Chapter Four: **Case Study**

4.1 BACKGROUND

Saudi Aramco is one of the leading national companies in Saudi Arabia. Its experience in implementing TQM is an example of successful implementation. This national company is considered to be one of the largest owners of capital projects and its operation covers the whole Kingdom. The budget for its capital projects exceeds $ 1 billion a year. The company has more than 50,000 workers and almost 2,000 of them work in the Engineering Administrative Area, and more then 2,000 in the Project Management Team. Its long history and the respect it has earned over more than half a century have made it a model for many organizations in Saudi Arabia to follow. Many governmental agencies have benefited from this company's expertise in both technical and managerial areas. It has always been a point of attention for both public and private organizations.

Saudi Aramco workers come from many different countries with the majority being Saudi, who represent more than 75% of the human resources. The expatriates come from North America, Europe, the Indian subcontinent and South East Asia. The relatively good income, treatment and other benefits of this company encourage its workers to continue working for it until the age of retirement, especially the national workers. It represents a lifetime career for most of its employees. The Company has played an important role in developing local industries. Also, it has contributed aggressively in technology transfer and training of national human resources. The Company has developed a culture over time that has been much influenced by the American style of management.

Interest in establishing a quality management program in the Engineering and Operation Services (E&OýS) business line appeared as an avenue for reducing costs. Capital projects have always been considered to be a potential area for saving. The pressure to reduce costs and enhance the efficiency of capital projects led the management to adopt TQM in an attempt to meet the new challenges.

A senior vice-president heads the E&OS business line. The business line consists of five different administrative areas, each area headed by a vice-president. Two of these administrative areas are the Engineering Administrative Area and the Project Management Team Administrative Area (PMT). Engineering consists of five departments, and the PMT consists of eight departments.

4.2 BENCHMARKING

When the Company decided to implement the quality improvement process, executive management decided to build on other's experience. A fact-finding mission was conducted to review TQM implementation with several companies in different fields. These companies included 1) major US oil companies: Exxon, Mobil, Texaco, and Star enterprises, 2) major engineering & construction contractors: B&R, Bechtel, Flour Daniel, John Brown, and Stone & Webster, 3) the Construction Industry Institute (CII). Upon the conclusion of the fact-finding mission the following was observed:

1. All companies have quality improvement programs using TQM concepts.
2. There was a high level of commitment with strong management support.
3. TQM consultants were utilized in different ways; some used consultant support and others relied only on sending their quality personnel to attend TQM courses.
4. Assignments were made of dedicated quality improvement personnel, quality directors and in one case a quality vice president.

5. Generally they were positive about quality improvement efforts.

4.3 Starting the Journey

The Company executive management requested that its departments be prepared to manage change while continuously improving operations. The methodology of the quality journey was to be communicated to everyone. Everyone was made aware, in some degree, of a journey that would be filled with opportunities to improve customer confidence, increase productivity and lower costs.

Senior management emphasis that the overall objectives of introducing TQM are

- To ensure a mindset of excellence and continuous improvement within every employee, implemented through strong leadership at every organizational level
- To develop a management culture which treats customers and employees equally and sets their satisfaction as the highest organizational objective
- To provide a process for employee participation in identifying problems and implementing solutions to enhance personal and organizational performance

4.4 Commitment of upper Management

It was clear that upper management were committed to making the changes. Mr. Ali I. Naimi (the previous Company President and CEO, currently, the Minister of Petroleum and Minerals) stated that, *"Through training, development and such programs as Total Quality Management, Saudi Aramco is in an excellent position as we enter the New Year".* (Arabian Sun. December 29,1993).

The senior Vice-President of Engineering and Operation Services, Mr. Abdullah G. Al-Ghanim, in his introductory remark on introducing TQM in the Engineering and Operation Business Line stated:

> *"Competition, whether at a local or international level, will continue to be a driving force to improve our methods and to be more cost-effective. Because of this, Engineering and Operations Services has implemented a continuous process of sustained improvement in quality performance, motivation, communication, productivity, training, customer focus, and recognition. Quality is characterized by attitudes, a culture, and an environment. The goal of this process is to increase the quality of work done in our business line by creating a quality awareness and culture within our workforce.*
>
> *In order to accomplish this, commitment is essential. It starts at the top and should prevail at all levels of management. This is very important. But it is also not that difficult to obtain, mainly due to the potential overall savings that always draw the interest of management at the top. The application of TQM can be instrumental in responding to the corporate objective of reducing the cost of capital investment, operating costs, and manpower without compromising the quality of operations….*
>
> *I feel confident that, as a team, we can meet the challenges of the future and that the implementation of the Quality Improvement Process will be instrumental to our continued success. I am committed to this process and you can count on my support as you embark on it.*

4.5 INITIAL QUALITY EFFORTS

TQM was first implemented in selected departments of the Company as part of a pilot program. Due to its initial success and leadership commitment, the program was then extended to more departments. A TQM consultant was asked by the Company to assist in establishing the TQM concept. The consultant was mainly expected to:

1. review and understand the company's structure and functions;
2. provide recommendations;
3. develop an implementation plan;
4. prepare the organization for change;
5. establish a training program (including quality improvement tools and techniques) and provide reference materials.

4.6 Creating the Vision

The next step for the Company was to create its vision. Several immediate thoughts came to mind such as customer satisfaction, excellence, efficiency, and cost effectiveness. A common vision for the organization was created. The vision was to continuously improve the Company's effectiveness to ultimately meet the demand of its external customers by creating an environment that motivates employees, involves all employees in the improvement process through teams, encourages partnering with internal customers, and with external suppliers.

Specifically, the overall objectives of introducing TQM in the Engineering and Operation Services (E&OS) were:

- To ensure a mindset of excellence and continuous improvement within every employee, implemented through strong leadership at every organizational level

- To develop a management culture which treats customers of E&OS and employees equally and sets their satisfaction as the highest organizational objective

- To provide a process for employee participation in identifying problems and implementing solutions to enhance personal and organizational performance

4.7 The Quality Improvement Program: an overview

The schematic for the quality improvement model that was adopted by the Company's Engineering and Operation Services Business Line is shown in Figure 4.1. The model consists of three phases.

- The first phase includes:
  1. Awareness/commitment development
  2. Organization Assessment
  3. Strategy development
- The second phase includes:
  1. Feedback on diagnosis
  2. Implementation
  3. Commitment
- The third phase includes:
  1. Quality system
  2. Measurement
  3. Alignment
  4. Hand-over

4.8 Developing awareness and commitment

Phase one helped the Company to understand quality management and the need for change. Going through this phase, they established a strong quality foundation from which the decision to proceed was developed and the commitment to succeed was maintained. At this stage, necessary resources were invested to find out where the company was then, and what the barriers were, and what were the opportunities for improvement. At the end of the assessment phase, management had enough information to make a knowledgeable commitment to start the journey of continuous quality improvement. Some of the tools used at this stage were:

1. Self study (books, articles, seminars)

2. Awareness presentation and material: an awareness presentation provided members of management with an overview of quality management; why they should be interested, and how to get started.

3. Site visits: Members of the management identified organizations and companies outside the Company that had implemented quality management, and arranged a visit. Organizations involved in quality management were proud of their successes and were pleased to discuss their quality improvement process with management teams.

Full awareness of the program was later introduced to all employees through half or one day sessions. The awareness program was also extended to contractors and suppliers employees. The training program is briefly discussed in the following section.

4.9 Training

Training started earlier with the initial TQM program began with the consultant. The training process took a top-down approach from manager levels to unit head and through division head level. The training was in the form of a 5-day course entitled "Quality Management Skills". The course covered the basic ideas of the quality management concept and its techniques. In early 1994, a 9-day quality improvement team facilitator course was started. The objective of this course was to develop certified quality facilitators in each department. Two (2) persons were selected carefully from each department to attend the course. The certified facilitators conducted quality awareness courses for all employees in each department. The duration of the quality awareness course varied from 2-4 hours based on the level of the employee.

Later, in 1995 (third quarter), the company's training department had been utilized to provide training in quality management. The objectives of having in-house training were to :

- Cut costs through in-house versus consultant training
- Enroll the company's training department early in QM training
- Increased future opportunities for course improvements, and,
- Development of future in-house QM courses and programs tailored to meet company needs

It was obvious that the Company had invested a lot of time and money in the TQM education programs, especially for upper management. The education programs were very effective.

4.10 Organization Assessment

Assessment of the organization in late 1993 was the first step in the journey toward quality. The objective was to help management to discover the critical areas of focus for immediate improvement efforts, identify gaps between ”where they were” and “where they should be,” and better define the cultural and attitudinal issues that are derives of or restraints to the quality process.

4.10.1 Planning the Assessment

The purpose of performing organization and customer diagnostics is to measure the attitude, perception and behavior of employees and customers. The management team were instructed to get involved by working with the consultant to ensure that the diagnostics, surveys, interviews, and process studies were designed to provide information that impacted the organization’s ability to provide quality operations and services and which could be used to further the organization’s objectives. Pre-assessment planning sessions were helpful for the organizations to find out what to ask, whom to ask, how to ask it, how to judge the answers, and how to resolve issues that were identified. Pre-assessment planning prevented problems in presenting the results; it also helped to ensure that the assessment addressed key areas of opportunity.

4.10.2 The Assessment

The base questionnaire consisted of 72 statements to which respondents indicated their level of agreement using a five points scale, ranging from “strongly disagree” to “strongly agree”. Each statement was aligned with one of the following areas:

- Communication effectiveness
- Employee empowerment
- Performance management
- Work process effectiveness

- Communication openness
- Planning and evaluation
- Quality emphasis
- Cooperation and teamwork
- Customer satisfaction
- Goal clarity

A total of 1,611 questionnaires were distributed proportionately to all three administrative areas and departments (in the Engineering and Operation Business Line). This represented 15% of the Business Line employees. Respondents ranked their department priorities, various groups' commitment to improving quality and reasons for rework, and indicated the percentage of their time spent on rework. The assessment results were used by the management team to help focus on quality improvement opportunities in all areas of the company.

4.10.3 Customer Satisfaction Questionnaire

In addition to the organization assessment, a questionnaire was developed to assess customers' attitudes, perceptions and satisfaction with departments in the Engineering and Operation Services Business Line. The questionnaires were sent to a total of 183 Division heads and above. The base questionnaire contained 36 custom-designed questions, asking the respondents to rate their level of agreement for each department on a five point scale ranging from "strongly agree" to "strongly disagree". The author developed and conducted the survey for the Vendor Inspection Division- Inspection Department, with the help of Mr. Wiley Fox from the O&IE Department. The survey is included in appendix "B" as an example of the customer satisfaction survey,

4.10.4 Interview and Focus Groups

A list of pre-designed questions was developed to generate discussion on key topics such as work processes, customers, suppliers and communication.

The interviewer/facilitator selected appropriate questions from the list to elicit discussion from the individual or focus group specifically for the purpose of identifying issues and opportunities for improvement. A total of 75 managers and above was interviewed and 375 employees participated in the focus group discussion.

4.10.5 Assessment of Core Processes

Since it is extremely beneficial to have a basic understanding of core processes, and the opportunities for improvement within those processes, departments were requested to carry an assessment of core processes. The objective of the assessment was to answer the following questions:

- What are the core processes?
- What are the major issues associated with these processes? An understanding of major process issues help management to identify and select breakthrough opportunities.

4.10.6 Result of the Assessment

The company assessment revealed that employees had concerns in many areas mainly concerning communication, empowerment, work process effectiveness, quality emphasis, teamwork, and customer satisfaction. Unfavorable responses in the above area reflected a considerable level of distress among employees with the overall work environment. This distress was system-generated and was traced back to significant gaps in perception/expectation. From the detailed analysis of the quantitative data and review of the interviews and focus groups comments, significant opportunities was identified in two main areas:

1. vertical, between supervisors and employees in the same functional groups (unit, division, department, etc.);

2. horizontally, between employees in different cross-functional groups;

These are the areas where interaction or transactions between employees occur. Executive management reviewed these concerns along with implementation strategies. The executive management established the ownership of the assessment findings and later decided to start the implementation of a quality improvement program. This program, based on team playing, provided team members with TQM techniques and tools to improve the quality of their work.

4.11 Implementation

To gain maximum benefits and momentum, the quality improvement program was implemented in two directions simultaneously, via:

1. an immediate process improvement approach or “Breakthrough improvement”, and;
2. an ongoing improvement effort or “continuous improvement”

4.11.1 Breakthrough improvement

The breakthrough improvement strategy includes identifying, selecting and taking immediate action on a significant, cross-functional work process of strategic importance at the Administrative Area level. The breakthrough improvement strategy consists of the following elements:

1. an Administrative Area workshop to identify the major process, selection of a cross-functional issue that needs immediate process improvement and nomination of an appropriate cross-functional management for the partnering workshop;

2. a partnering workshop to bring the nominated cross-functional managers together to define the scope of the improvement effort,

identify the expert-level breakthrough team and agree on the duration of their assignment to analyze and resolve the selected issue;

3. a breakthrough team, composed of expert employees on the selected cross-functional major issues, to analyze and develop a specific improvement plan leading to improvements in the operation of the selected issue.

The Administrative Area workshop is a one-and a-half-day workshop to review the quality assessment results, understand quality improvement strategy development and identify one cross-functional problem and scheduling of a partnering workshop. The workshop consists of the following modules:

1. managing change through the quality improvement process;
2. reviewing and discussing diagnostic data;
3. developing strategies for continuous improvement;
4. identifying issues and problem selection;
5. planing and scheduling for partnering.

4.11.2 Partnering Workshop

The objective of the Partnering workshop is to develop a plan of action to resolve the problem identified in the Administrative Area workshop. The Partnering workshop participants also identify an expert-level team to develop the specific process improvements and implementation plan. The workshop is delivered in one or two days and consists of the following:

1. reviewing the issue identified in the Administrative Area workshop;
2. reviewing process flow and the groups involved in the process;
3. reviewing the role of the expert-level team;
4. identifying the expert-level team;
5. developing questions to be answered by the expert-level team;

6. developing an initial charter for the expert-level team;
7. developing an initial plan for the expert-level team.

4.11.3 Continuous improvement

The quality improvement process actively involves every department, division, work unit and individual employees in the improvement of their work processes and customer satisfaction. The strategy to introduce and implement the quality improvement process (QIP) throughout the organization is accomplished by the following three actions:

1. Quality improvement process facilitators: These provide human resources to assist in planning, training and implementation of the QIP.

2. Quality improvement implementation workshop: This is the provision of just-in-time training to ensure that process improvement is planned and implemented throughout the organization.

3. Creating and sustaining an environment for change: This involves a two-day management-and supervisory-level course that teaches management skills necessary to develop personal and departmental action plans to support the quality improvement process.

4.12 Integration and alignment

The third and final phase was integrating the quality improvement process throughout the Business Line and establishing the measurement and alignment mechanisms that would ensure the process dynamics at all times. Figure (4.2) shows the adopted organization for continuous improvement. It also indicates the alignment of objectives. The detailed activities are defined below.

4.12.1 Steering Committee: Quality councils

By mid 1995, three committees had been formed at three different levels. These three committees replaced the former steering committee. This time, these committees were called councils. The objectives and the tasks of these councils differ from one to another. The Business Line Quality Council (BLQC) is the highest in the hierarchy. The senior Vice-president chairs it. The BLQC is responsible for setting up the Business Line quality strategy and long-term plans

The Second Council is the Administrative Area Quality Council (AAQC) which is chaired by the Vice President. There are five different AAQCs; one for each administrative area. This council consists of the department managers as members. The task of this council is to set up the objectives and the Administrative Area implementation action plans. It also reviews the progress and the difficulties in quality management implementation. Furthermore, it coordinates implementation efforts among the different departments within the administrative area.

The third council is the Department Quality Council (DQC) which is chaired by the department manager and includes the division heads and the quality coordinator as members. The author, as mentioned before, was assigned the responsibility of the inspection department quality coordinator. The organization chart for the inspection department is shown in Figure (4.3) as an example for the other departments. The quality coordinator reports directly to the department manager, as shown in the chart. The task of the department quality council is explained in the following section.

4.12.2 Department Quality Council

Each department has a departmental quality council that comprises the manager and the supervisors in that department. The DQC oversees the

quality activities in their areas of responsibility and ensures those managers and supervisors have an active part in guiding the TQM process.

Department managers chair the departmental quality councils. The DQC is responsible for quality improvement activities and the implementation of approved projects from their departmental quality improvement teams. The DQC chairmen have monetary authority equal to their authority as department head or as delegated. The task of the departmental quality council is to ensure the mindset and create the culture of quality.

4.12.2.1 Ensuring the mindset

Every employee is exposed to the quality process to understand its background, rationale, and framework. In addition, such exposure orients employees to the process improvement methodology. Since this is to be on-the job experience, employees see the new process improvement methodology applied to a real issue in the department. In this way, every employee will have an opportunity to use the tools of the quality process while learning the process.

4.12.2.2 Creating the culture

Managers and supervisors lead the way in the quality process. They are supportive of teams in their own department and of cross-functional teams by:

- Providing all employees with the training needed to acquire the skills to perform efficiently as a team member
- Providing time for team activities
- Supplying the needed meeting space and materials for effective team performance
- Identifying problems or areas of concern for teams to investigate
- Evaluating each proposed team project

- Giving consideration to benefits, costs, cost savings, and the projected time frame for completion
- Providing feedback to the team in a timely manner
- Reviewing the results of all team projects
- Reporting team progress to upper management
- Recognizing team accomplishments

Managers and supervisors are participate in the overall quality improvement process by:

1) replying promptly to team requests and, when necessary, providing detailed explanations for denied requests, including asking for further investigation for an alternate solution;

2) expediting the implementation of team solutions and suggestions;

3) periodically attending team meetings to observe the process and to reinforce their visibility and support;

4) participating in setting long-term objectives for the quality effort.

4.13 Work Improvement Initiation

1) When employees identify an issue they cannot resolve by themselves, a work improvement notification (WIN) form should be filled. The form is shown in Figure 4.4. Figure 4.5 shows the process of the employee suggestion system.

2) If a solution is proposed, and it can be implemented by the employee and their supervisor without further approval, that is noted on the form, along with the implementation date. If there is no solution, or the employee and supervisor alone cannot implement the solution, the WIN form is reviewed by the DQC.

3) The WIN is sent to the departmental coordinator/facilitator.

4) The coordinator/facilitator assigns a WIN tracking number and completes a log entry for the WIN.

Work Improvement Notification Form (WIN)

To: **Division Quality Coordinator** WIN Number _____
cc: Department Quality Coordinator (Assigned by Dept. QC)

Instructions:
If you become aware of an improvement opportunity, use this checklist to analyze it and start the action needed to get it fixed, improved, or prevented. If you feel you need assistance with this form, get help from your supervisor.

What is the existing situation?

Is it: a problem that needs fixing? ☐

an improvement opportunity? ☐

a situation that needs prevention? ☐

Where does it occur?

How often does it occur?

Is there anything else happening at the same time that might be associated with this situation?

What is the impact of the situation on:

Quality?

Customer satisfaction?

What is this situation costing us (e.g., time, money, people, etc.)?

Who have you discussed this situation with?
Customers (internal or external):

Technical experts:

Supervisor:

Other:

What do you believe are the root causes of this situation?

What is your solution?

Can you implement this solution? Yes ☐ No ☐
Remarks:

In your opinion, should this be referred to a QIT? Yes ☐ No ☐
Remarks:

Will you be a leader ☐ member if the team is created? Yes ☐ No ☐

Your Name _____ Dept. / Div._____

Signature_____ Date_____

Supervisor's Name_____ Dept. / Div._____

Signature_____ Date_____

5) The coordinator/facilitator completes the acknowledgment memo and sends it to the originator. Typically, the acknowledgment is sent within two days of receipt.

4.13.1 Work Improvement Notification Review

There are two practices for discussing the TQM issue. Some departments have monthly or biweekly (every two weeks) meetings to discuss the quality improvement issue. Other department devote a portion of every regular weekly departmental meeting to discuss TQM issues. The intent of the second practice is not to separate the DQC meeting from the normal management meeting. If there are WINs that have been logged, they are discussed and reviewed by the DQC. The DQC evaluates each WIN submitted on the basis of:

- Seriousness
- Urgency
- Solvability
- Impact on employees
- Impact on customers
- Impact on operations/costs

There are three alternatives for each WIN:

1) Implement the proposal.
2) Form a team, either departmental or cross-functional team to address the issue.
3) Deny/delay the proposal.

4.13.2 Implementing a Work Improvement Notification Proposal

If the WIN proposes a solution that is reasonable to the DQC and there are sufficient resources within the department to implement the proposal, the DQC can decide to implement the solution immediately. The
DQC may also hand the issue over to an individual for implementation. In either case, the person who submitted the WIN is notified. The coordinator/facilitator logs the DQC's disposition of that item on the logbook.

4.13.3 Forming a Team Based on a Work Improvement Notification

If the WIN does not propose a solution, or the DQC decides that further investigation is needed, the DQC may decide to form a team. The DQC may also hand the item off to an individual for further investigation. Recognizing that teams are resource-intensive, the DQC uses the following criteria to determine whether forming a team is appropriate or not:

- Can the problem or opportunity benefit from concentrated attention by a group of people?
- Is/Are the cause or causes of the problem unknown or uncertain?
- Is the solution unclear?
- Do functional or other interests impede the selection of the best course of action?
- Is consensus necessary for organizational support or effective implementation?

Depending on who is involved in the process under consideration or the nature of the problem, the DQC decides whether to form a departmental quality improvement team (QIT) or a cross-functional team (CFT). The DQC identifies the sponsor and charters the team. The charter provides information to the team about what it is supposed to work on and the boundaries within which it is supposed to operate. The coordinator/facilitator notifies the person who submitted the WIN of the disposition of the item and logs the disposition in the

logbook. If a team has been formed, the coordinator/facilitator schedules the first team meeting.

4.13.4 Denying a Work Improvement Notification Item

If the DQC decides that the WIN item does not merit further consideration, the DQC may reject the proposed improvement. The DQC may also delay work on the item, based on workload or resource constraints. The coordinator/ facilitator notifies the person who submitted the WIN of the disposition of the item and logs the disposition in the logbook. Upon receipt of a rejection notification, the person who submitted the item has the opportunity to appeal the decision. He should notify his supervisor and the facilitator that he wishes to appeal. If the person wishes to appeal, that person will be invited to the next DQC meeting and given an opportunity to state his case. The DQC can then choose to change its initial decision or not. This decision will be final.

4.13.5 Review of Team Results

Upon completion of the teamwork, the team will make its presentation to the DQC and the sponsor (if the sponsor is not a member of the DQC). After hearing the proposed solution and implementation plan, the DQC/sponsor has three choices

- Reject the solution.
- Request further work by the team.
- Accept the solution as presented.

If the solution is rejected or further work is requested, the team has the opportunity to rework whatever portion of their solution has been rejected and present to the DQC/sponsor again. When the solution is accepted, the team completes the final project summary form (FPS) after implementation and submits it to the coordinator/facilitator. The coordinator/facilitator logs the disposition in the logbook. If the person who submitted the WIN was not a

member of the team, the coordinator/facilitator notifies the person who submitted the WIN of the disposition of that item. Appendix B contains examples of the WIN that were suggested in 1997.

4.13.6 Tracking Progress

The work of the quality improvement teams is tracked informally and formally. The nature of the informal tracking is basically that the teams continually monitor their progress in both what they are accomplishing and how well they are working together. If the teams are having problems that they and the coordinator/facilitator cannot solve by themselves, the problem is brought to the attention of the DQC for discussion and/or resolution.

In the formal tracking, the coordinator/facilitators have primary responsibility for monitoring the overall progress of the TQM initiative in their departments. The coordinator/facilitator presents to the DQC on a regular basis, and management on a quarterly basis, with the following information.

- Number of WINs submitted
- Percentage of WINs implemented without DQC review
- Percentage of WINs approved by the DQC
- Percentage of WINs which lead to teams
- Percentage of WINs which are assigned to individuals
- Ratio of QITs to CFTs
- Percentage of WINs which are denied/delayed
- Number of active teams
- Number of solutions presented
- Percentage of solutions implemented
- Percentage of solutions sent back for rework
- Percentage of solutions rejected
- Average cycle time for teams
- Results from implementations

All of this information can be retrieved from the work improvement notification log sheet, and the final project summary.

4.13.7 Rewarding and Recognizing Individual and Team Effort

Since every department is different, one of the first tasks of the DQCs is to design a reward and recognition process for their departments. In this case, the employees of the department will be the customers. The charter statement for the task is, "We must develop a reward and recognition process for our department, for both individuals and teams, which reinforces everyone looking for opportunities for improvement and participating in their implementation." The principle here is to make the departmental reward and recognition system meet the needs of the employees in that department.

4.14 Quality Systems

Establishing the quality systems assures that the organization has the foundation, communication methods, and environment to sustain the change process and help institutionalize it. The suggested department quality system consists of quality awareness, cost of quality analysis, corrective actions, goal setting, measurements and recognition mechanisms. The author coordinated the effort of developing the quality system for the inspection department. ISO 9002 was used as a guideline. Appendix “C” shows the table of contents of the quality manual, which was developed during the author’s assignment.

4.15 Impact of TQM

According to the interviewed supervisors, employee levels of satisfaction and productivity have increased due to the reward and recognition program that is part of the TQM implementation effort. Rewards are simple and inexpensive but yet very meaningful to employees. The reward distribution ceremony is held quarterly. Employees who are rewarded for their performance or contribution usually try to maintain high standards. It has also been noticed that

employees have started to approach their management with creative suggestions. The "Let it go" attitude which is very common in large organizations has gradually been replaced with "Let us do things better". The major change here is "us" versus "it". Those who have been interviewed stressed the positive impact of TQM implementation on employees by referring to the statistics that indicate fewer sick leave applications, and late morning arrivals.

4.16 Obstacles associated with TQM Implementation

The company's quality improvement has proved to be successful in setting the foundation for continuous performance improvement throughout the organization. The quality improvement program provided the organization with the knowledge and tools necessary to:

1. manage the change;
2. identify opportunities for improvement;
3. ensure continuos quality improvement;
4. improve performance levels.

The success of the implementation can be attributed to the unlimited commitment and support of upper management.

After four years of implementation, mainly on quality improvement teams (QIT's), thirty percent of the processes to be improved have been completed. However, results have been difficult to quantify. Informal in-house assessment during the second quarter of 1995, revealed the following (Mubaiyedh 1997):

1. The TQM concept has been understood as a set of tools and techniques rather than a culture.

2. TQM is only accomplished through teamwork.

3. The quality improvement program has been separated from the company's strategic business plan. Neither overall action plans, nor detailed action plans with accountability have been drawn up.

4. Awareness of the company's vision and objectives has not extended much beyond the management level. Employees perceive committed executive management and disillusioned middle management.

5. TQM Training has been far ahead of the number of QIT's involved. Some trained employees had to wait for more than a year before being involved in any QIT.

In addition to the above, the company has established the quality improvement (TQM) program without any previous formal or informal quality systems or any kind of quality assurance procedures.

When TQM was introduced department managers hoped or expected to:

1. remove the boundaries between departments;
2. break functional hierarchies;
3. improve productivity; and,
4. better meet customer needs.

The positive impact of TQM implementation was not the case with all employees. Some employees were not informed for some personal reasons. Also, some of them were skeptical about the whole issue of TQM and it was difficult to convince them about management commitment towards TQM. In fact, some of the employees felt that the excitement surrounding TQM was just because it was a new idea for trial that would gradually vanish. The Company has previously witnessed many concepts and slogans that have lost their thrust over time. However, this time, management is aware of the importance of maintaining the necessary thrust

for TQM implementation. Management commitment towards TQM has been continuously demonstrated and emphasized to employees in different forms. Among the other difficulties in implementing TQM is the struggle of some of the supervisors in maintaining their power. Some of the supervisors and even higher levels feel that TQM takes their power away, even though they cannot speak up against TQM implementation because of the support of top management. This can be observed through their jokes and informal conversations.

Several supervisors have indicated that they believe that after a promising start, the initial TQM initiative has become ineffective. Employees and managers have become disillusioned and frustrated when their department reached dead ends in some of their QIT's, had insignificant benefits or slow progress on other QIT's, while the improved processes of completed QIT's were difficult to implement or needed more time to begin. Some completed QIT's have even been shelved for many reasons.

The cultural differences among the employees who come from different countries and backgrounds do not create any problem in TQM implementation. However, one of the expatriates who was interviewed mentioned that some of the other expatriates feel that TQM might be a threat to them. They have the impression that improving efficiency and reducing cost might lead to their being replaced by less well paid employees.

Among the other difficulties in TQM implementation is that some of the company policies and regulations conflict with the spirit of TQM. Hopefully, this will vanish soon as the company adopts TQM as a corporate strategy. The progress in TQM implementation in the Engineering and Project Management Business Line is faster and stronger than any other business lines in the company, which could create future problems.

One of the remaining challenges in TQM implementation is measuring the effectiveness of TQM. Many advantages and benefits of TQM implementation are intangible, which makes any attempt to assess the positive impact difficult, if not impossible. According to some of the interviewees, a periodic survey using standardized questionnaires can help to overcome this problem. However, this approach is not followed in Saudi Aramco. In the meantime, a procedure for measuring quality improvement is under preparation.