



NSCET E-LEARNING PRESENTATION

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Electrical and Electronics Engineering

IV YEAR/7th Semester

GE8077-Total Quality Management

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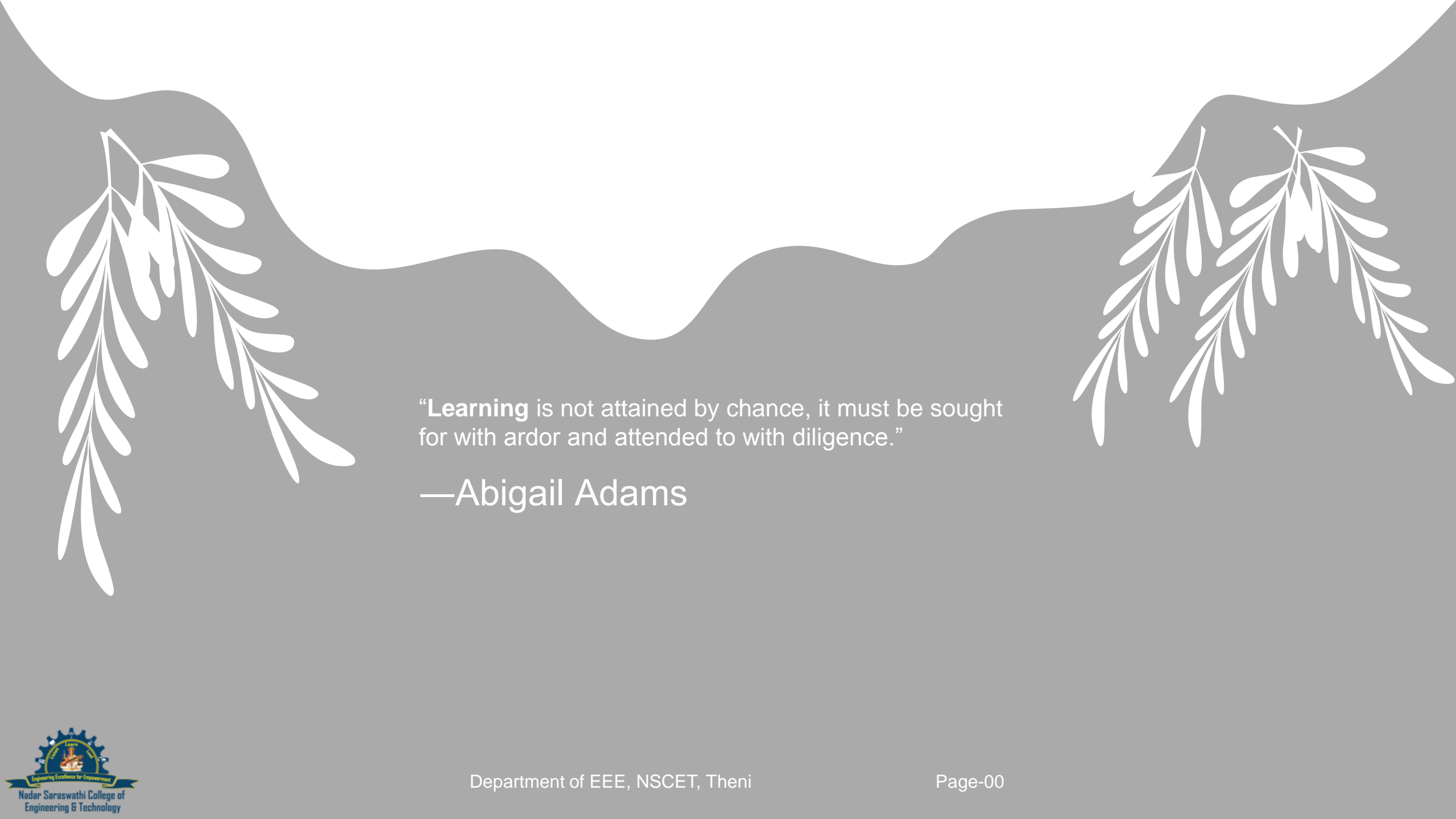
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UNIT-I INTRODUCTION





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

—Abigail Adams

Unit I - Syllabus

INTRODUCTION

Introduction - Need for quality - Evolution of quality - Definitions of quality - Dimensions of product and service quality - Basic concepts of TQM - TQM Framework - Contributions of Deming, Juran and Crosby - Barriers to TQM - Customer focus - Customer orientation, Customer satisfaction, Customer complaints, Customer retention.

INTRODUCTION:

- Quality does not mean an expensive product. On contrary it is fitness for use of the product.
- Quality has become a key ingredient for success in today's business.
- Total Quality Management (TQM) is an enhancement to the traditional way of doing business.
- It is a proven technique to guarantee survival in world-class Competition.

Contd.,

By analyzing the three words, Total Quality Management:

- **Total – Made up of the whole (or) Complete.**
- **Quality – Degree of Excellence a product or service**
- **Management – Act , art, or manner of handling , controlling, directing, etc.**
- **TQM is the art of managing the whole to achieve excellence.**

NEED FOR QUALITY

- Helps to regulate and creates consistency in products/services
- It attracts more customers to a business
- It creates competition among business
- It creates profitability for the business owner. This is as result of the increase in sales benefits to all members of the organization and to society.“
- Some definitions that are accepted in various organizations:
 - “Quality is customer satisfaction,”
 - “Quality is Fitness for Use.”

NEED FOR QUALITY

- **Customer**

Anyone who is impacted by the product or process delivered by an organization.

- **External customer:**

- The end user as well as intermediate processors. Other external customers may not be purchasers but may have some connection with the product.

- **Internal customer:**

- Other divisions of the company that receive the processed product.

Cont.,

What is a product?

The output of the process carried out by the organization. It may be goods (e.g. automobiles, missile), software (e.g. a computer code, a report) or service (e.g. banking, insurance)

How is customer satisfaction achieved?

Two dimensions: Product features and Freedom from deficiencies.

EVOLUTION OF QUALITY

- One of the important issues that business has focused on in the last two decades is —quality .
The other issues are cost and delivery.
- Quality has been widely considered as a key element for success in business in the present competitive market.
- Quality refers to meeting the needs and expectations of customers. It is important to understand that quality is about more than a product simply working properly.

CONTRIBUTION OF QUALITY GURU

SHEWHART - Control chart theory

PDCA Cycle

DEMING - Statistical Process Control

JURAN - Concepts of SHEWHART

- Return on Investment (ROI)

FEIGANBAUM - Total Quality Control

- Management involvement

- Employee involvement

Cont.,

FEIGANBAUM - Total Quality Control

- Management involvement
- Employee involvement

ISHIKAWA - Cause and Effect Diagram

- Quality Circle concept

CROSBY - “Quality is Free”

- Conformance to requirements

TAGUCHI - Loss Function concept

- Design of Experiments

Quality:

- Quality is the relative term generally used with reference to the end use of the product.
- Quality is a judgment by customers or users of a product or service. i.e, Quality is a Customer determination ,not an engineer's or a manager's Determination.
- Quality does not mean an expensive product, on the contrary, it is fitness for use of the customer.

Quality can be quantified as follows:

$$Q = P/E$$

Where,

Q = Quality,

P = Performance, and

E = Expectations,

Quality is based on the Performance of the Product and Expectations of the Customer.

DEFINITION OF QUALITY

- Quality is defined as the predictable degree of uniformity and dependability, at low cost Suited to the market. (Deming).
- Quality is defined as fitness for use (Juan).
- Quality is defined as conformance to requirements (Crosby).
- Quality is totality of the characteristics of entity that bear on its ability to satisfy stated and implied needs (ISO).

DEFINITION OF QUALITY

Quality means different to different people:

- 1. Customer-Based:** Fitness for use, meeting the customer expectations.
- 2. Manufacturing-Based:** Conforming to design, specifications, or requirements. Having no defects.
- 3. Product-Based:** The product has something that other similar products do not that adds value.
- 4. Value-Based:** The product is the best combination of price and features.
- 5. Transcendent:** It is not clear what it is, but it is Something good...

DIMENSIONS OF QUALITY



1. **Performance** – Fulfillment of primary Requirement.
2. **Features** – Additional things that enhance performance.
3. **Conformance** – Meeting specific standards set by the industry.
4. **Reliability** – Consistence performance over a period of time.
5. **Durability** – Long life and less maintenance.
6. **Service** – Ease of repair, guarantee and warranty.
7. **Response** – Dealer customer relationship, human interface.
8. **Aesthetics** – Exteriors, packages.
9. **Reputation** – Past performance, ranking, branding.

Service Quality

- Service quality (SQ), in its contemporary conceptualization, is a comparison of perceived expectations (E) of a service with perceived performance (P), giving rise to the equation $SQ=P-E$.

SERVICE QUALITY:

1. **Reliability** - Refers to the dependability of the service providers and their ability to keep their promises.
2. **Responsiveness** - Refers to the reaction time of the service.
3. **Assurance** - Refers the level of certainty a customer has regarding the quality of the service provided.
4. **Empathy** - **Being** able to understand the needs of the customer as an individual.
5. **Tangibles** - Similar to the physical characteristics of quality of products.
6. **Other Dimensions** - **Time**, Courtesy, Timeliness, consistency, accuracy, credibility and security.

TOTAL QUALITY MANAGEMENT (TQM):

- TQM is defined as both philosophy and a set of guiding principles that represent the foundation of continuously improving organization.
- It is the application of quantitative methods and human resources to improve all the process within the organization and exceed customer needs now and in the future.

TQM BASIC CONCEPTS

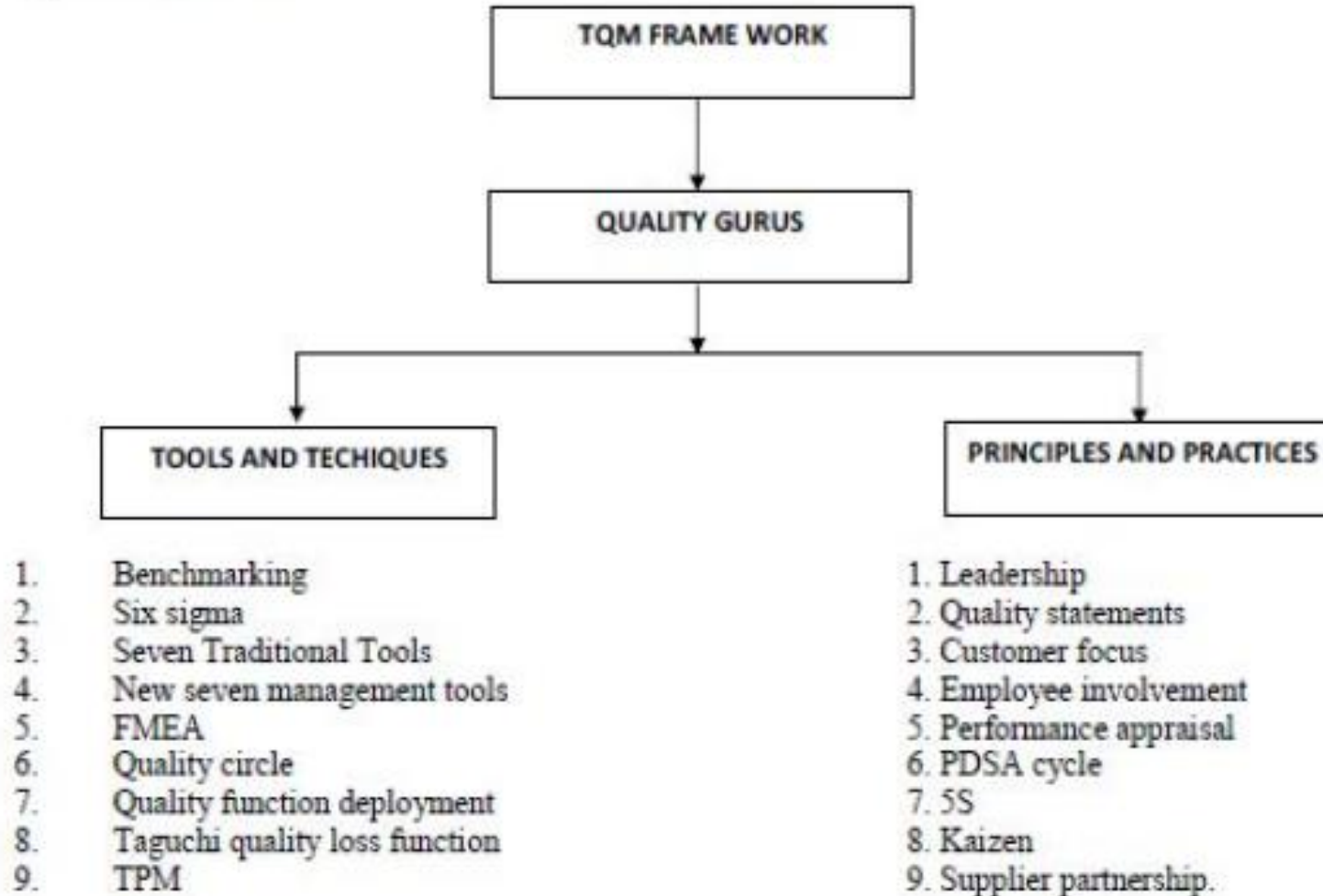
- A committed and involved management to provide long-term top-to bottom organizational support.
- An unwavering focus on the customer, both internally and externally.
- Effective involvement and utilization of the entire work force.
- Continuous improvement of the business and production process.
- Treating suppliers as partners.
- Establish performance measures for the processes.

TQM BASIC CONCEPTS

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

TQM FRAMEWORK

TQM Frame work:



CONTRIBUTIONS OF DEMING:

1. Create constancy of purpose towards improvement.
2. Adopt the new philosophy.
3. Cease dependence on mass inspection
4. Stop Making Decisions Purely on the Basis of Cost
5. Improve Constantly and Forever
6. Institute Training

7. Institute Leadership
8. Drive Out Fear
9. Break down barriers between departments
10. Eliminate slogans
11. Enumerate Numerical Quotas
12. Remove Barriers to Pride in Workmanship
13. Encourage Education and Self-Improvement
14. Take Action

PHILIP CROSBY

Quality is Free


His first book which made him famous.

Zero Defects

One of his four absolutes of quality.

The Four Absolutes

Four absolutes of Quality.



Philip Crosby

Born: Jun 18, 1926
Died: Aug 18, 2006

Best known for: Quality is Free, Zero Defects and Four Absolutes of Quality

The Fourteen Steps to Quality Improvement

1. Management Commitment

- Make it clear that management is committed to quality.

2. Quality Improvement Teams

- Form Quality Improvement Teams with senior representatives from each department.

3. Measure Processes

- Measure processes to determine where current and potential quality problems lie.

4. Cost of Quality

- Evaluate the cost of quality and explain its use as a management tool.

5. Quality Awareness

- Raise the quality awareness and personal concern of all employees.

6. Correct Problems

- Take actions to correct problems identified through previous steps.

7. Monitor Progress

- Establish progress monitoring for the improvement process.

8. Train Supervisors

- Train supervisors to actively carry out their part of the quality improvement program.

9. Zero Defects Day

- Hold a Zero Defects Day to reaffirm management commitment.

10. Establish Improvement Goals

- Encourage individuals to establish improvement goals for themselves and their group.

11. Remove Fear

- Encourage employees to tell management about obstacles to improving quality.

12. Recognize

- Recognize and appreciate those who participate.

13. Quality Councils

- Establish Quality Councils to communicate on a regular basis.

14. Repeat the Cycle

- Do it all over again to emphasize that the quality.

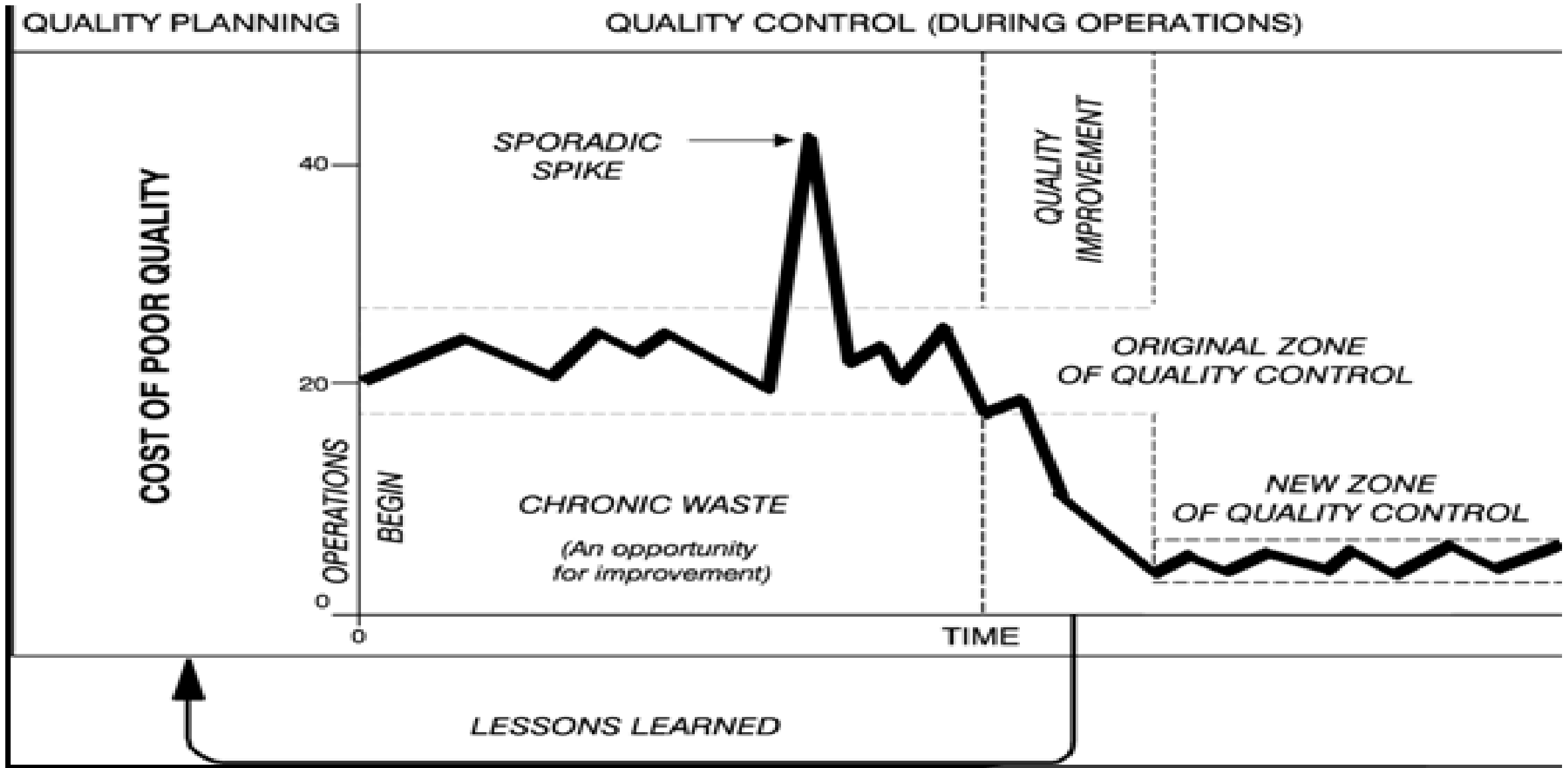
JURAN'S QUALITY

- “Quality” means those features of products which meet customer needs and thereby provide customer satisfaction.
- “Quality” means freedom from deficiencies—freedom from errors that require doing work over again (rework) or that result in field failures, customer dissatisfaction, customer claims, and so on.
- In this sense, the meaning of quality is oriented to costs, and higher quality usually “costs less.”

J.M. Juran's Trilogy

Developed the idea of trilogy

- Quality Planning
 - Quality Control
 - Quality Improvement
- Trilogy shows how an organization can improve every aspect by better understanding of the relationship between processes that plan, control and improve quality as well as business results.
 - In 1951, the first edition of Juran's quality control handbook was published.



BARRIERS IN IMPLEMENTING TQM

- Lack of Management Commitment
- Inability to change Organizational culture
- Improper planning
- Lack of continuous training and education
- Failure to continually improve
- Incompatible organizational structure and isolated individuals and departments.
- Ineffective measurement techniques and lack of access to data and results
- Paying
- Inadequate attention to internal and external customers
- Inadequate use of empowerment and teamwork

BENEFITS OF TQM

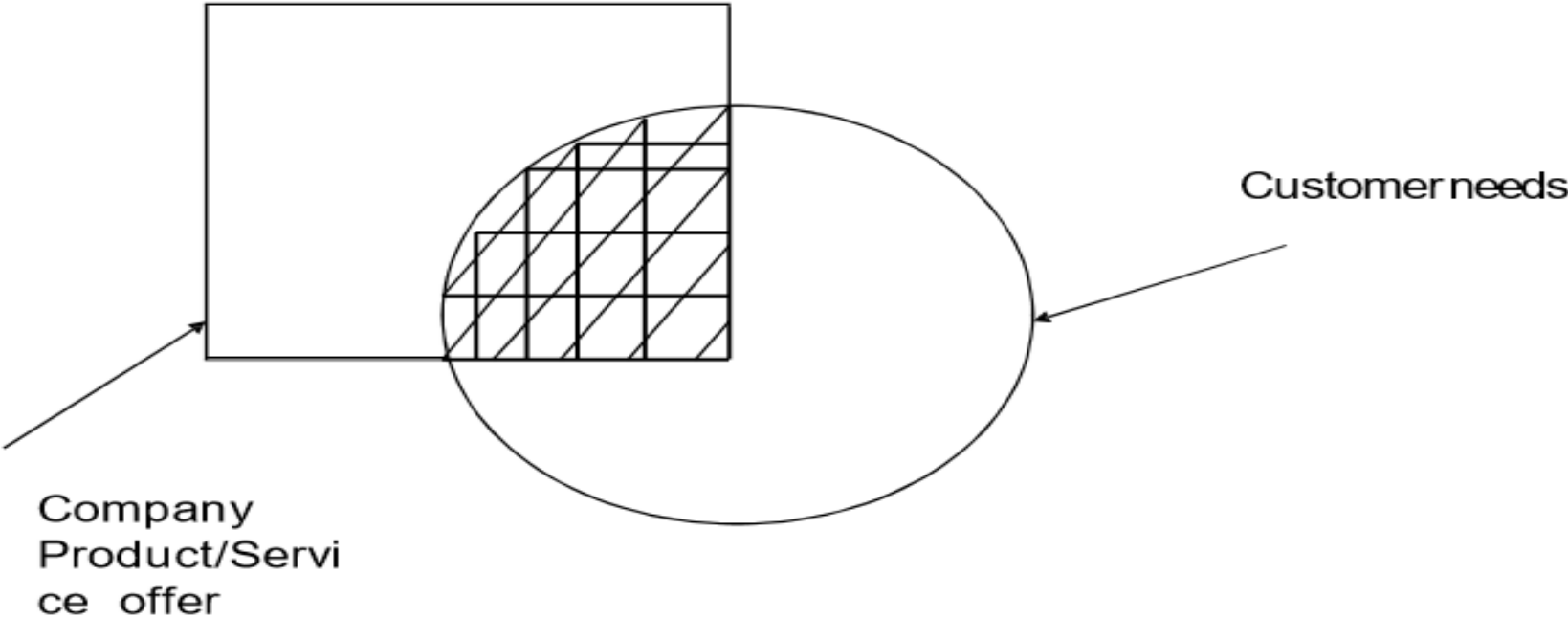
- Improved quality
- Employee participation
- Team work
- Working relationships
- Customer satisfaction
- Employee satisfaction
- Productivity
- Communication
- Profitability
- Market share

CUSTOMER SATISFACTION

- As emphasized so far, in today's buyers market the customer is the king Even the definition of quality, quality is what customer wants, emphasizes on the customer requirements.
- In other words, quality is a measure of customer satisfaction. It is obvious that business cannot survive without satisfied customers.
- Therefore TOM's purpose is meeting or creating customer expectations, so that the customers are delighted It is understood that the customer satisfaction must be the primary goal of any organization.
- Therefore it is essential that every employee in the organization understands the importance of the customer.

Customer Satisfaction Model

- Teboul's Model of Customer Satisfaction



Cont.,

- In this the customers' needs are presented by the circle, and the square represents the product or service offered by the company.
- The intersection portion, shown with dots, is perceived as the customer satisfaction.
- So it is understood that the company should strive for increasing the intersection customer satisfaction.

WHO ARE THE CUSTOMERS?

- The customers are:
 - the most important people in the business
 - not dependent on the organisation. The organization depends on them.
 - not an interruption to work but are the purpose of it.
 - doing a favour when they seek business and not vice versa.
 - a part of business, not outsiders.
 - Life blood of the business.
 - People who come with their needs and jobs.
 - Deserve the most courteous and attentive treatment.

Types of Customers

Customers are two type.

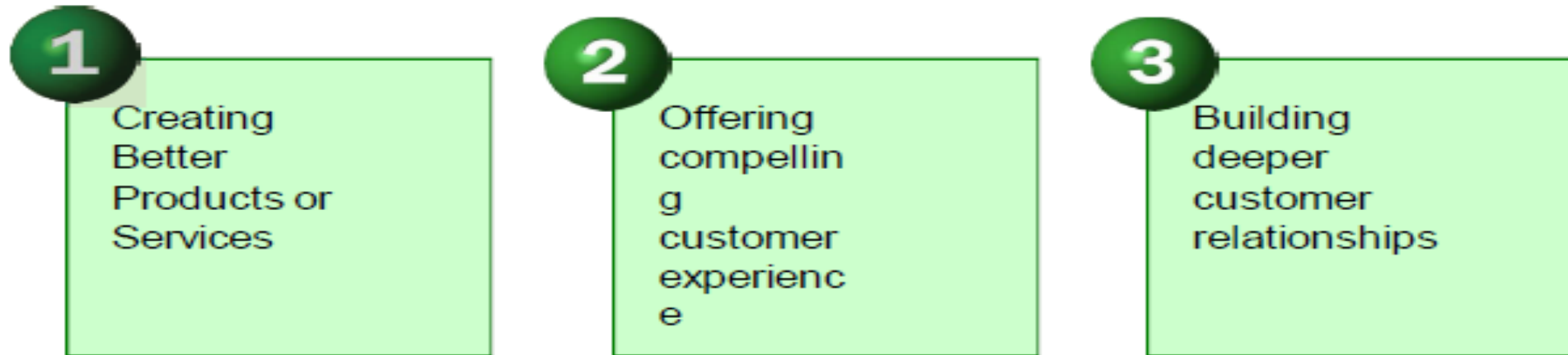
They are:

- 1. External customers.
- 2. Internal customers
- **External customers:**
 - The customers outside the company are called external customers
 - In other words, an external customer is the one:
 - who uses the product or service: who purchases the product or service, or
 - who influences the sale of the product or service.

Internal customers

- The customers inside the company are called internal customers.
- As there is a flow or work product and service in the organization, each department dependent on the other.
- In this, each department or each quality management is considered as a customer by the previous department and as a supplier for the to department.

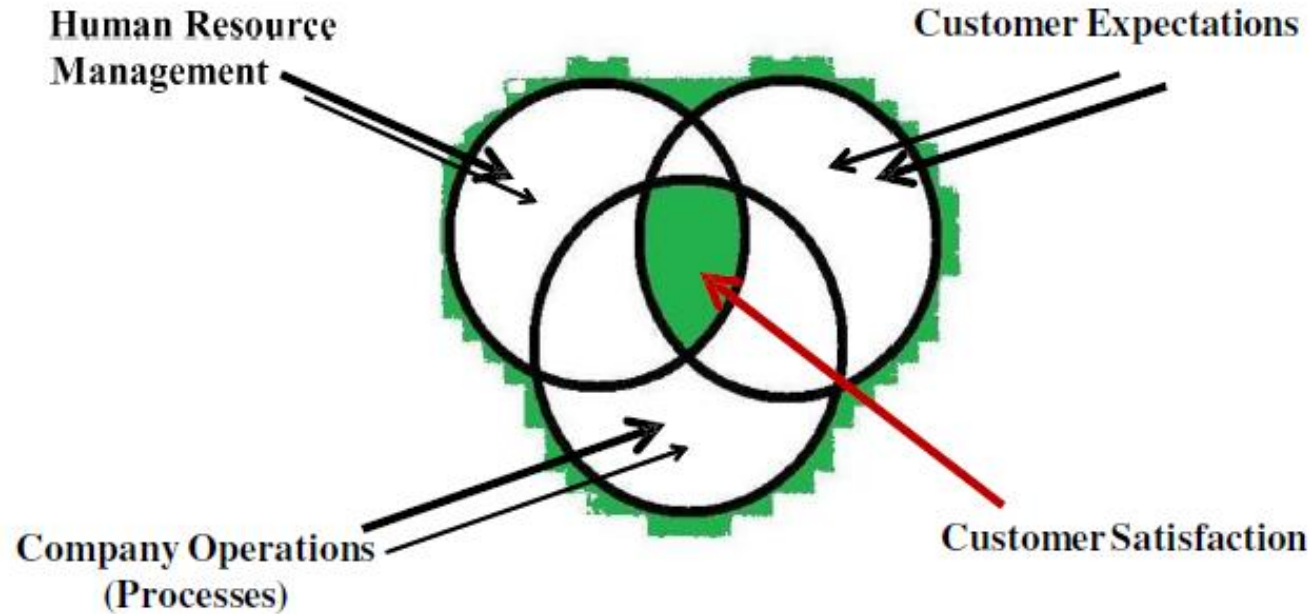
Goals of Customer Focus:



Boosting retention and repurchase = more sales!!!

Customer Satisfaction

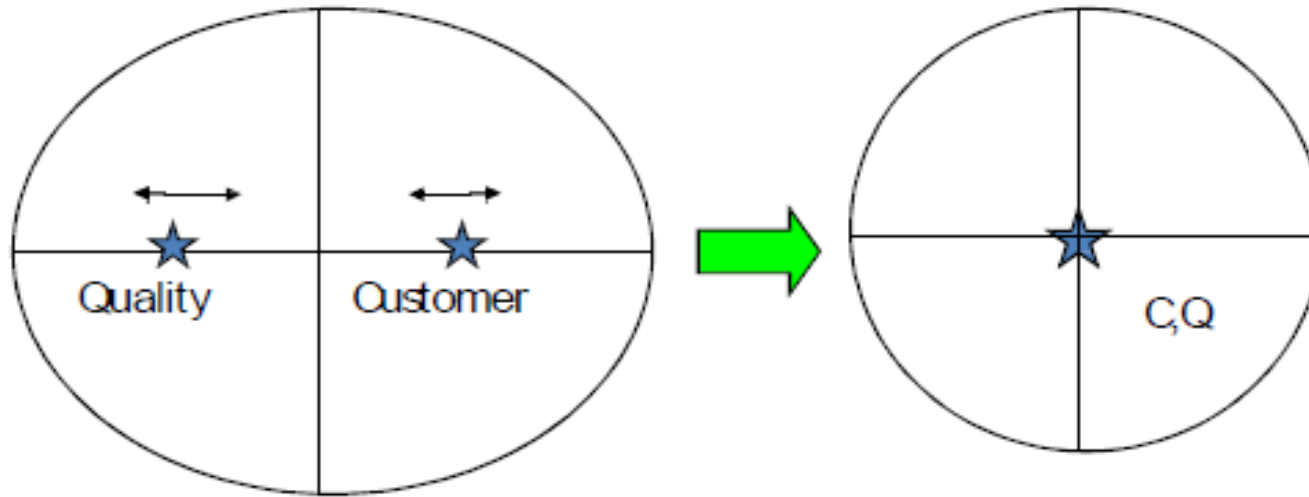
- Three Part System



Customer satisfaction

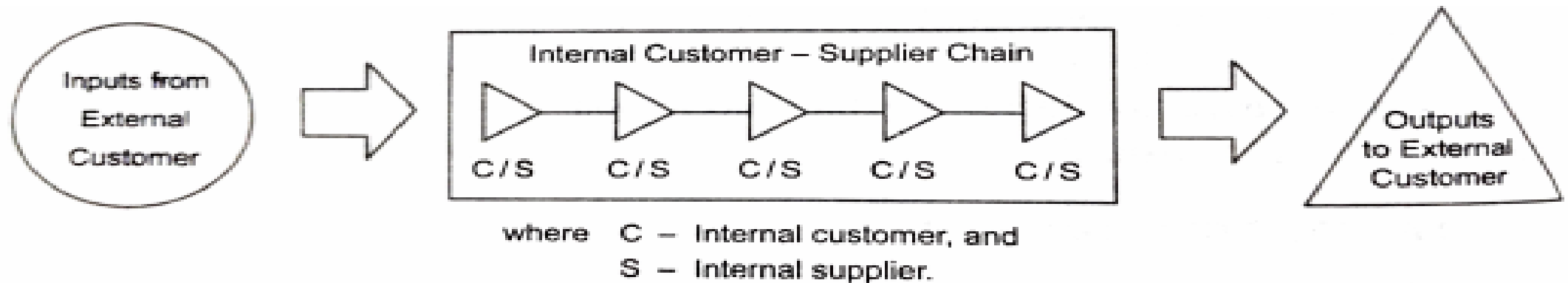
- Customer is the Boss or 'King'
- Customer dictates the market trends and direction
- The organization depends on the customer
- The satisfied customer will help in bringing the new customers

Norman's Customer satisfaction model Quality



NEED FOR PERFORMANCE APPRAISAL

- In order to achieve the total customer orientation, TQM requires the better customer supplier relationship.



The model of customer supplier chain.

- All processes require inputs, which are provided by the internal or external supplies.
- Similarly all processes delivers outputs, which are used by internal or external customers.
- Figure shows everyone inside the company as a supplier and customer at the same time.
- Each unit is considered as a customer by the previous unit and as a supplier for the next unit.

CUSTOMER PERCEPTION OF QUALITY

- Quality is what customer perceives it to be.
- However, as the customers go on changing their needs, the quality level needs are to be improved continuously to meet the customers demand.
- That's why the basic concept of TOM philosophy is continuous process improvement .

An American Society for Quality (ASQ) survey ranked the customer perceptions in the following order :

- 1. Performance
- 2. Features
- 3. Service.
- 4. Warranty,
- 5. Price, and
- 6. Reputation management.

CUSTOMER COMPLAINTS:

- Customer Satisfaction analysis helps the organization in the following ways:
 1. A totally satisfied customer contributes to revenue of the company.
 2. A totally dissatisfied customer decrease revenue.

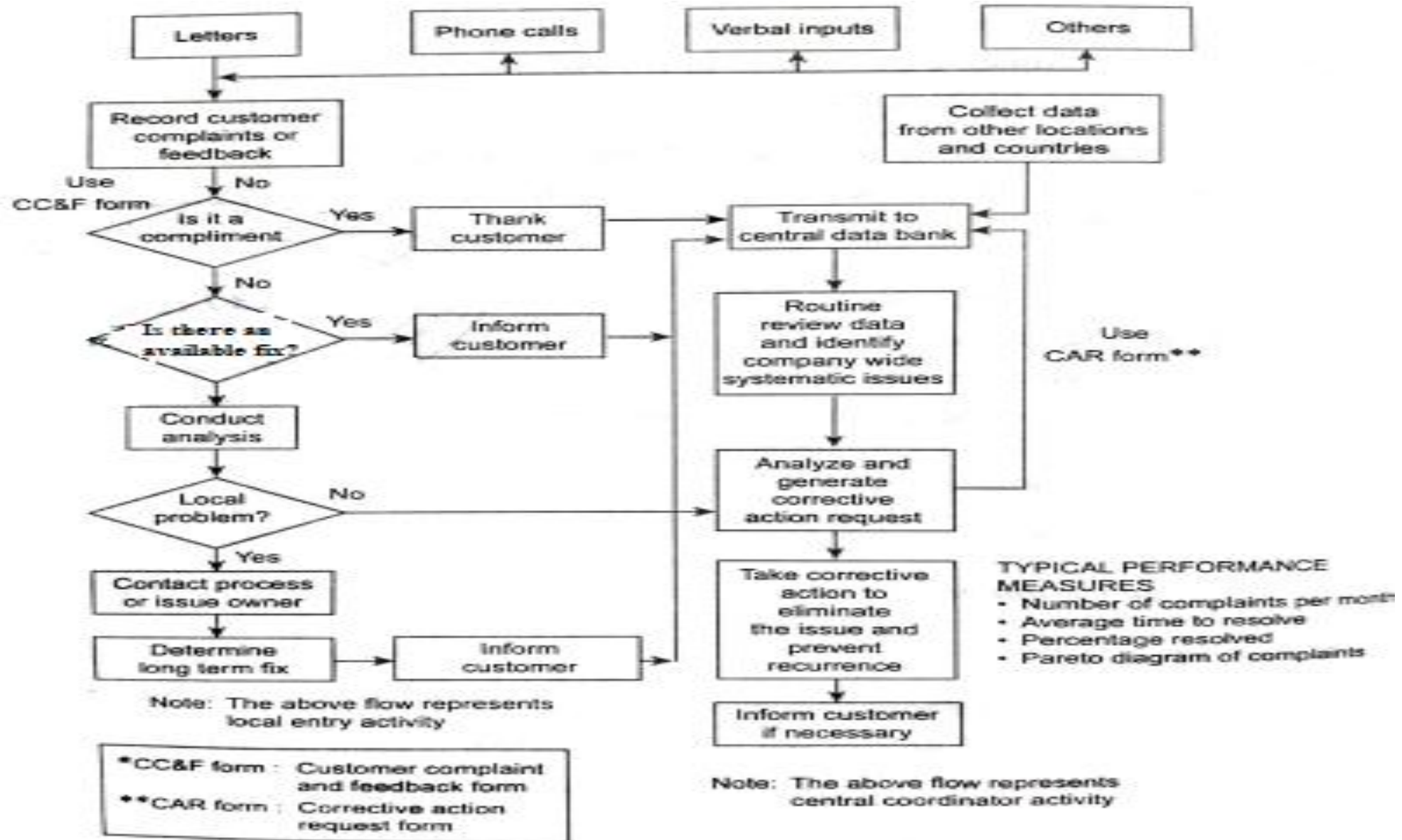
Customer Feedback

- Customer feedback or customer complaint is required:
 - - to discover customer dissatisfaction.
 - -to identify customer's needs.
 - -to discover relative priorities of quality,
 - - to compare performance with the competition, and
 - - to determine opportunities, for improvement.

Tools Used for Collecting Customer Complaints are:

1. Comment card
2. Customer questionnaire
3. Focus groups
4. Toll - free telephone numbers.
5. Customer visits
- 6 Report cards
7. The Internet and computer

Customer Complaints Flow Chart



CUSTOMER RETENTION

- It means “retaining the customer” to support the business. It is more powerful and effective than customer satisfaction.
- For Customer Retention, we need to have both “Customer satisfaction & Customer loyalty”.

The following steps are important for customer retention.

1. Top management commitment to the customer satisfaction.
2. Identify and understand the customers what they like and dislike about the organization.
3. Develop standards of quality service and performance.
4. Recruit, train and reward good staff.
5. Always stay in touch with customer.

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6. Work towards continuous improvement of customer service and customer retention.
7. Reward service accomplishments by the front-line staff.
8. Customer Retention moves customer satisfaction to the next level by determining what is truly important to the customers.
9. Customer satisfaction is the connection between customer satisfaction and bottom line