QUALITY MANAGEMENT

QUALITY

Excellence

Durability

Life Quality

Water Quality

Air Quality

Time Quality

Good Quality Food

Life Standard

Good Quality for Cheap Price

Over Qualified

QUALITY MANAGEMENT

WHAT IS QUALITY?

CUSTOMER / CLIENT SATISFACTION

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KES

"Sure, we know how to have a
good time up here!"

What is quality?

- Free from deficiencies

- Comply with purpose

- Conformance to the specifications

- Quality in the construction project is achieved if the completed project conforms to the stated requirements of the principal participants (owner, design professional, constructor) while conforming to applicable codes, safety requirements, and regulations.

THE CONCEPT OF QUALITY IN THE CONSTRUCTION INDUSTRY

In construction industry 'the concept of quality' is considered in different dimensions.

- The final product can be mentioned as;
  - the quality of the building
  - the quality of the process

- In construction industry
  - both a product is produced
  - and meanwhile a service is provided.

"Then I said, 'It's my way or the highway.'"

EIGHT DIMENSIONS OF QUALITY

- One of the approach for the product belongs to Garvin, and
- Garvin determined the eight dimensions of quality such as;
  - **PERFORMANCE**
  - **FEATURES**
  - **RELIABILITY**
  - **CONFORMANCE**
  - **DURABILITY**
  - **SERVICEABILITY (USEFULNESS)**
  - **AESTHETIC and**
  - **PERCEIVED QUALITY** (Evans and Lindsay 1991).

EIGHT DIMENSIONS OF QUALITY

- **PERFORMANCE**

- First of all, a building should be <u>appropriate to it's function</u> and should ensure customer satisfaction. That means; the building should satisfy the performance expected from itself.

EIGHT DIMENSIONS OF QUALITY

- **FEATURES**

- The properties such as; <u>chosen techniques for the construction of building, the properties of the materials, the compatibility of these materials with each other, solutions of the nodes and etc.</u> can affect the quality of a building.

Gaudi, Casa Battlo

EIGHT DIMENSIONS OF QUALITY

- **RELIABILITY**

- Looking at the notion of a quality product, product must give confidence about delivering customer expectations about it.

  - Assurance that building can deliver its functions without any problem.

  - Features such as; the strength of the building, inviolability of the materials and being healthy, fulfillment of the required physical conditions, having fire and earthquake resistance, etc. should give confidence to the user.

EIGHT DIMENSIONS OF QUALITY

- **CONFORMANCE**

- The design of the building, construction technique, materials, style and other aesthetic properties should fit the building's function and environmental conditions according to the customer expectations.

EIGHT DIMENSIONS OF QUALITY

- **DURABILITY**

- It is important to preserve the materials, details and the whole building in the long term like the first day.

  - The presence of details or materials that wear out, require repair or replacement in a short time will cause buildings to be defined as poor quality.

  - Also it is very important that the construction technique, the materials and details should be resistant to earthquakes and fire. This technique, materials and details can vary according to the geographical conditions of the field where the construction is built.

EIGHT DIMENSIONS OF QUALITY

- **SERVICEABILITY (USEFULNESS)**
- Serviceability is the existence of the necessary features relative to the solutions of the problems that may occur during the use of building.
  - For example: easy accessibility of the roof in case of a possible problem, the presence of a space that is required for renovations or the presence of a fire escape in case of fire, it's location, it's compliance with standards, etc. should be considered initially.

EIGHT DIMENSION OF QUALITY

- **AESTHETIC**

- Another important feature about quality is aesthetic.

- The building should satisfy users' visual pleasure and should be sentimental.

Frank Gehry

EIGHT DIMENSIONS OF QUALITY

- **PERCEIVED QUALITY**

- Perceived quality is the level of satisfaction about the quality of building that has been felt by customer. It is a relative concept because every person has different sense of value than anybody (Evans and Lindsay,1991; Şeker,2000).
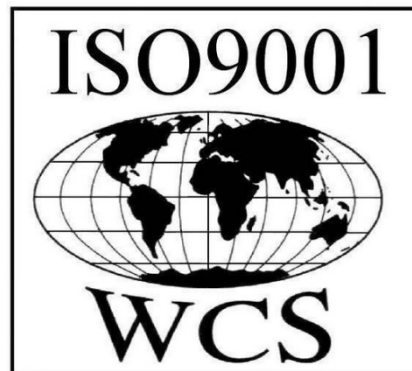
TOTAL QUALITY
MANAGEMENT

QUALITY
MANAGEMENT

QUALITY ASSURANCE

QUALITY CONTROL

INSPECTION

QUALTY MANAGEMENT SYSTEM AND STANDARTS

- In TSE (Turkish Standards Institution), standards as series of TS EN ISO 9000:2000 are:

  - TS EN ISO 9000 : Quality Management Systems – Main Definitions and Terms
  - TS EN ISO 9001 : Quality Management Systems - Conditions
  - TS EN ISO 9004 : Quality Management Systems – Guide to Increase Performance
  - TS EN ISO 19011 : Environment Quality Management Systems

TOTAL QUALITY
MANAGEMENT

QUALITY
MANAGEMENT

QUALITY ASSURANCE

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INSPECTION

ISO 9000

Benefits of ISO systems

- Greater customer loyalty

- Improvements in market share

- Higher stock prices

- Reduced service calls

- Higher prices

- Greater productivity

- Cost reduction.

- Common feature of these management systems is including documentation. This means that they suggest running systems to be done by written procedures and rules (TS EN 9001:2000).
  - Document control
  - Records control
  - Management commitment.

- Management systems' work perfection is only possible with embracing TQM philosophy.
- In short, systems not based on TQM are no longer valid.

The need for a paradigm shift

Topics	Old Paradigm	New Paradigm
Quality	Meeting specification	Customer value
Measurement	Internal measure of efficiency	Linked to customer value
Positioning	Competition	Customer segments
Key stakeholder	Stockholder	Customer
Product design	Internal sell what we build	External build what the customer wants

The cultural shift required for TQM

From	To
Meeting specification	Continuous improvement
Compete on time	Satisfy customer
Focus on final product	Focus on process
Short-term view	Long-term view
Inspection based-quality	Prevention-based
People as cost burdens	People as assets
Minimum cost suppliers	Quality suppliers
Compartmentalized organization	Integration
Top-down management	Employee participation

TOTAL QUALITY MANAGEMET (TQM)

- TQM is an integrating management concept that aims to improve the quality of product or service continuously with the participation of everyone involved in the organization (Evans and Lindsay, 1991).

- Japan-origin

- Play an essential role in many companies' success

- Main principles
  - Continuous improvement
  - Certain active participation of all employees in the organization
  - Reaching profitability by satisfying employees, customers and the community.

Total Quality Management: Basic Concepts

- Orientation to results

- Focus on the customer

- Leadership and consistency of purpose

- Management by process and data

- Employee development and participation

- Continuous learning, innovation and improvement

- Developing cooperation

- Corporate social responsibility

Total Quality Management: Basic Concepts

- **Orientation to results**

  Perfection depends on creating a balance between the needs of all shareholders (employees, customers, suppliers, society's and everyone that have financial relationship with institution.) and satisfying all shareholders' needs.
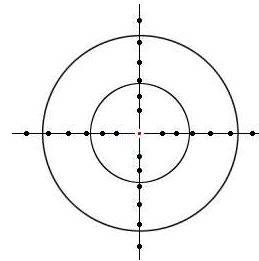
- **Focus on the customer**

  Customer is the person that says final word about product and service quality; therefore, by focusing the needs of current and potential customers, company must try to become in a higher position in the areas of customer loyalty, customer retention and increasing market share.

Total Quality Management: Basic Concepts

- **Leadership and constancy of purpose**

  Behaviors of a leader in an institution determines clarity of objection, creates unity and creates an environment that helps institution and employees to reach perfection.

- **Management by process and data**

  Institutions show their best performances when; relations and action between institutions are clear, managed systematically, and decisions and planned improvements are taken according to data which is trustful and reflects shareholders' views.

Total Quality Management: Basic Concepts

- **Employee development and participation**

  In order to achieve potential of the employees, there must be a shared value trust and an authorization culture. Such an environment eases everyone's participation.

- **Continuous learning, innovation and improvement**

  Performance of an institution makes peak when its knowledge is managed in continuous learning, innovativeness, and reformation culture.

Total Quality Management: Basic Concepts

- **Developing cooperation**

  The best performance depends on trust to institutions which it cooperates, sharing know-how and constituting mutual beneficial relationships based on consolidation.

- **Corporate social responsibility**

  Long term interests of institution and its employees depends on taking an ethical approach, exceeding society's general expectations and current regulations.

KAIZEN(*Continuous Improvement*)

- In Japanese, *kai* means change, *zen* means better.
- *Kaizen*, means working in a direction that aims processes and increases customer happiness, affects competitive powers, expresses slow but numerous and fast improvements in worker, process, time and technology. And it expresses reduction in costs.

- *Kaizen,* aimed to processes instead of results. Because, if it is intended to increase results, processes that reveals these results must be improved.

KAIZEN

- *Human Resource Level*, is seen as a resource.
  - consider this resource not only in the business but also outside the business,
  - give importance in education, improvement and training,
  - reward employees not only because their performance results, but also with their contribution to the improvement processes.
- *Process Level:* protecting processes, taking corrective precautions and improving processes.

- *Time Level:* aims to be able to response to the changes in the market, fast innovations, increasing range of products timely for reducing costs and improving activities.

- *Technology Level:* is achieved by reducing costs, applying various technologies and simplifying them.

Main Principles of Kaizen Philosophy

- Acknowledge the problem.

- Pick projects that don't require huge amount of money.

- Firstly, consider "our" problems not "theirs"

- Only measurement should not be economical interest.

- Determine priority. Run the project by principles like quality, costs, distribution etc.

- Follow the rule plan-do-check-act (PDCA)

- Use correct solution tools.

Kaizen's approach to problems is

"Welcome Problems"

Because;

- There is no improvement without a problem.

- Problems are the tips of the bigger problems underneath the water level. With decreasing water level, they become more visible.

- It is needed to remove obstacles between departments.

What has to be done to practice Kaizen?

* first; to accept inadequacy of current situation.

- Even when a system works perfectly, there can be a lot of things to improve.
- Plus, improvements in science and technology pushes performance measures forward.

* secondly; to keep efforts of improving human aspect.

- It is human that does everything.
- Human resources are the most valuable asset of any institution.
- In traditional management systems, only utilization of this resource is very limited. However, every employee must be a part of this improvement activity.

* thirdly; problem solving techniques must be used frequently and broadly.

Main Principles of TQM

- **MANAGEMENT WITH FACTS, NOT MYTHS!**

- **WITHOUT DATA, NO PROCESS!**

- **WITHOUT DATA, NO ANALYSIS!**

- **WITHOUT ANALYSIS, NO DECISIONS!**

- **AVOID PARALYSIS WITH ANALYSIS!**

TOTAL QUALITY MANAGEMENT (TQM)

- **Key resources**
  - **EDWARDS DEMING: STATISTICAL PROCESS CONTROL**
  - **JOSEPH MURAN: PLANNING – CONTROL – DEVELOPMENT**
  - **PHILIP CROSBY: QUALITY IS FREE**
  - **KAORU ISHIKAWA: QUALITY CIRCLES, FISHBONE DIAGRAMS, PARETO ANALYSIS ETC.**
  - **TOM PETERS VE ROBERT WATERMAN: IN SEARCH OF EXCELLENCE**
  - **GENICHI TAGUCHI: ROBUST DESIGN**

QUALITY EXCELLENCE AWARDS

- BALDRIDGE AWARD (US)

- EUROPEAN QUALITY AWARD

- DEMING PRICE (JAPAN)

- NATIONAL QUALITY AWARD (TURKEY)

BALDRIDGE AWARD

- 1987
- Performance targets as award criteria
  - Continuous improvement of value in product that presented to the customer
  - Continuous improvement in institutional ability and productivity

European Foundation for Quality Management (EFQM)

- The model founded on the fact that there can be a lot of approaches in order to realize sustainable perfection in every level about performance resides in following statement:

- *Perfect results that echoes on performance, customers, employees and public can be constructed with leading policy, strategy, employees, resources and processes with appropriate leadership.*

The EFQM Excellence Model (www.efqm.org)
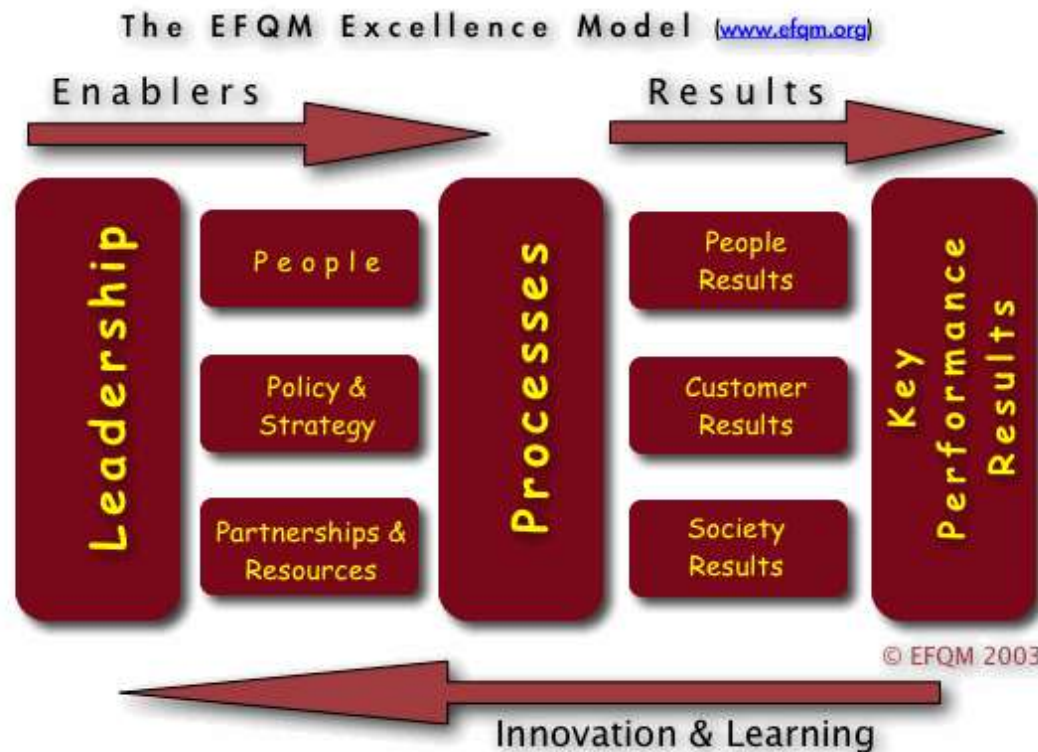
- At the heart of this model, a logic that is defined as **RADAR** takes place.

- RADAR consists of four dimensions:

*	**R**esults
*	**A**pproach
*	**D**eployment
*	**A**ssessment
*	**R**eview

RADAR Logic

This logic requires an institution to do the following:

- Targeted results are parts of the process that forms policies and strategy. These results must comprise both financial and operational performances and perceptions of shareholders.

- Planning and improving consolidate and well based approaches in order to reach present and future goals.

- Systematic expansion of approaches in order to actualize these approaches precisely.

- Evaluating and revising approaches for monitoring and analyzing results by residing in continuous learning. Therefore, determining improvement points, prioritizing, planning and applying them.

- When using this model in institutions, for example in self-evaluating, Approach, Deployment, Assessment and Review dimensions must be related to every "Entry" sub-criteria. "Results" dimension must be related to "Result" sub-criteria in RADAR scoring matrix.

Applying RADAR Logic

- **Dimension that constitute RADAR logic**
  - **Results**
    Results includes what institution gained. In an institution that reached perfection, results must show positive tendencies, objectives must be appropriate and accessible, when comparing to the other institutions results should indicate high performance and all these results must be based on approach. In addition, results must comprise related area and applications.

  - **Approach**
    Approach includes what an institution planned to do and its reasons to apply these plans. In an institution that reached perfection, approach must have a strong base, which means having understandable foundation, having well defined and improved processes, focused clearly to the shareholders' needs and to be consolidated. From one perspective, it is expected having adopted institutions' policies and strategies, from other perspective, related to other approaches as much as possible when appropriate.

  - **Deployment**
    Deployment includes what an institution do in order to make its approach happen. In an institution that reached perfection, it is expected that approaches are applied in related areas systematically.

  - **Assessment and Review**

    This dimension includes what an institution does to evaluate and review its approach and expansion of approach. In an institution that reached perfection, it is expected that measuring approach and expansion of approach regularly and practicing learning activities. After the information gathered from these two activities, this information must be used in determining improvement points, determining priorities, planning improvements, and applying improvement.

Excellence Model Criteria

1. CRITERION – LEADERSHIP

2. CRITERION –POLICY AND STRATEGY

3. CRITERION – EMPLOYEE

4. CRITERION – PARTNERSHIPS AND RESOURCES

5. CRITERION – PROCESSES

6. CRITERION – CUSTOMER RELATED RESULTS

7. CRITERION – EMPLOYEE RELATED RESULTS

8. CRITERION – COMMUNITY RELATED RESULTS

9. CRITERION – KEY PERFORMANCE RESULTS

Excellence Model Criteria

1. CRITERION– LEADERSHIP

- Excellent leaders improves vision and mission and making realizing them easy. They improve institutional values and systems which needed to sustained success, and realizes them with their activities and behaviors. In times of change, they provide consistency of objective. Excellent leaders can change an institutions direction and encourage others to follow.

Excellence Model Criteria

2. CRITERION–POLICY AND STRATEGY

- Excellent institutions realizes their mission and vision by developing shareholder focused strategy and by consideration of sector and market which they are operating in. They create policies, plans, objectives and processes in order to realize their strategies.

Excellence Model Criteria

3. CRITERION- EMPLOYEES

- Excellent Institutions manages, develops and helps to use freely their employees' knowledge and full potentials on the individual and team level in the whole institution. Treats all employees equally and encourages them to take part in actions, and authorize them. They appreciate attach importance to their employees and encourages them in order to use their knowledge for institution's benefits, and to make them participate continuously.

Excellence Model Criteria

4. CRITERION– COOPERATION AND RESOURCES

- Excellent institutions plan and manage their external cooperation, suppliers and internal resources in order to affect their policies, strategies and processes positively. During planning and managing cooperation and resources, institution keeps balance of its, society's and environment's recent and future needs.

Excellence Model Criteria

5. CRITERION– PROCESSES

- Excellent institutions design, manage and improve their processes in a way that these processes can support their policies, strategies; satisfy their customers and other shareholders and increase added value for them.

Excellence Model Criteria

6. CRITERION– RESULTS ABOUT CUSTOMERS

- Excellent institutions uses comprehensive performance and perception indicators about their customers and they get successful results at that.

Excellence Model Criteria

7. CRITERION– RESULTS ABOUT EMPLOYEES

- Excellent institutions uses comprehensive performance and perception indicators about their employees and they get successful results at that.

Excellence Model Criteria

8. CRITERION– RESULTS ABOUT SOCIETY

- Excellent institutions uses comprehensive performance and perception indicators about society and they get successful results at that.

Excellence Model Criteria

9. CRITERION– BASE PERFORMANCE RESULTS

- Excellent institutions uses comprehensive performance indicators about bases of their policies and strategies and they get successful results at that.

DEMING PRIZE

- 1947 JUSE (JAPANESE SCIENTISTS AND ENGINEERS)

- EDWARDS DEMING

- STATISTICAL METHODS

- TOTAL QUALIY MANAGEMENT GURU

- Purpose of the award is to help realizing **corporate level quality control that is based on statistical process control.**

- It was given to only Japanese companies until 1987. After that date, it can be also given to the foreign companies.

DEMING (TQM)

- Determine goals of the organization to increase product and service quality.
- Adopt new management philosophy. (don't tolerate non-qualified labor, poor quality product and services.)
- Put an end to examination of mass in the organization
- Stop evaluating organization based on price tags.
- Provide continuous development.
- Provide education on duty.
- Make leadership institutionalized.
- Put an end to fear.
- Remove borders between departments.
- Remove slogans, posters and numerical objectives.
- Remove quotes and numerical objectives.
- Remove applications that cause employees not to work properly.
- Apply continuous education.
- Realize transformation with participation of everybody.

NATIONAL QUALITY MOVEMENT

Ulusal Kalite Hareketi

- **National Quality Movement-** Aims to increase the number of nation-wide example institutions in every sector and every region in the perspective of Total Quality and Perfection.

SIX SIGMA

- A management strategy that uses easy and efficient statistical tools to determine, measure, control, improve and analysis processes in businesses in order to maintain perfection in operations.

- Six Sigma approach focuses in three topics:
    - Increasing customer satisfaction.
    - Reducing cycle time
    - Decreasing errors

- **SOURCE: WIKIPEDIA**

SIX SIGMA

- Sigma is standard deviation in statistics.
- 6Sigma can be used as a measurement of process changes.

  Six Sigma Team

- In every Six Sigma application there are **"champion", "specialist lack belt", "black belt" and "green belt".** The responsible of 6Sigma is "champion". Champion selects projects, approves and keeps track. Black belts are ones that makes applications and runs projects.

- Specialist black belt observes and inspects all applications. Additionally, there are green belts who provides logistics like measurement, analysis, documentations

- **SOURCE: WIKIPEDIA**