IE407 Total Quality Management
Lecture 21

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Reminder: SA grade

- SA grade will be determined by the attendance system
- More than 8 absents will automatically lead to SA grade
- Please be careful about your attendance in lectures

Besterfield Chapter 5: Continuous Process Improvement

Problem-Solving Method

Systematic approach to solving problems
(also called scientific method)

Seven Phases of Problem-Solving Method

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

Phase 1: Identify the Opportunity

- Objective of phase 1 is to identify and prioritize opportunities for improvement
  - Identify the problem
  - Form the team, if already there is none
  - Define scope
- Problem identification
  - Look for the problems that have the greatest potential for improvement
    - Pareto analysis, Proposals from key insiders, Proposals from suggestion schemes, Field study of users' needs
      (see more on p. 129-130)
  - Criteria to qualify as a problem
    - Performance deviates from standard, extraordinary, unknown cause

Phase 1: Identify the Opportunity - 2

- Problem identification (continued)
  - Quality council (or work group) must prioritize problems
    - Importance of problem, contribution to the attainment of goals, use of objective measures
- Form a team
  - If natural workgroup is relevant then work group is the team
  - If the problem is multifunctional in nature, quality council should select a multifunctional team with goals and milestones
- Define scope
  - A problem well stated is half solved. A good problem statement should be the starting point (read example, p. 131)
  - Project charter should include authority, objectives and scope, composition, direction and control, and general approach, method, resource etc.

Phase 2: Analyze the Current Process

- Objective of phase 2 is to understand the process and how it is currently performed
  - Define process boundaries
  - Outputs and customers
  - Inputs and suppliers
  - Process flow
- Define process boundaries
  - Develop a flow diagram for graphically depicting the process
  - Define target performance measures. Establish new measure(s) if necessary
    - There is no improvement without measures

Phase 2: Analyze the Current Process - 2

- Define process boundaries (continued)
  - Collect relevant data and information that is available
    - Input from internal and external customers should be sought
    - A number of data collection methods are available
- Identify customers and their requirements and expectations together with a review of procedures currently being used (read specific items on p. 132)
  - Use of cause-and-effect diagram is particularly effective in this phase. The object is to seek causes, not solutions
  - Simulation models may be used to identify causes
  - Voting may be used to determine the root cause
    - Verification of root cause is necessary (Read more p. 133)

Phase 3: Develop the Optimal Solution(s)

- Objective of phase 3 is to establish potential and feasible solutions and recommending the best solution to improve the process
- Creativity plays a major role in developing the optimal solutions. Three types of creativity
  - Create a new process
  - Combine different processes
  - Modify the existing process
- Brainstorming can be used to arrive at optimal solutions

Phase 3: Develop the Optimal Solution(s)

- Usually a large number of simple problems are responsible for inefficiency and ineffectiveness
  - Creative solution of such problems lead to improvements in quality and morale
- Typical areas for possible change are
  - The number and length of delays, bottlenecks, equipment, timing and number of inspections, rework, cycle time, etc.
  - Excellent candidates include reducing cycle times, lowering inventory levels, and locating non-value-added activities
    - These have many hidden costs that will be saved
- Evaluation and testing of solutions is done to determine solutions that have greatest potential for success

Phase 4: Implement Changes

- The objective of phase 4 is preparing implementation plan, obtaining approval, and implementing process improvement
  - A written implementation plan report is needed to obtain approval
  - Upon approval by the quality council, it is desirable to take the affected departments in confidence and obtain their consent
    - A presentation is appropriate. It provides opportunity for feedback
- The plan should include how implementation will be monitored
  - Run charts, control charts, Pareto diagrams, histograms, check sheets, and questionnaires can be used for monitoring

Phase 4: Implement Changes – 2

- Combination map helps formulate an action plan to help measure the results of an improvement
  - See Table 5-1 on page 135

Phase 5: Study the Results

- Phase 5 has the objective of monitoring and evaluating the change by tracking and studying the effectiveness of the improvement efforts
  - This is done through data collection and review of progress
  - Meaningful change should be institutionalized and measurement and evaluation on ongoing basis are made to ensure continuous improvement
- Periodic meeting to evaluate the results will indicate if further fine-tuning is required
  - In these meeting notice will be taken of any unforeseen problems which may sometime arise on implementation of change

Phase 6: Standardize the Solution

- Standardizing the solution prevents "backsliding"
- Once the team is satisfied with the change, it must be institutionalized by
  - Positive control of the process
    - Positrol (positive control) assures control of important variables
    - See Table 5-2 on page 136 for an example
  - Process certification
    - In addition the following quality peripherals must also be certified: the system, environment, and supervision
  - Operator certification
    - Cross-training to ensure next-customer knowledge and job-rotation

Phase 7: Plan for the Future

- Phase 7 has the objective of achieving improved levels of process performance
  - The improvement process must continue
- Remember that TQM addresses the quality of management as well as management of quality
- Quality council (or workgroup) should conduct regularly scheduled reviews of progress and identify the areas for future improvement
  - Changes in customer requirements should also be tracked
  - Lessons learned must be transferred to appropriate activities within the organization
    - Problem solving, communications, and group dynamics

References

- Besterfield, Dale H. and others. 2019. *Total Quality Management,* 5th edition. Pearson India