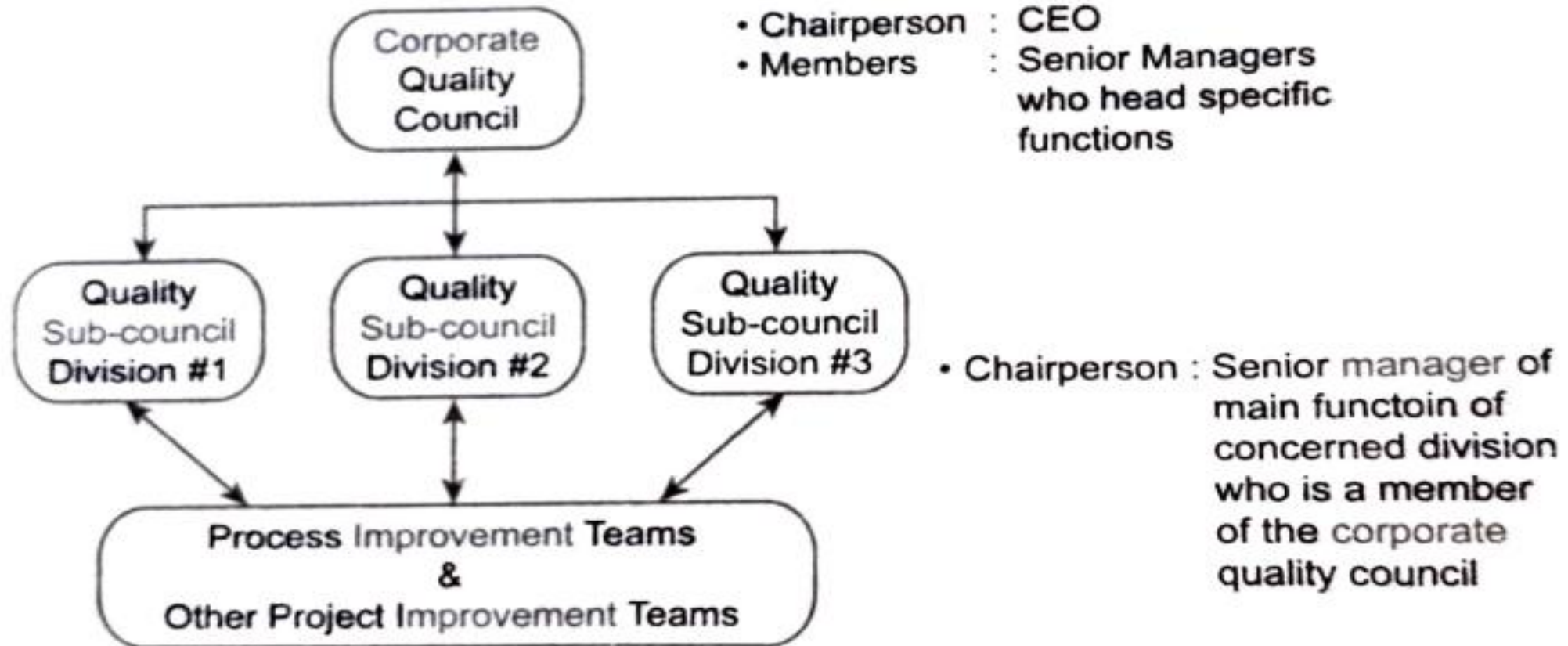
- The duties of the quality council are:
 1. To establish the core values and quality statements. Quality statements include vision statement, mission statement, and quality policy statement.
 2. To establish the strategic long-term plan with goals and the annual quality improvement program with objectives.
 3. To plan the training and education programmes.
 4. To determine and monitor the cost of poor quality
 5. To perform and monitor the performance measures for each functional areas of the organisation.
 6. To establish multifunctional project and departmental teams and monitor their progress.
 7. To establish / revise the recognition and reward system periodically

Responsibilities of the Quality Council Coordinator

- (i) To develop two-way trust;
 - (ii) To propose team requirements to the council;
 - (iii) To share council expectations with the team;
 - (iv) To empower the team ; and
 - (v) To brief the council on team progress.
- Thus quality councils are the instruments for creating the idea of never-ending quality improvement. In other words, it is the driver for the TQM engine.

Quality Structure

Figure shows a typical quality structure involving different levels of cross-functional participation by managers



EMPLOYEE INVOLEMENT

Employee involvement is the backbone of a TQM movement. An effective TQM effort requires the total involvement from every person at all levels in the organisation.

Some of the important aspects of employee involvement are:

1. Employee motivation.
2. Employee empowerment,
3. Teams and teamwork,
4. Recognition and reward schemes, and
5. Performance appraisal.

EMPLOYEE MOTIVATION

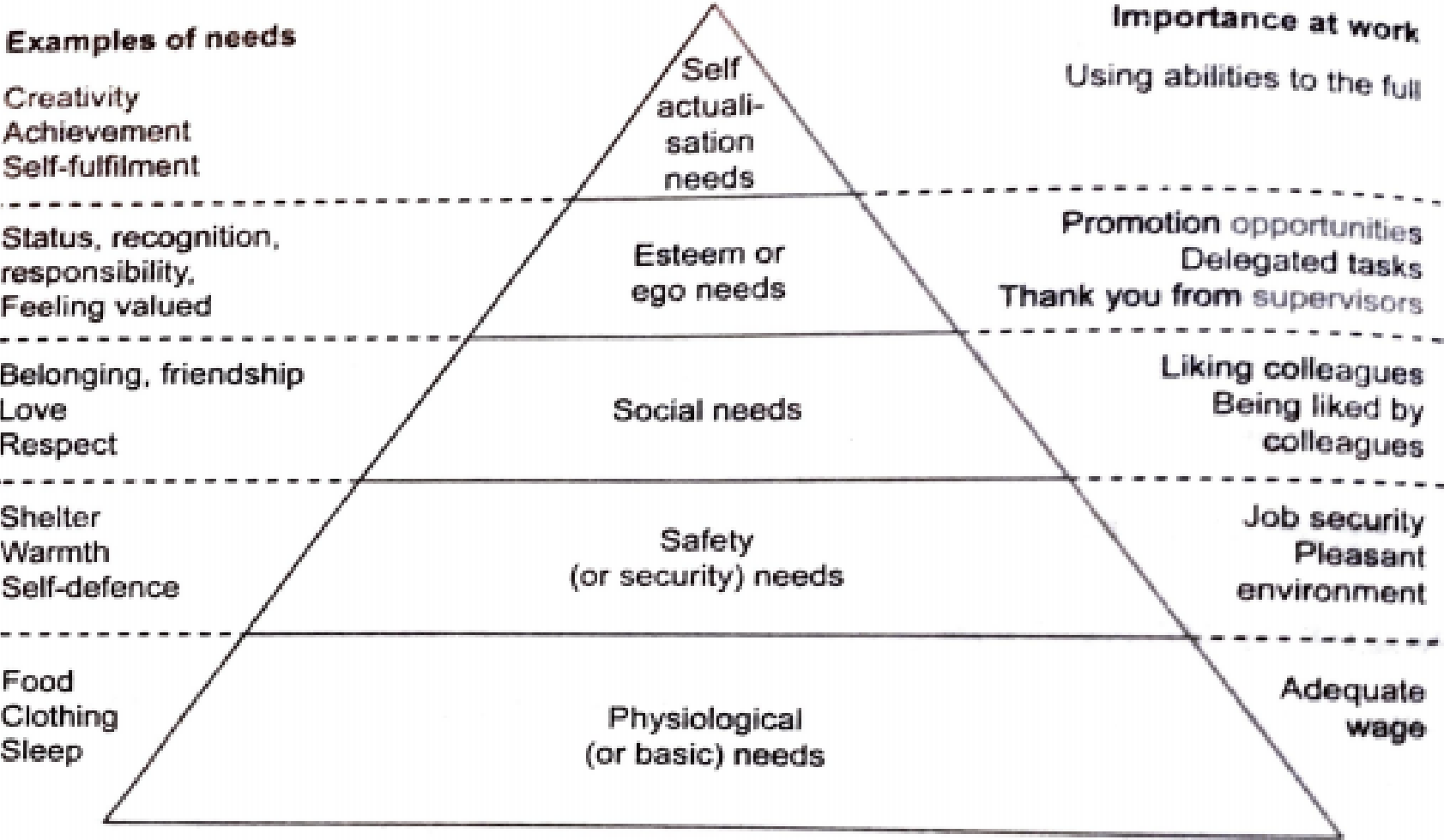
CONCEPT OF MOTIVATION

- * Scott defines, "Motivation means a process of stimulating people to accomplish desired goals."
- * Edwin B. Flippo defines, "Motivation is the process of attempting to influence others to do your will through the possibility of reward."
- * In simple words, motivation is the process of inducing people inner drives and action towards certain goals and committing his energies to achieve these goals.

IMPORTANCE OF MOTIVATION

1. Motivation improves employee involvement.
2. Motivation promotes job satisfaction and thus reduces absenteeism and turnover.
3. Motivation helps in securing a high level of performance and hence enhances efficiency and productivity.
4. Motivation creates a congenial working atmosphere in the organisation and thus promotes interpersonal cooperation.

Employee Motivation



EMPLOYEE EMPOWERMENT

It is an environment in which people have the ability, the confidence and the commitment to take his responsibility and ownership to improve the process and initiate the necessary steps to satisfy customer requirements within well-defined boundaries in order to achieve organizational values and goals.

- Job Enrichment: Is expanding content of the Job.
- Job Empowerment: Is expanding the context of the job.

General Principles Or Characteristics for' Empowering Employees

1. Tell people what their responsibilities are.
2. Given the authority equal to the responsibility assigned to them.
3. Set standards of excellence.
4. Give them knowledge information and feed back.
5. Trust them and treat them with dignity and respect.

CONDITIONS TO CREATE THE EMPOWERED ENVIRONMENT

The three conditions required to create the empowered environment are:

1. Everyone must understand the need for change.
2. The system needs to change to the new paradigm.
3. The organisation must provide information, education, and skill to its employees.

TEAMS AND TEAM WORK

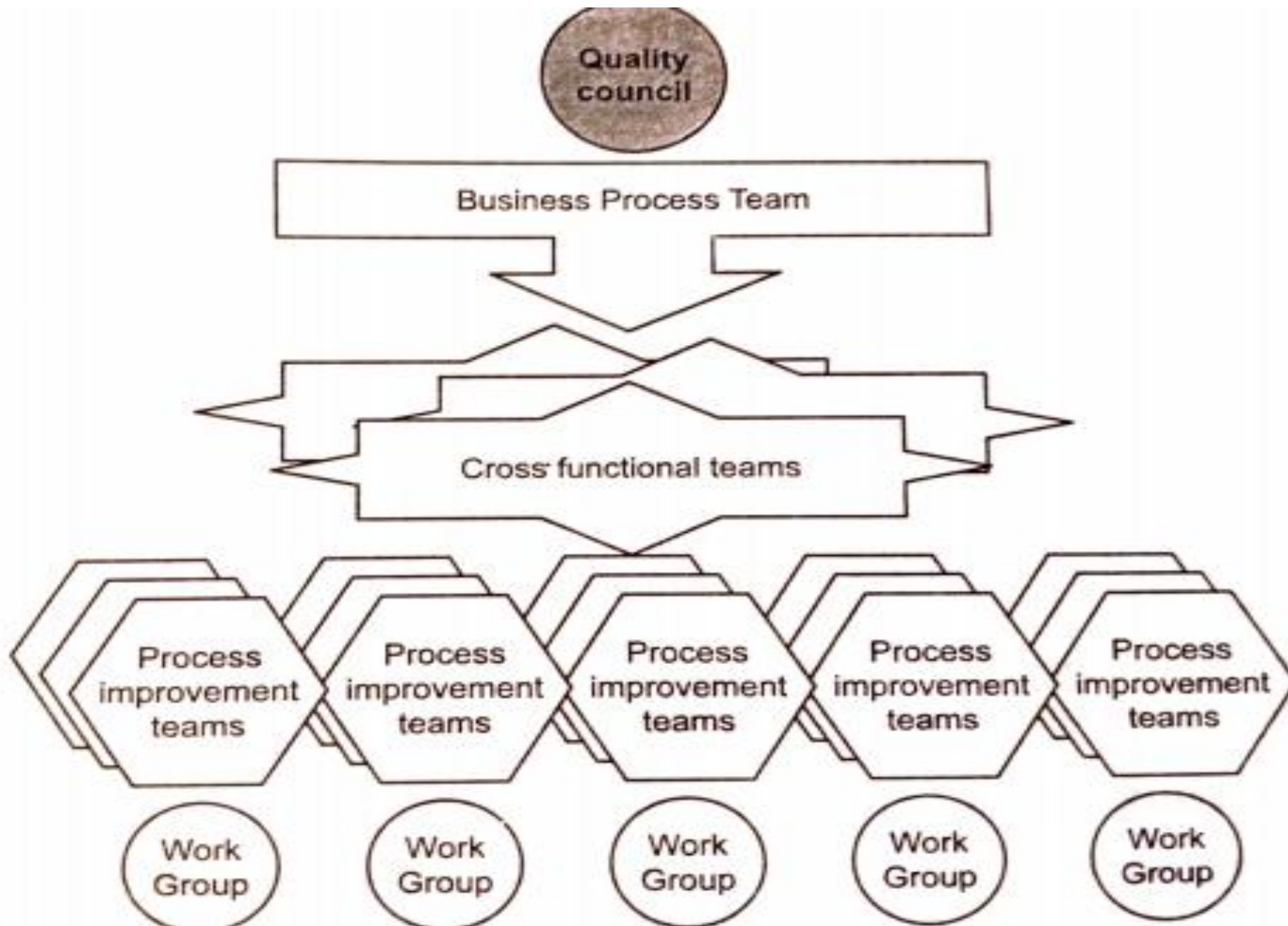
A team can be defined as a group of people working together to achieve common objectives or goals. Team work is the cumulative actions of the team during which each member of the team subordinates his individual interest and opinions for the fulfilling of objectives of the group.

Benefits of Team Work

- Improved solutions to quality problems, ownership of solutions, communication and integration.
- Objectives – Short Term Planning.
- Goal – Long Term Planning.

Types of teams.

- The different types of teams are
- 1. Process improvement team
- 2. Cross-functional team
- 3. Natural work team and
- 4. Self-directed work team.



Elements of Effective Teamwork

- Main elements of effective teamwork are as follows:
 1. Purpose,
 2. Role and responsibilities,
 3. Activities,
 4. Effectiveness,
 5. Decisions,
 6. Results, and
 7. Recognition.

Stages of Team Development

- Forming stage
- Storming Stage
- Norming Stage
- Performing Stage
- Maintenance stage
- Evaluating Stage

Barriers to Team Progress

- The various roadblocks to team progress are :
- 1. Insufficient training.
- 2. Incompatible rewards and compensation.
- 3. First-line supervisor resistance.
- 4. Lack of planning.
- 5. Lack of management support.
- 6. Access to information systems.
- 7. Lack of union support.
- 8. Project scope too large.
- 9. Project objectives are not significant.
- 10. No clear measures of success.
- 11. No time to do improvement work.

RECOGNITION AND REWARD

- Recognition is a process whereby management shows acknowledgement of an employee's outstanding performance. Recognition is a form of employee positive motivation.
- This acknowledgement may be of financial, psychological or both in nature.
- **Reward** is a tangible one, such as increased salaries, commissions, cash bonus, gain sharing, etc., to promote desirable behavior.

TYPES OF REWARDS

- Broadly, one can classify the rewarding systems into two groups. They are:
 - **1. Intrinsic rewards** : These are related to feelings of accomplishment or self-worth.
 - **2. Extrinsic rewards** : These are related to pay or compensation issues.
- Richard S. Allen and Ralph H. Kilmann have tabulated the different intrinsic and extrinsic rewards in Table

RECOGNITION AND REWARD

Various ways for Recognition and Rewards are

1. Recognition can be expressed using verbal and written praise.
2. Rewards may be in the form of certificates and plaques.
3. Reward is normally in the form of cinema tickets, dinner for family etc.
4. The financial compensation (for recognition) can be paid in terms of increased salaries, commissions, gain sharing etc.
5. The efforts of employees can be recognized by promotions, special job assignments etc.

RECOGNITION AND REWARD

6. A letter of appreciation from the CEO or the Top Management will increase the employee's involvement.
7. Reward may be delayed but recognition should be in a timely basis.
8. Rewards should be appropriate to the improvement level.
9. People like to be recognized than any reward.
10. Special forms of recognition include pictures on the bulletin board, articles in news letters, letter to families etc.
11. Supervisors can give on-the-spot praise for a job which is done well.

PERFORMANCE APPRAISAL

- Performance appraisal is a systematic and objective assessment or evaluation of performance and contribution of an individual.
- It is a systematic and objective way of judging the relative worth of an employee in performing his / her task.

NEED FOR PERFORMANCE APPRAISAL

The purpose of performance appraisal are

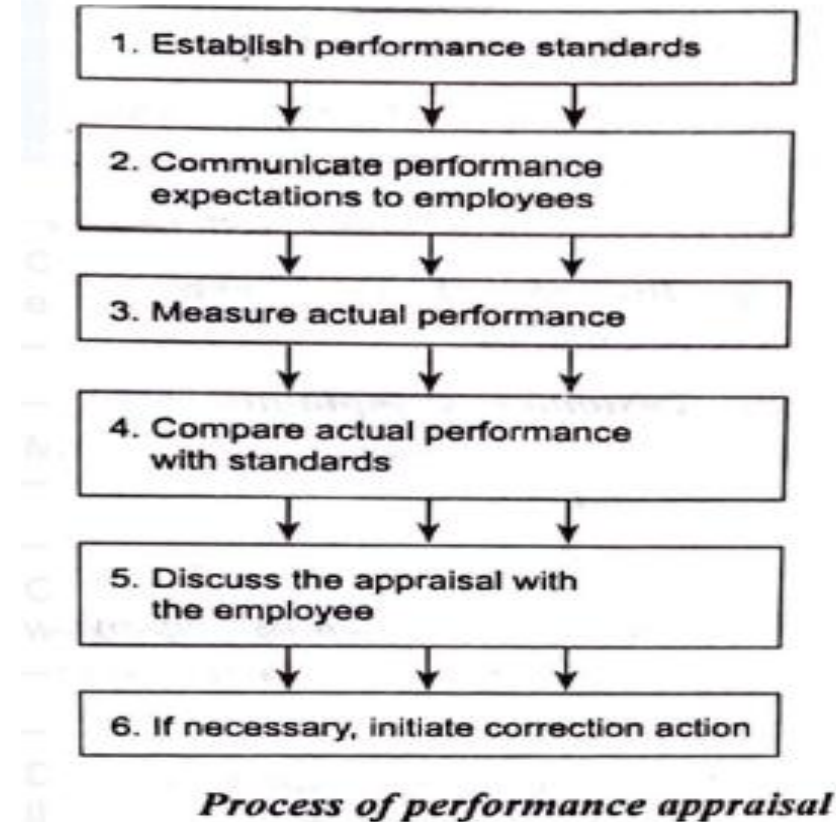
1. To identify employees for salary revision, promotion, transfer, demotion, and lay-off.
2. To take an organisational of inventory people, skills and potential for comparing it with its needs.
3. To determine training and development needs of the employees.
4. To motivate employees by providing feedback on their performance

NEED FOR PERFORMANCE APPRAISAL

5. To know personal strengths and weaknesses of different individuals.
6. To establish a basis for research and reference for personnel decisions in future.
7. To guide the individual to plan job and personal objectives and to help him in career planning.
8. To validate the selection procedures.
9. To improve communication in an organisation.
10. To make the supervisors and executives more observant of their subordinates.

PROCESS OF PERFORMANCE APPRAISAL

- There are six steps in the development of appraisal system. Figure depicts the self explanatory steps required for the process of performance appraisal.



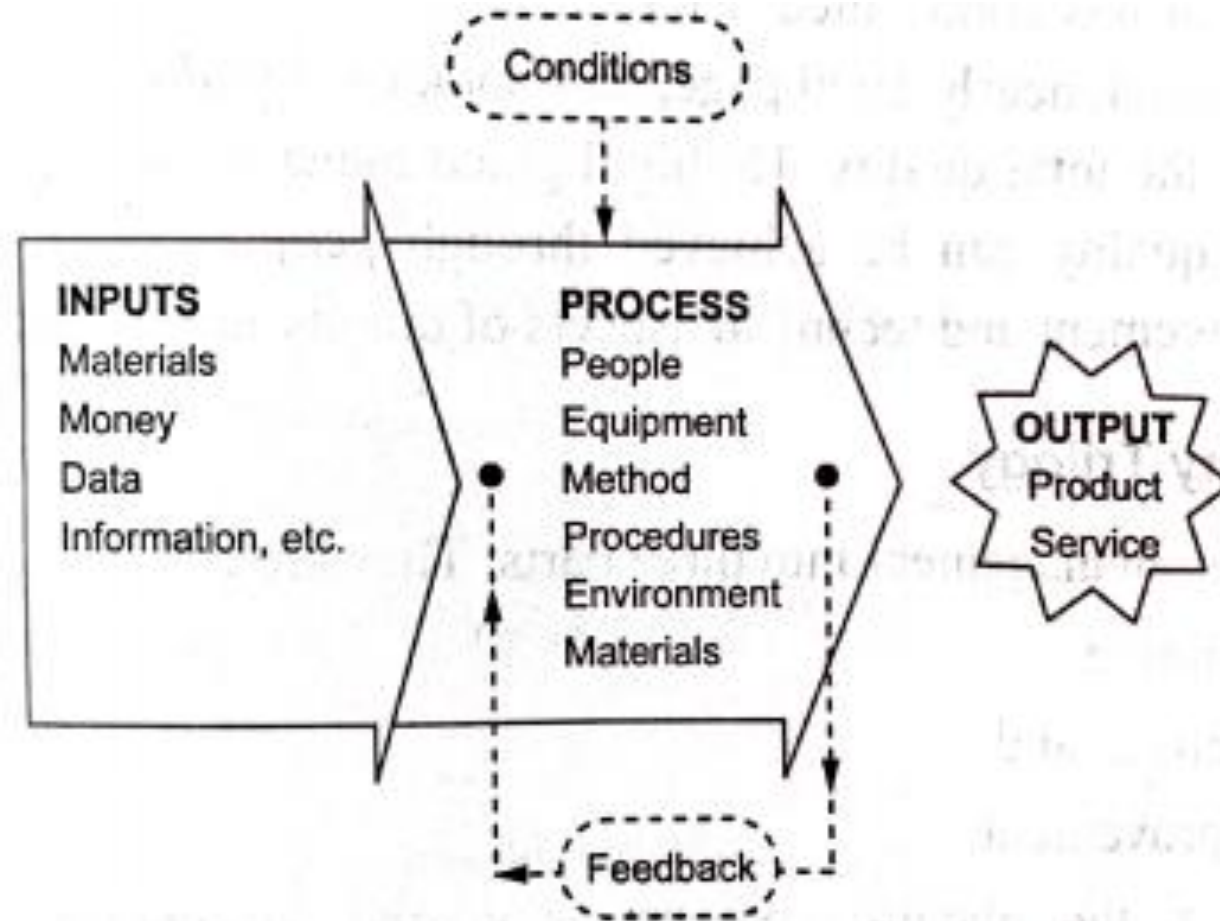
BENEFITS OF PERFORMANCE APPRAISAL

1. It provides useful feedback to the employee, supervisor and personnel specialists and allows them to take corrective measures to improve performance further.
2. It helps in determining the pay adjustments, increments and bonuses as it rates the merit of the employee.
3. It provides basis for employee promotion, transfer or demotion.
4. It helps in determining individual's training and developmental needs and in designing training programmes accordingly.
5. It helps the employee to plan their career.

CONTINUOUS PROCESS IMPROVEMENT

- TQM has been defined as a philosophy based on quest for progress and continual improvement in the areas of cost, reliability, quality, innovation, efficiency and business effectiveness.
- TQM is a continuous learning process which never stops.
- It is a cyclic, iterative, and never-ending activity.

INPUT / OUTPUT PROCESS MODEL



INPUT / OUTPUT PROCESS MODEL

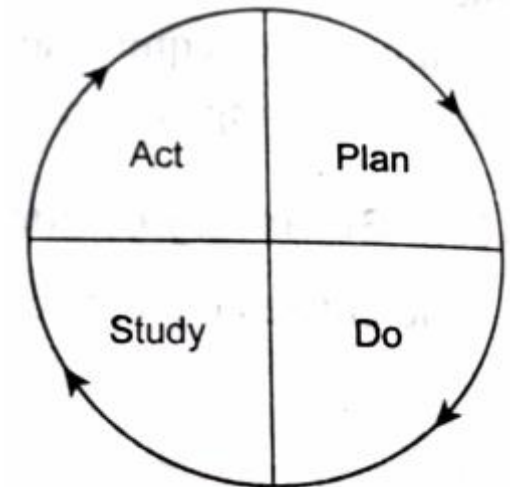
- A process refers to business and production activities of an organisation.

The process is the interaction between various inputs and outputs involved.

- A business organisation their elements / activities are coordinated and integrated to achieve common organisational objectives.

PDSA CYCLE (OR DEMING WHEEL)

- PDSA stands for Plan, Do, Study, and Act. It is a model for testing ideas that improvement. you think may create improvement.
- It is an extremely practical, common sense based approach that is easy to understand.
- It can be used to test ideas for improvement quickly and easily based on existing ideas, research, feedback, theory, review, audit, etc.
- It encourages starting with small changes, which can build into large improvements in the service through successive quick cycles of change.



Phases of PDSA Cycle

- The four phases of PDSA cycle and their descriptions are presented in Table.

Phases	Description
1. Plan	<ul style="list-style-type: none">➤ Define the problem.➤ Analyze the causes and draft an action plan for solving the problem.➤ Determine the quality objectives and the critical factors.➤ Define the performance indicators.➤ Collect and analyze the necessary process data.➤ Generate possible solutions.➤ Select the most feasible solution ; and work it out.

Phases	Description
2.Do	<ul style="list-style-type: none"> ✓ First, implement the plan on a limited scale or conduct an experiment to test the proposed improvement. Collection data is hereby essential. ✓ Train all involved employees in the use of quality improvement methods and techniques. ✓ Describe the process which is considered for improvement and form project teams to lead the process.
3. Check	<ul style="list-style-type: none"> ➤ Evaluate the trial project with the performance indicators. ➤ Verify whether the improvement has been successful or not.
4. Act	<ul style="list-style-type: none"> ✓ Act to implement proven improvements. The choices are introduce the plan, adjust or reject it. ✓ The improvements are documented in standard procedures so all employees are well-informed on how to handle in future. ✓ Usually, the cycle will be repeated under the different circumstances and conditions to test how consistent the results are.

Benefits of the PDSA Cycle

The benefits of the PDSA cycle can be experienced in the following areas:

- Daily routine management for the individual and / or the team.
- Problem-solving process.
- Project management.
- Continuous development.
- Vendor development.
- Human resources development.
- New product development.
- Process trials

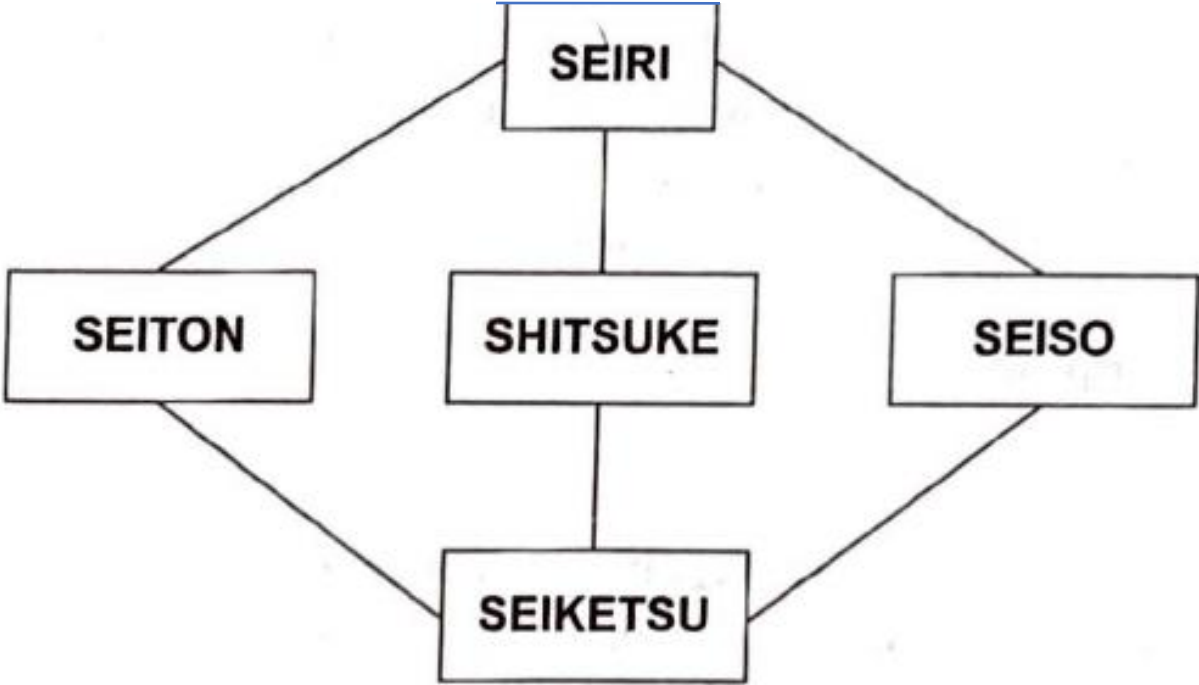
5S HOUSE KEEPING

- This is a house keeping technique used to establish and maintain a productive and quality environment in an organization.
- This method is invented in Japan which will give safer, more efficient and more productive operation results in boosting of morale of workers, job involvement and satisfaction and ownership of their responsibilities.

Meaning of 5S Elements

Japanese Term	English Equivalent	Meaning in Japanese Context
1. SEIRI	Tidiness	Throw away all rubbish and unrelated materials in the work place.
2. SEITON	Orderliness	Set everything in proper place for quick retrieval and storage.
3. SEISO	Cleanliness	Clean the work place, everything without fail.
4. SEIKETSU	Standardization	Standardizing the way of maintaining cleanliness.
5. SHITSUKE	Discipline	Practice 'FIVE S' daily. Make it a way of life, This also means commitment.

Relationship Between Various 5s



Relationship between various 5S

The objectives of 5S

1. To create a neat and clean work place.
2. To systemise day to day working.
3. To improve work efficiency.
4. To standardize work practices.
5. To improve work discipline.
6. To improve the quality of work and products.

Factors in Implementing 5S

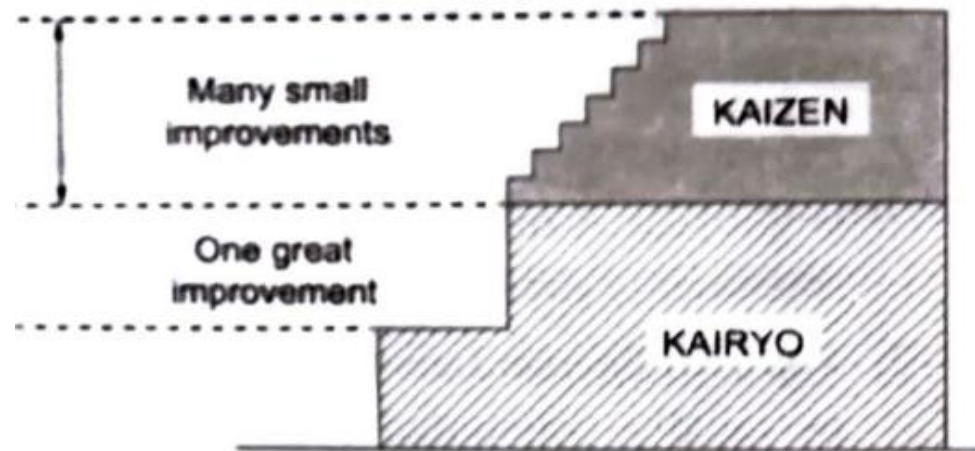
- Participation by all - Should be understood and practiced by all employees
- Top management commitment – CEO and Senior management team need personally commitment practice and supervise the program
- Should be self sustaining – Banners, slogan posters and new tutors should be fully utilized to draw attention of every one
- Review the program – Every month group of people from different areas of responsibilities plan and evaluate each zone

Benefits in Implementing 5S

1. Work place becomes clean and better organized. It becomes proud place to work.
2. Results in good company image and generates more business.
3. Shop floor and office operations become easier and safer.
4. People become disciplined.
5. Contribute to productivity quality and employee morale.
6. Better quality awareness
7. More usable floor space.
8. Lesser time wasted in material handling .

KAIZEN

* Kaizen is a Japanese word which means continuous improvement or improvement over improvement. It is the process of continuous improvements in small increments that make the process more efficient, effective, controllable, and adequate.



Comparison between Kaizen and Kairyo

Kaizen Vs Kairyo

Kaizen	Kairyo (Innovation)
It is achieved through conventional know-how and PDCA.	It is obtained by technological or organizational breakthrough.
It is employee oriented.	It is technology oriented.
It requires large investment but little effort to maintain.	It requires little investment but great effort to maintain.
It involves everybody in the company.	It involves a selected few experts and researchers.
It requires recognition of effort before results.	It is motivated by expected results. results.

Features of Kaizen

- According to Glenn Gee et al, the Kaizen improvement focuses on the use of:
 1. Value-added and non-value-added work activities.
 2. Muda, which refers to the seven classes of wastes. Wastes are over-production, delay, transportation, processing, inventory, wasted motion, and defective parts.
 3. Principles of motion study and the use of cell technology.
 4. Principles of materials handling and use of one-piece flow.
 5. Documentation of standard operating procedures.

SUPPLIER PARTNERSHIP

➤ Customers and suppliers have the same goal – to satisfy the end user. The better the supplier's quality, the better the supplier's long term position., because the customer will have a better quality. Customers and suppliers must work together to maximize their return on investment.

In recent years, there are number of forces that have changed supplier relations. They are:

1. Deming's philosophy,
2. Just-In-Time (JIT) concept,
3. Kaizen or continuous improvement,
4. ISO 9000 Quality Management System (QMS), and
5. Supply Chain Management (SCM).

SUPPLIER PARTNERING

Partnering is defined as a continuing relationship, between a buying firm and supplying firm, involving a commitment over an extended time period, an exchange of information, and acknowledgement of the risks and rewards of the relationship.

The relationship between customer and supplier should be based upon trust, dedication to common goals and objectives, and an understanding of each party's expectations and values.

Key Elements to Partnering

The three important elements to achieve the customer / supplier partnering relationship they are:

1. **Long-term commitment** : Long-term commitment provides both customer and supplier the much needed environment to achieve the planned objectives require the sufficient time.
2. **Trust** : Mutual trust between two parties forms the basis for a strong working relationship.
3. **Shared vision** : Both the customers and suppliers have the common goal ie., to satisfy the end user.

SUPPLIER SOURCING

Three types of supplier sourcing are:

*Sole sourcing;

*Multiple sourcing; and

*Single sourcing;

SUPPLIER SOURCING

1. Sole Sourcing

* Sole sourcing is the use of only one supplier for the organisation. The organisation does not have any choice. It is forced to use only one supplier.

2. Multiple Sourcing

* Multiple sourcing is the use of two or more suppliers for an item.

3. Single Sourcing:

* Single sourcing is the use of one supplier for an item when several sources are available. It leads to long-term partnering relationship.

SUPPLIER SELECTION:

Usually suppliers are selected based on their performance in terms of cost, quality, and Delivery reliability. In addition, supplier criteria includes factors such as management compatibility, goal congruence, and strategic direction of the supplier firm.

Stages in Supplier Selection and Evaluation

There are four stages in supplier selection and evaluation. They are:

- Survey Stage
- Enquiry Stage
- Negotiation and Selection Stage
- Experience Stage

SUPPLIER RATING

- Supplier rating system, also referred as a scorecard system, is used to obtain an overall rating of supplier performance. It is analogous to students progress report.

Usually supplier rating is based on quality, price, performance and production capability.

Objective of Supplier Rating

The customer rates supplier in order to:

- obtain an overall rating of supplier performance ;
- ensure complete communication with suppliers;
- provide each supplier about the details of problems for corrective action ; and
- maintain and improve the partnering relationship between the customer and the supplier.

Supplier Rating Format

It shows a model supplier rating format, otherwise known as supplier scorecard.

Item :	Rated by :					Date :
Period :	Maximum Points	Supplier A	Supplier B	Supplier C	Supplier D	Supplier E
Location :		Actual Points	Actual Points	Actual Points	Actual Points	Actual Points
Quality Performance						
I. QUALITY						
(i) Quality personnel						
(ii) Quality procedure						
(iii) Concern for quality						
(iv) Concern history						
II. PRICE						
(i) Price-quality						
(ii) Price-negotiation						
(iii) Financial ability						
III. PERFORMANCE						
(i) Technical						
(ii) Delivery history						
(iii) Technical assistance						
IV. PRODUCTION CAPABILITY						
(i) Production capacity						
(ii) Manufacturing equipment						

Rating Scale : 5.0 = Very good 2.0 = Poor
4.0 = Good 1.0 = Very poor
3.0 = Average 0 = Negative