# But It Takes Too Long . . .

A Juran Institute Research Monograph

John F. Early
Senior Vice President, Research and
Development

Top executives often seek to convey a sense of urgency around efforts to redirect their organizations toward a customer focus. But then they become frustrated because they discover, "It takes too long." Even among those who earnestly believe that managing quality is the key to success in the market, there is often a gnawing feeling that things are moving too slowly. Executive leaders are usually results-oriented, with a bias for action. Part of their job is to keep the organization focused on the ultimate goals and moving expeditiously toward them.

Those of us who measure our experience attempting to manage quality in decades rather than months have heard it all before. There has always been a natural impatience for results that serve the business imperatives. But in the last couple of years there has been a change in the tone of the dialogue. Total Quality Management (TQM) became a slogan and a buzz word. Since TQM has entered the lexicon of hordes of pundits and would-be experts, it has become increasingly difficult to sort the solipsistic ruminating from the facts. This paper looks at one set of the facts.

We can start with understanding what Total Quality Management is **not**. It is not

- a set of syllogistic propositions

- a set of specific tools or techniques

- a philosophy

- a program

Total Quality Management **is**:

- how organizations delight customers, and as important by-products:

    - reduce costs
    - increase revenue
    - empower employees

- a growing **and changing** body of learning about the techniques that work to delight customers, reduce costs, improve revenue, and empower employees

It should not be surprising that changing the whole culture of an organization to customer focus can take time. We are dealing here with the majestic, deliberate biological and psychological reactions of humanity to change. But this elapsed time need not be measured in glacial epochs. We have discovered three important facts:

1

(1)     Some organizations are indeed bogged down in their efforts.

(2)     Others, however, have achieved stunning successes.

(3)     A few, specifically targeted interventions can greatly accelerate the results of those who are not making adequate progress.

This paper addresses only one of several dimensions along which organizations can accelerate their quality gains.  We will examine the time required for cross-functional teams to complete quality improvement projects.  These teams are often part of the first major exposure that an organization has to managing quality, and they continue to be an important ingredient for success.  As a result, the effectiveness of these teams is crucial.


## The Study

Juran Institute has worked with hundreds of organizations to revitalize and redirect their quality management efforts.  In many cases, we have been asked by the organization's executive leadership to help them increase the speed and efficiency of their quality improvement projects.  As a result of these requests, we have developed a data base from which a number of broadly useful generalizations can be identified.

A set of 20 quality improvement projects from 10 organizations in 5 different industries (health care, petroleum exploration and production, chemical manufacturing, restaurant food, and metal fabrication) were analyzed in great detail.  The projects had all been initiated during the first two years of the organization's formal quality improvement efforts.  Most of the projects had been identified by the organization's executives as "taking too long."  We have confined this analysis to those that required longer than one year.

The study team developed a list of typical quality improvement team difficulties and defined each.  Then the history of each of the studied projects was reviewed for evidence on one or more of these problems.  The list of problems was modified as the review progressed.

Next, we calculated the time lost as the result of identified difficulties.  In most cases, that calculation was fairly straight forward because the difficulty usually involved the project team spending time on activities that were unnecessary--either because they should not have been undertaken a task in the first place or because the task was the consequence of failures earlier in the project.

Finally, we tabulated the data in a number of different ways and identified the primary lessons learned.  Those results are described below.  The description begins with an overview of the general lessons and moves on to some specific suggestions for achieving greater speed in solving chronic quality problems.

2

## How Much Time Can Be Saved?

The projects in our study required an average of 68.1 weeks to complete. An astonishing 62.8% of that time could have been avoided. (See Figure 1.)

## Quality Improvement Project Time

Useful time (37.18%)
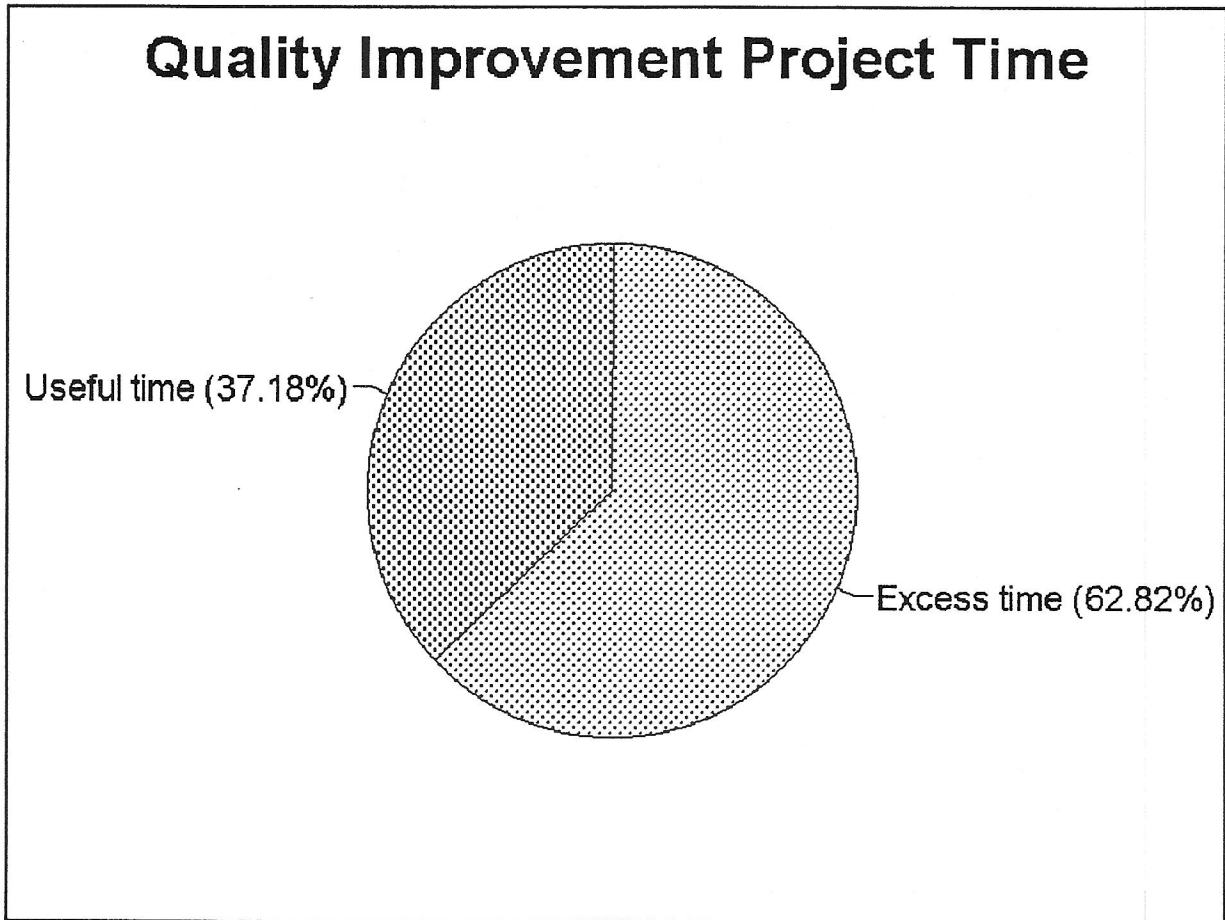
Excess time (62.82%)

Figure 1: Excess Time

A little over half of the avoidable time could have been saved if the managers who chartered the project had provided more effective preparation and support. The remainder of the unnecessary time could have been eliminated had the teams used known best practices in working on their projects. (See Figure 2.) We will look at the specific opportunities in each of these categories shortly.

# Quality Improvement Project Time

Excess: Team (24.17%)
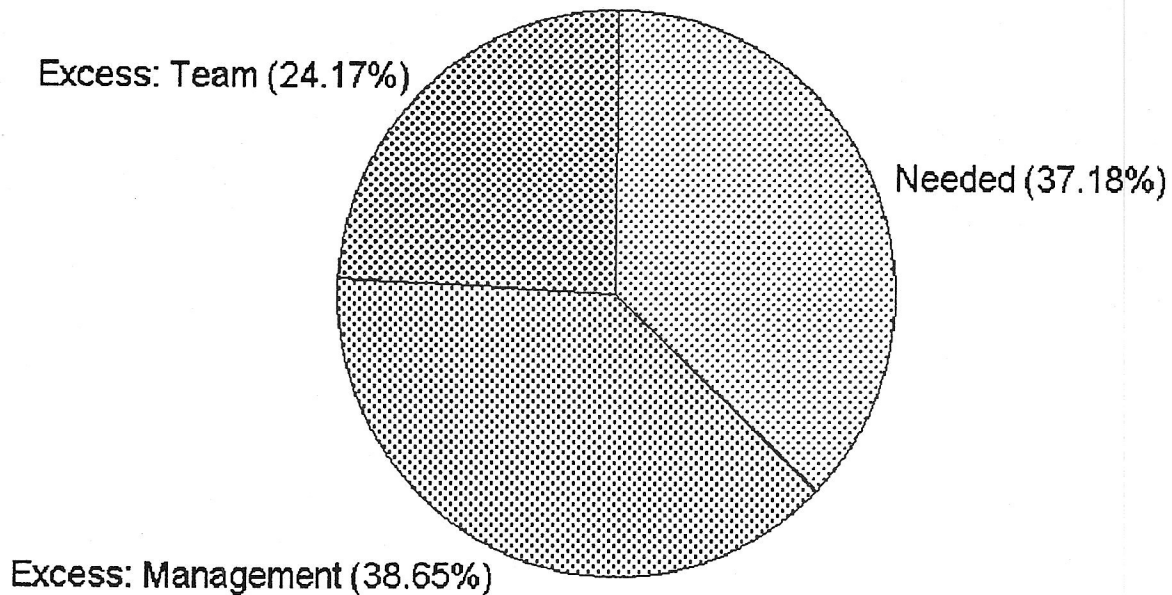
Needed (37.18%)

Excess: Management (38.65%)

Figure 2:  Major Sources of Excess Time

These results do not suggest that either the executives or the teams should be **blamed** for the slow results.  After all, they were learning how to eliminate chronic quality problems that had plagued them unabated for decades.  The results do point out that even relatively complex quality improvement projects are not inherently long.  The proper preparation, support, and methods have yielded significant results in modest lengths of time.

## Where Can Time Be Saved?

Effective quality improvement is the application of the scientific method to the elimination of poor quality.  While the details may vary, effective quality improvement in a cross-functional setting has a structure similar to that in Figure 3.
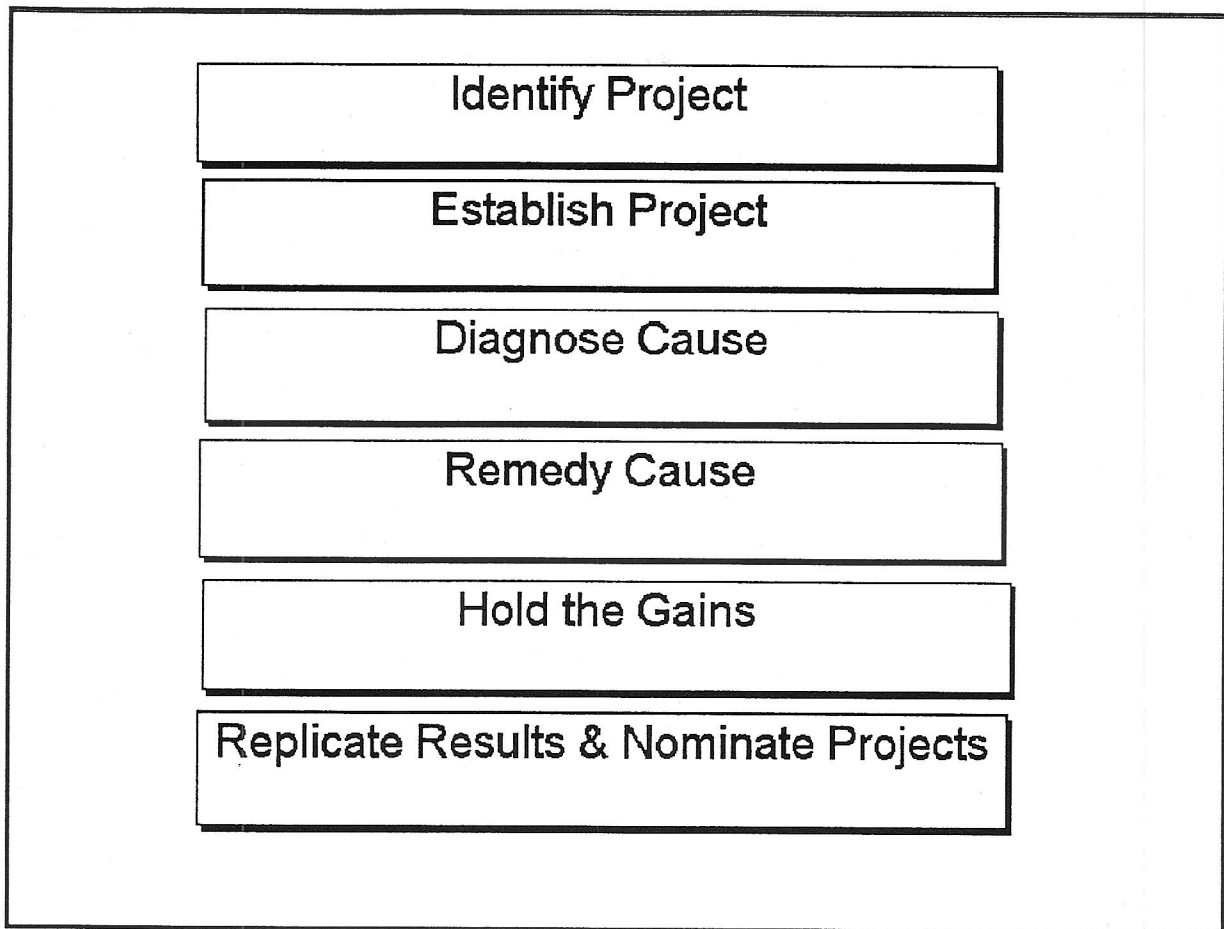
4

**Figure 3: Quality Improvement Process**

Identify Project:       One of the most important opportunities for improvement is targeted for solution.

Establish Project:       The mission for the project is defined clearly and an appropriate team is given the responsibility and authority to solve the problem.

Diagnose Cause:       The root cause (or causes) of the problem are identified and proved.

Remedy Cause:       A remedy that will eliminate or inhibit the cause is designed and implemented.

Hold the Gains:       Appropriate quality controls and operating procedures ensure that the beneficial results continue indefinitely.

Replicate Results &

5

Nominate Projects:    The remedy for one problem should be applied directly to other similar problems.  During the project, other related problems may be identified for later projects.

Concerns about the time required to complete projects usually relate to the elapsed time from when the project has been established until the remedy has been implemented and operational controls are beginning to hold the gains.  This concern would seem to focus the inquiry on the third and fourth steps in the process.  Many delays during those steps, however, can be traced to failings during the identification and establishment of the projects.  As a result, each opportunity for accelerating the project was classified by the step in the process during which the opportunity for faster progress occurred, which was not always the same step in which the impact was felt.  For example, the allocation of time to the project and the provision for training were assigned to the Establish Project step because that is when those decisions and resource allocations should be made.  Delays from jumping to a remedy were classified in the Diagnose Remedy step because that is where the failure to identify the root cause occurred, even though the failure resulted in wasted time implementing an inappropriate remedy.

The time-saving opportunities are summarized by the first four steps in the quality improvement process in Figure 4.
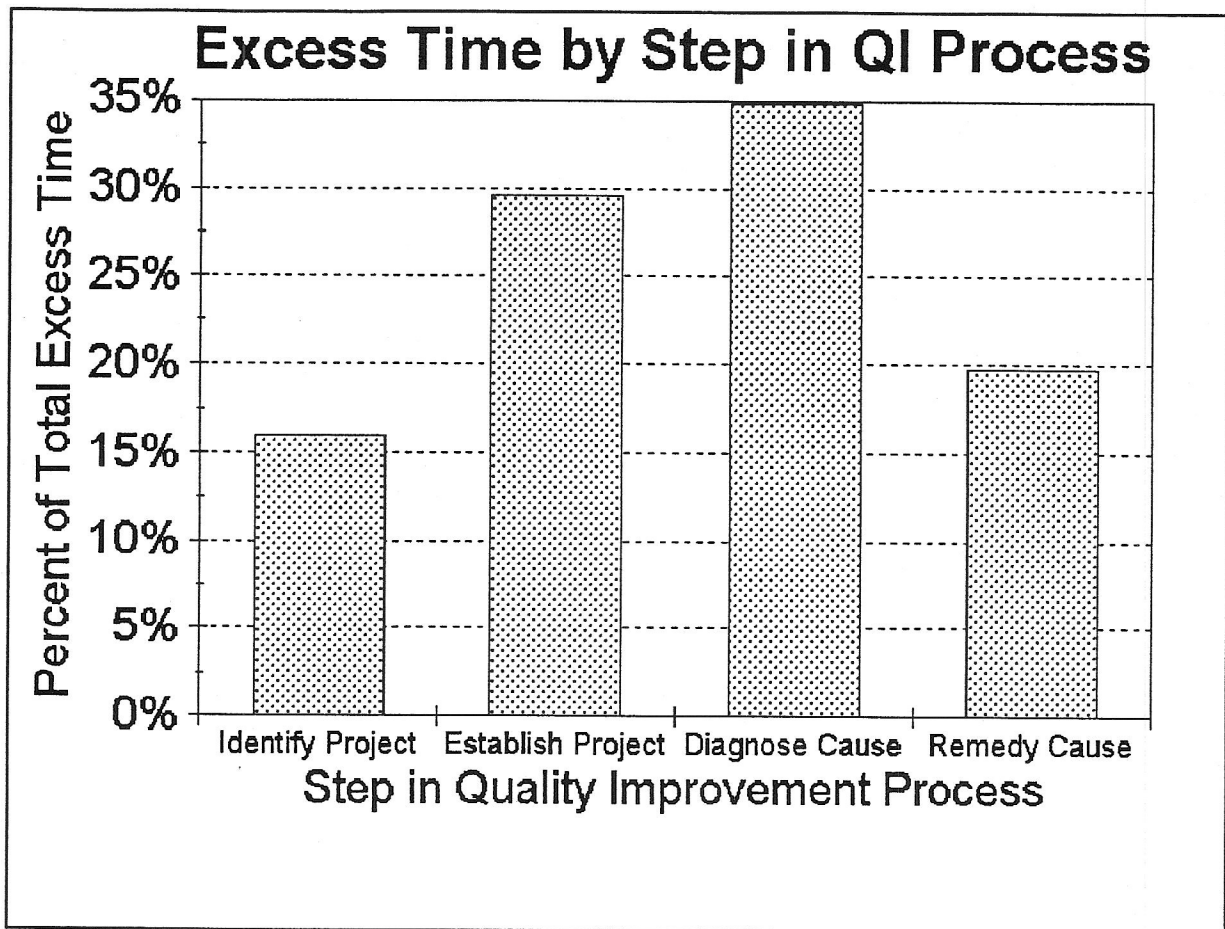
6

Figure 4:  Excess Time by Step in Quality Improvement Process

Since the act of diagnosing a root cause is usually the most unfamiliar to a team, most executives suspected that the diagnosis step would be the overwhelming source of project delay.  Many were also prepared to believe that they could make some major improvements in how projects were identified and established.  But the significant delays in developing and implementing the remedy surprised most.

This surprising result led one of the studied organizations to review its history with other types of projects.  These pre-quality-improvement projects had been largely set up to implement some procedure without any effort to diagnose root causes or discover customer needs.  To their surprise, they found out that these pre-quality projects had also taken extremely long times.  These delays, in turn, resulted from the limited organizational expertise in basic planning techniques:  identifying tasks to be performed, scheduling elapsed time and resources, monitoring progress against the plan, and so forth.  This same lack of expertise carried over to their quality improvement projects.  As a result, they began providing their team leaders and facilitators with additional training in basic project management techniques.

## The Top Time Wasters

The following table lists all the factors that were identified as responsible for at least some of the excessive project time.

| Letter Code | Excess Time Category |
|:---:|:---|
| A | Very limited time dedicated to the project |
| B | Delay by executives in confronting resistance |
| C | No pre-existing measure |
| D | Vague, debatable mission |
| E | Not sticking with the Vital Few |
| F | Too much flow diagramming |
| G | Basic training on team time |
| H | Jumping to remedy prematurely |
| I | Poor implementation plans |
| J | Poor planning for data collection |
| K | Quality Council required unnecessary work |
| L | Team refused to believe existing data |
| M | Project inherently complex |
| N | Team refused to believe collected data |
| O | Project too large |
| P | Team spent too much time refining root cause |
| Q | Down time waiting for data tabulation |
| R | Failure to use Pareto Analysis |
| S | Unusually poor team dynamics |

## Average Time Lost per Project
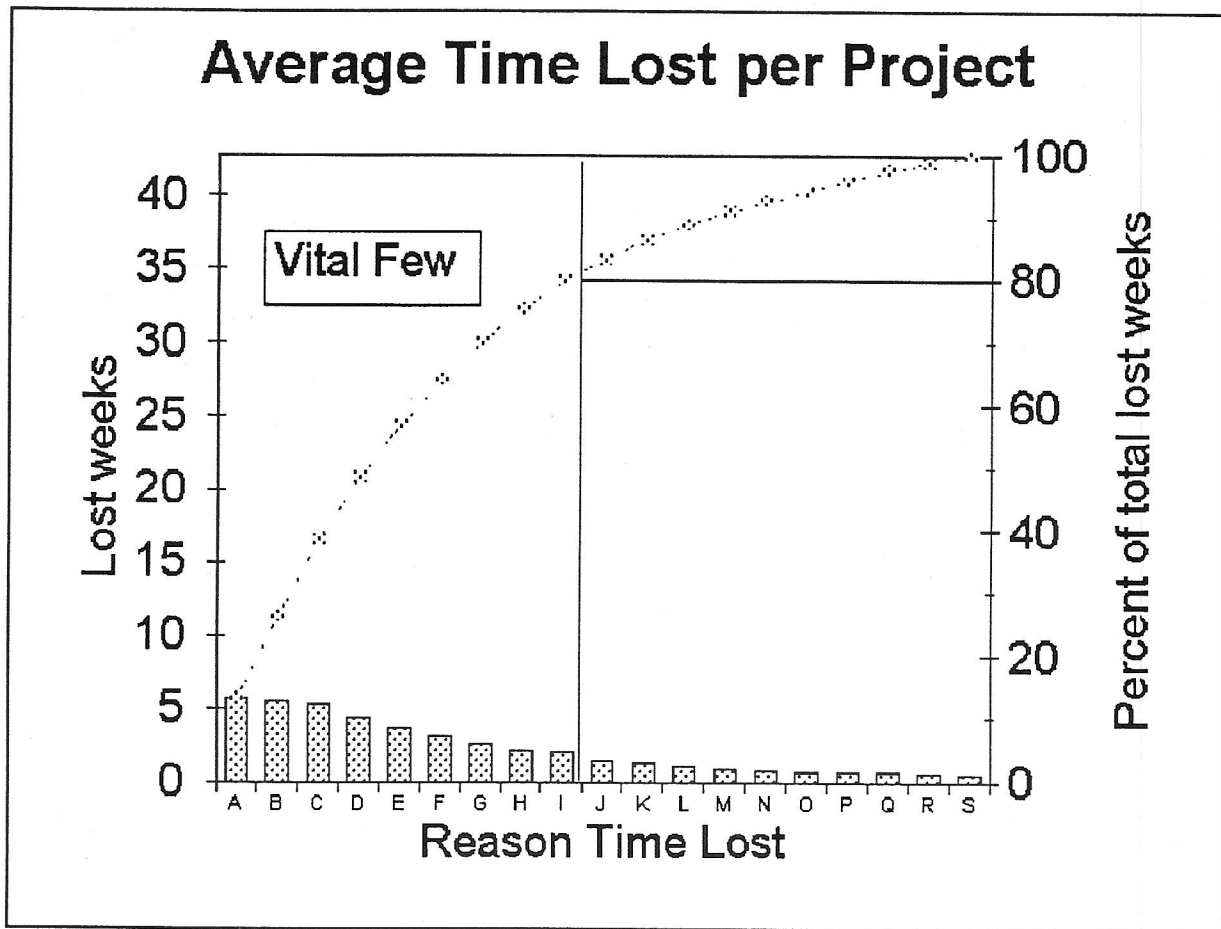


**Figure 5:** Average Lost Time by Reason

Figure 5 is a Pareto Diagram for these factors that, on average, wasted the most time on the projects that were studied. Each of the top nine factors is described in detail below, along with some examples.

**Very Limited Time Dedicated to the Project**

It should be obvious that if team members spend more time each week working on their project, they will complete their project faster. If the project is important, spend more time on it each week. For the class of cross-functional projects that are the topic of this study, if the individuals assigned to the team cannot devote approximately 4 hours a week to the project (including both team meetings and between-meeting assignments), then the project is probably not important enough to do in the first place.

The time lost for this category represents the extra total elapsed time required because the team members spent fewer than four hours per week on their project. The projects could have been completed even faster had more than four hours per week been set aside for them.

9

## Delay by Executives in Confronting Resistance

Remedies to chronic quality problems often have profound impacts on the people in the organization. These impacts can create resistance to the proposed changes, no matter how beneficial they may be. An effective quality improvement team will take a number of steps in its design of the remedy that can help avoid this resistance. Even when the team does all it can to deal with the possible resistance, there will be times that the executive leadership must take action to deal with this resistance. In the cases studied, the executives eventually realized that they needed to address the problem. Unfortunately, considerable time and organization energy were wasted in the process.

In one case, the team asked the quality council to remind the affected line managers that reassignment of duties among individuals was a legitimate outcome of the project. The quality council simply enjoined the team to work more closely with the affected managers. In the end, it became obvious that without the explicit support of top management, middle managers were able to impede progress by simply refusing to discuss any reassignments or restructuring because they saw that as beyond the authority of the team.

In a similar case, the executive for one function in the company actively refused to permit some realignment within his own function as part of the remedy. His peers and the CEO let him obstruct progress for weeks by simply declining to discuss the matter.

## No Pre-existing Measure

Many projects are launched without any data to demonstrate their magnitude. As a result, the project team must begin by developing these measures. "If you can't measure it, you certainly can't improve it." Without measurement you know neither the magnitude of the problem when you began, nor its magnitude when you finished.

The absence of a measure for the problem does not automatically mean that the project is a poor one, but it does mean that the team's first order of business is to develop a measure of the problem. As organizations mature in the management of quality, they develop more appropriate quality measures as a matter of routine management. As a result, later projects can be identified and chartered using reliable data on the magnitude of the problem, and the teams can start analyzing the symptoms of their problem immediately, without collecting new data..

In addition to causing delay, the absence of adequate data for many projects results in another type of waste: projects that must be abandoned because the imagined problem is trivial or nonexistent. One corporate office established a project to "eliminate all the cases in which new technical and professional staff did not have their computers installed during their first week on

10

the job." A little data collection revealed that there had been only one case which had taken more than three days. The project was scrapped.

A hospital set up a project to "reduce patient dissatisfaction with response time to the call button." There were but two cases in the previous year of patient complaints on that point and no evidence of that as a problem from the patient satisfaction survey. In the end, that project too was dropped.

## Vague, Debatable Mission

If the mission assigned to the team is vague, has several possible meanings, or is not demonstrated to be significant, teams will waste a lot of time. Team meetings can dissolve into interminable debates over the meaning of the mission. Or, even if the team thinks it understands the mission, it can waste time pursuing one aspect of a general problem when another aspect was the intent of those chartering the project.

Some typical examples of poor mission statements include:

- "Improve timeliness of . . ." Does it mean reduce the elapsed cycle time? The total number of staff hours consumed? The total amount of time on task?

- "Reduce paperwork. . ." What paper work? The amount of paper consumed? The amount of time spent completing data requests? Something else?

- "Improve communication . . ." Between what people or organizations? On what topic? What is the evidence of poor communication? How will it be measured?

## Not Sticking With the Vital Few

One important key to effective quality improvement is identification and elimination of the vital few causes of the problem. When a team becomes distracted with the interesting but minor parts of the problem, it takes far longer to solve the problem.

A team charged with reducing delays in delivering one of their company's most vital services had many theories about those delays. One of the theories was that errors in the customer-service data base created delays in scheduling, led to providing the wrong service, or caused the service representative to spend time to research the missing information. This theory was widely believed by the team members and was the first one tested. Errors in the data base turned out to be minuscule and almost never of the kind that would cause service delays. Nevertheless, the team would not let go of that theory. Every time new data were collected to test other theories,

11

additional data were collected about data-base errors, always with the same finding. Even the proposed remedy had a component to audit and eliminate data-base errors. The team spent at least 8 weeks of effort continuing to chase and eliminate a source of error that had long been shown not to be a problem.


## Too Much Flow Diagramming

Flow diagrams are very useful and are an effective part of many quality improvement projects. They have, however, sometimes become an end in themselves. Teams have developed flow charts that are unnecessarily elaborate and complex for the problem they are addressing.

Early in a quality improvement project, a high-level flow diagram is often very helpful in describing the limits of the project and how the major pieces of the relevant process relate to each other. This high-level diagram can then be the basis for next steps such as collecting additional data on the symptoms of the problem, narrowing the project to the vital-few aspects, or generating the first round of theories of cause.

Too often, however, this initial diagram is elaborated in far more detail than is necessary. If the team members are reminded that they are seeking the vital few root causes and not every possible problem, then they are more likely to begin analyzing their data in light of the simpler high-level diagram. Based on that analysis, they can then identify those few steps in the process that may need more detailed flow diagrams.

One team was working to speed up the purchasing process. It spent eight weeks drawing exquisitely detailed flow diagrams. At least 80% of that time was spent diagramming work within the purchasing department itself. When the team finally collected some data on the time required for each major step in the process, they discovered that nearly two-thirds of the total time and at least 90% of the time "waiting" was spent in the approval process before the purchase request reached the purchasing department. Had the team collected their initial timing data based on a high-level flow diagram, they could have saved at least six weeks. Nothing in their more detailed diagram was needed for that data collection.


## Basic Training on Team Time

Because quality improvement teams are being asked to do something that is often new to them, they require training. Juran Institute's experience is that most new teams require at least two to three days of training and preparation for their task. In some cases, this basic training is delivered prior to the start of the project, with refresher and supplemental learning along the way. In other cases, all or most of the training is provided during the team meetings.

12

While confining training to team meeting does provide a better opportunity to apply skills directly to the project as they are learned, it does have two other consequences:

(1) Teams sometimes feel lost because they cannot see how the entire process fits together.

(2) The project takes longer.

Organizations can avoid these two problems while still having the immediacy of application if they use team training methods that (1) allow the teams to apply what they have learned to parts of their project during the initial training session and (2) use a case study for application of all the process during the training.

If initial basic training is not given before the project begins, it will naturally make the project longer. If an organization does decide to deliver all the training during its team meetings, it should explicitly identify and allow for the extra time that this choice is adding to the project. The apparent project time really has two components then: (1) the actual project time and (2) the training time. If 16 hours of training is delivered during the course of a project and the team meets 2 hours per week. That can add up to 8 weeks to the apparent project time.

## Jumping to Remedy Prematurely

If a project team begins to implement a remedy before diagnosing the root cause fully, it may be in for a rude surprise. If the remedy does not really address the root cause, there will be little or no improvement.

Several teams concluded that their problems lay with inadequate training or procedures for the individuals operating the process. They then implemented a variety of training and informational efforts that made only the most marginal improvements in the final results--improvements that were also often ephemeral.

One of the projects concluded that some parts of their equipment should be replaced with more modern models. The results were disappointing.

For all those cases in which the teams jumped prematurely to their remedies, another few weeks of diagnosis would have saved them time and money. In the end, they had to return to further diagnosis and install additional remedies.

## Poor Implementation Plans

As discussed briefly earlier in this paper, one of the more surprising findings was that many teams did a poor job of preparing for implementing their remedy. Some of those failings included:

- The team had no implementation plan at all. They "just did it."

- They failed to provide for needed training.

- Key procedures, forms, or materials were missing or incomplete.

- Key individuals were left out of the implementation plan.


**Other Lost Time**

Among the other factors that contributed to significant lost time for some projects were:

- Poor planning for data collection

- Quality Councils requiring unnecessary extra work by the teams

- Refusal to use existing data

- Down time waiting for data tabulation

- Refusal to believe collected data

- Failure to use Pareto analysis to focus on vital few

- Continuing to refine the root cause to a level of precision not needed for an effective remedy

Aubrey and Gryna have identified a number of other quality improvement team characteristics that increase their effectiveness in accomplishing their mission.[1] These include:

- Keep the team as small as the problem will allow-- 4 or 5 when possible, more than 8 or 9 only under unusual circumstances.

---

[1]. Charles A. Aubrey, II and Derek S. Gryna, "Revolution Through Effective Improvement Projects," *45th Annual Quality Congress Transactions*, American Society for Quality Control, May 20-22, 1991, pp. 8-13.

14

- If large teams are necessary, divide them into smaller sub-teams to work on specific tasks, to the extent that is practical.

- As a unit, team members must be familiar with the problem and be at a high enough level in the organization to affect the needed changes.

- The most significant results usually come from management-chartered, cross-functional projects.

These factors did not emerge in our study because all twenty teams conformed with these team composition and chartering guidelines.


## Remedial Action for Slow Quality Improvement Projects

Most of the lost time identified in this analysis falls into one of two very general categories:

1. Failure to adhere to a well known best practices in quality improvement. These failures included inadequate mission statements and neglect of the Pareto principle.

2. Mechanical application of tools and process steps without sufficient focus on the reason for the activity or the mission of the team. This rigid orthodoxy can lead teams to waste time with excessive flow charts, quality councils to insist that teams solve cultural and organizational problems that the senior executives themselves are unwilling to address, or teams to draw Pareto diagrams but not act on the results.

To prevent lost time and gain maximum, rapid impact from quality improvement, upper management should ensure that:

1.  They personally know and properly execute their joint responsibilities with respect to quality improvement, especially as they relate to selecting and defining the mission of a project.

2.  Teams are trained in established, proven methods for quality improvement, using training materials that adhere to the best of adult learning principles.

3.  Facilitators and quality managers are properly prepared to spot potential delays in quality improvement projects and to intervene to keep them back on track.

In addition to avoiding the typical project difficulties that have been identified in this study, organizations that are serious about revolutionary rates of quality improvement are well advised to conduct similar reviews of their own projects. Each organization can have its unique difficulties that reflect its culture, professional development history, and policies.

In this paper, we have identified a number of general and specific actions that managers can take to accelerate their quality improvement teams. We focused primarily on the actions related to the steps followed in an individual quality improvement project. In addition to these, there also many other actions needed to establish and maintain the infrastructure for successful quality improvement projects, including:

- facilitation support for teams

- adequate training, irrespective of the timing and location

- time and support from immediate supervisors of team members

- encouragement and recognition from immediate supervisors, upper managers, and peers

- performance management and compensation systems that reinforce quality

Structured, formal quality improvement is a vital part of a successful quality strategy. If it is supported adequately and reviewed rigorously, the rewards will be substantial. The potential is too great to let quality improvement teams operate without adequate support and careful attention to the roadblocks they may be encountering.