CHAPTER 14
THE FORK MODEL FOR QUALITY MANAGEMENT: THE HANDLE, OR TRANSFORMATION

Sections

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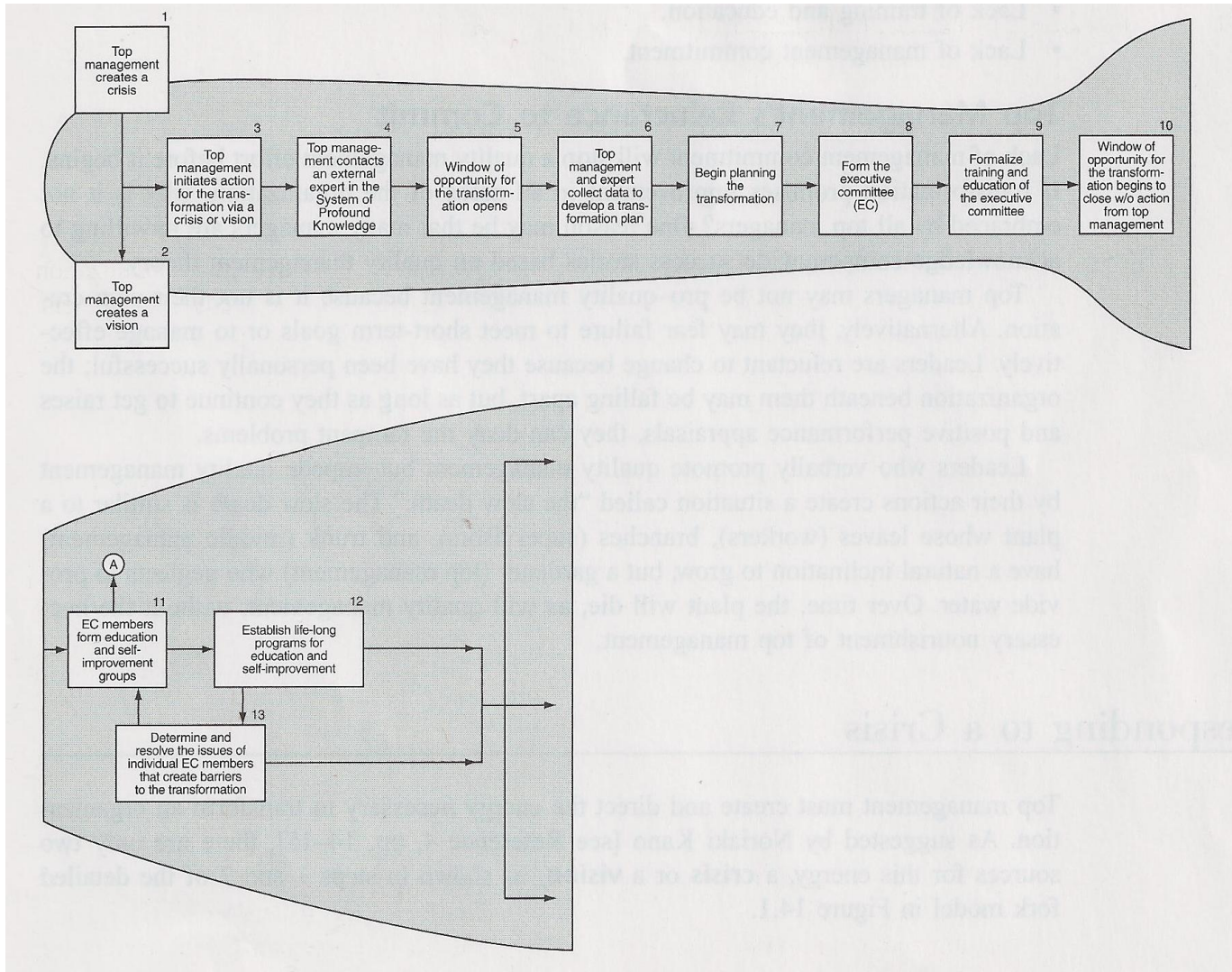References and Additional Readings

Chapter Objectives

- To examine the aids to promoting quality management
- To examine the barriers to quality management
- To discuss top management commitment to quality management
- To illustrate how top management can respond to crises in two company cases, one Japanese and one American
- To illustrate how top management can create a crisis resulting in the transformation to quality management
- To illustrate how top management can create a vision to enable the transformation to quality management
- To discuss how top management can initiate and carry out a plan for the transformation to quality management
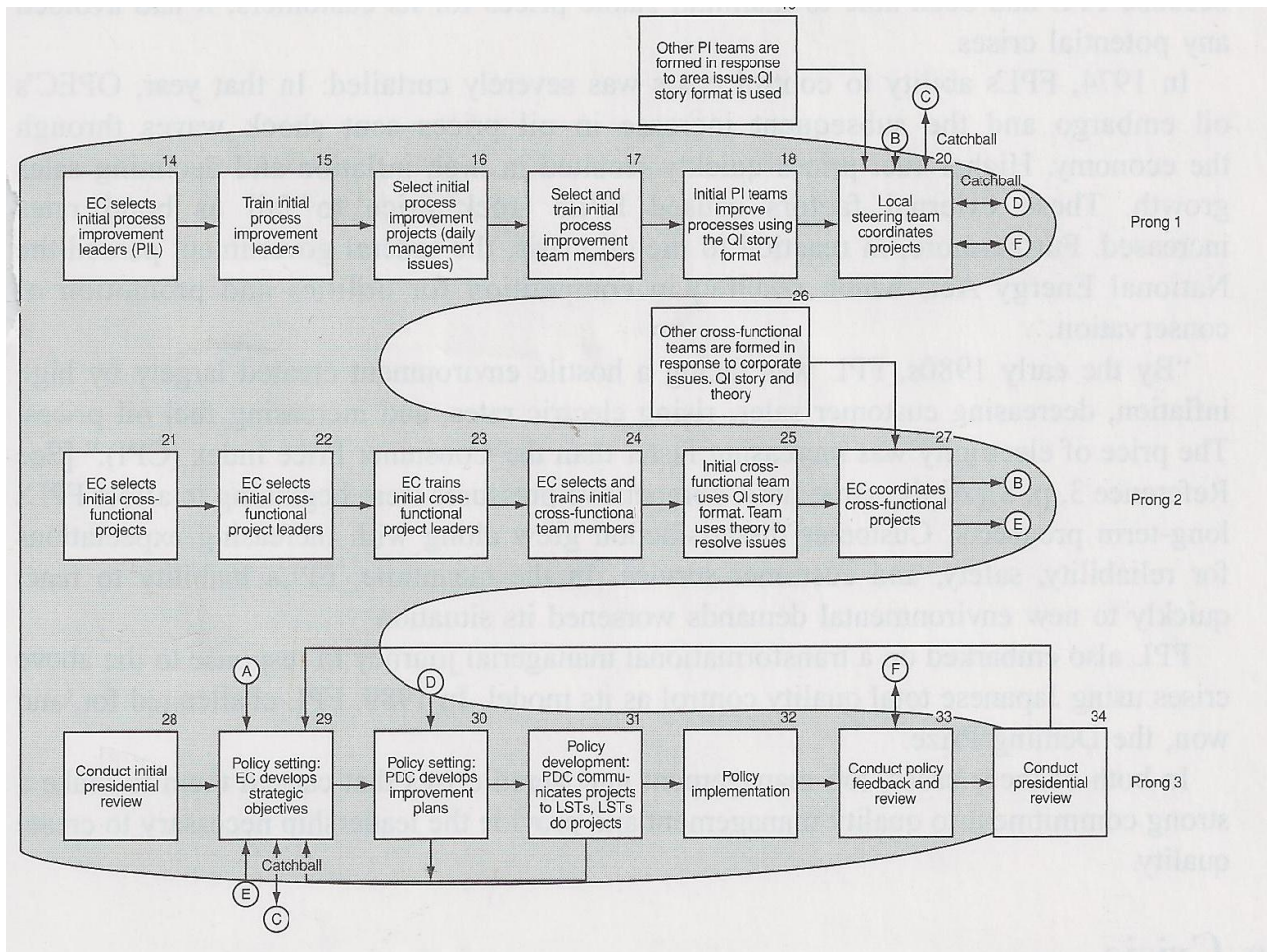
14.1 Introduction

Before any quality management efforts can be undertaken in an organization, top management needs a model for transformation. One possible model for transforming an organization, shown in Figure 14.1, is called the fork model due to its shape. It has a handle (management commitment to transformation the organization), a neck (education and training of top management required to transform the organization), and three prongs (daily management, cross-functional management, and policy management).

The handle of the fork model explains how top management must make a commitment to transformation. In this chapter we explain what is required to sustain, coordinate, and promote that commitment.

Figure 14.1
The Fork Model

| 14 | 15 | 16 | 17 | 18 | 20 |
| EC selects initial process improvement leaders (PIL) | Train initial process improvement leaders | Select initial process improvement projects (daily management issues) | Select and train initial process improvement team members | Initial PI teams improve processes using the QI story format | Local steering team coordinates projects |

Other PI teams are formed in response to area issues. QI story format is used

Catchball — B, C, D, F — Prong 1

| 21 | 22 | 23 | 24 | 25 | 27 |
| EC selects initial cross-functional projects | EC selects initial cross-functional project leaders | EC trains initial cross-functional project leaders | EC selects and trains initial cross-functional team members | Initial cross-functional team uses QI story format. Team uses theory to resolve issues | EC coordinates cross-functional projects |

Other cross-functional teams are formed in response to corporate issues. QI story and theory — 26

B, E — Prong 2

| 28 | 29 | 30 | 31 | 32 | 33 | 34 |
| Conduct initial presidential review | Policy setting: EC develops strategic objectives | Policy setting: PDC develops improvement plans | Policy development: PDC communicates projects to LSTs, LSTs do projects | Policy implementation | Conduct policy feedback and review | Conduct presidential review |

Catchball — A, D, F, E, C — Prong 3

Quality management is a never-ending journey. However, all journeys begin with one step. The moment the leadership of an organization takes that first step, the organization has started a quality management program. The time required to reap the benefits from quality management depend on the resources allocated to the process. The best time to begin quality management is now. Like a person who wants to lose weight and finds reasons not to start the process, organizations often manufacture excuses to put off the transformation. There is no specific time that is better than another to begin quality management.

14.2 Aids to Promoting Quality Management

Different needs and situations stimulate an organization to pursue quality management. Some examples of aids that promote the **transformation** of an organization to quality management include the desire to:

- Exceed customer requirements.
- Improve the organization's image.
- Increase market size.
- Increase market share.

- Improve employee morale.
- Create a common mission and strategy.
- Create a cascading system of objectives and metrics that cascade throughout the organization.
- Improve communication.
- Standardize processes.
- Create best practices.
- Improve the physical environment.
- Resolve problems before they become crises.
- Bridge responsibility gaps.
- Improve the documentation of processes, products, and services.
- Improve the design of processes, products, and services.
- Improve manufacturing and delivery of service.
- Produce uniform products, at low cost and suited to the market (improve quality).
- Increase profits.

14.3 Barriers to Quality Management

What stops an organization from pursuing quality? Examples of barriers that hinder the transformation of management of an organization include:

- Inability to change the mindset (paradigms) of top management.
- Inability to maintain momentum for the transformation.
- Lack of uniform culture and management style.
- Lack of long-term corporate direction.
- Lack of effective communication.
- Lack of discipline required to transform.
- Fear of scrutiny by supervisor.
- Fear of process standardization.
- Fear of loss of individualism.
- Fear of rigidity.
- Lack of financial and human resources.
- Lack of training and education.
- Lack of management commitment.

14.3.1 Top Management's Reluctance to Commit

Lack of management commitment will stop a quality management effort before it begins. If transformation promises improvement in all areas of the organization, why is it not embraced by all top managers? One reason may be that many managers are unwilling to acknowledge company-wide success stories based on quality management theory.

Top managers may not be pro-quality management because it is not their own creation. Alternatively, they may fear failure to meet short-term goals or to manage effectively. Leaders are reluctant to change because they have been personally successful; the organization beneath them may be falling apart, but as long as they continue to get raises and positive performance appraisals, they can deny the rampant problems.

Leaders who verbally promote quality management but impede quality management by their actions create a situation called "the slow death." The slow death is similar to a plant whose leaves (workers), branches (supervisors), and trunk (middle management) have a natural inclination to grow, but a gardener (top management) who neglects to provide water. Over time, the plant will die, as will quality management, without the necessary nourishment of top management.

Commitment, not support, by top management is required to transform an organization, as shown in the handle of the fork model in Figure 14.2. This is analogous to the old adage about bacon and eggs: the pig is committed to the dish, while the chicken is just supportive. So it goes with top management; top management's bacon must be on the line.

Figure 14.2
Handle of the Fork Model

	Handle of the Fork Model								Neck of the Fork M
	Steps								Steps
3	4	5	6	7	8	9	10	11	12
Top management initiates action for the transformation using a crisis or a vision	Top management contacts an external expert in the System of Profound Knowledge	Window of opportunity for the transformation opens	Top management and expert collect data to develop the transformational plan	Top management begins to plan the transformation	Top management forms the Executive Committee (EC)	Top management provides training and education for the Executive Committee	Window of opportunity for the transformation begins to close without action from top management	EC members form education and self improvement groups ↓	Establish life long programs for education and self improvement for members of the EC

(A)

14.4 Responding to a Crisis

Top management must create and direct the energy necessary to transform an organization. As suggested by Noriaki Kano [1993, pp. 14-15], there are only

two sources for this energy, a **crisis** or a **vision**, as shown in steps 1 and 2 of the handle of the fork model in Figure 14.2.

Many companies begin a program of quality management as a reaction to crises discovered by top management. This section describes the crises in a Japanese company and an American company which led to their embarking on a successful quality management transformation.

14.4.1 JUKI Corporation

JUKI Corporation is a Japanese manufacturer of products ranging from sewing machines to industrial robots. In 1973, JUKI management uncovered external and internal crises, which led them to exert the energy leading to quality improvement. The external crises included:

1.   An inability to be competitive due to low quality and productivity.
2.   Union problems.

The internal crises included:

1.   Using the "genius approach" to research and development. JUKI management relied on the creative abilities of employees to generate new products. This process did not allow management to predict, with any degree of accuracy and dependability, new improvements and innovations in products and services.
2.   Behaving with a "market-out" point of view. JUKI management created an organization in which products were produced and sold without determining the needs of customers.
3.   Depending on the skill of individual workers to get the job done. JUKI management relied on the uniqueness of each individual to get jobs done, as opposed to standardizing work methods through training so that all relevant employees could do a particular job.
4.   Acting as firefighters. JUKI employees reacted to crises; they did not proactively improve processes to prevent crises from occurring in the future.

JUKI Corporation embarked on a transformational managerial journey in response to the above crises using Japanese Total Quality Control as their model. In 1976, JUKI challenged for, and won, the Deming Prize. The Deming Prize is the quality management equivalent of a black belt in karate. It is awarded by the Japanese Union of Scientists and Engineers (J.U.S.E.).

14.4.2 Florida Power & Light Company

Florida Power & Light Company (FPL) is the largest utility furnishing the generation, transmission, distribution, and sale of electricity in the State of

Florida. It experienced steady growth throughout its history. However, the pace of this growth increased dramatically in 1946, making it difficult for FPL's leaders to plan, finance, construct, and operate the utility. As FPL grew, so did its managerial processes, becoming ever more cumbersome and unresponsive to customer needs. Nevertheless, because FPL had been able to maintain stable prices for its customers, it had avoided any potential crises.

In 1974, FPL's ability to control costs was severely curtailed. In that year, OPEC's oil embargo and the subsequent increase in oil prices sent shock waves through the economy. Higher fuel prices quickly resulted in high inflation and declining sales growth. These external factors caused FPL's stock price to fall as bond rates increased. Furthermore, in reaction to the oil crisis, the federal government passed the National Energy Act, which resulted in competition for utilities and promotion of conservation.

"By the early 1980s, FPL was facing a hostile environment created largely by high inflation, decreasing customer sales, rising electric rates, and increasing fuel oil prices. The price of electricity was increasing faster than the Consumer Price Index (CPI)" [FPL Corporate Document, 1988, p.8]. At the same time, competitive pressures were beginning to affect FPL's long-term prospects. Customer dissatisfaction grew along with increasing expectations for reliability, safety, and customer service. In the meantime, FPL's inability to react quickly to new environmental demands worsened its situation.

FPL also embarked on a transformational managerial journey in response to the above crises using Japanese Total Quality Control as their model. In 1976, FPL challenged for, and won, the Deming Prize.

In both of these cases, top management uncovered crises that caused them to make a strong commitment to quality management and provide the leadership necessary to create quality.

14.5 Creating a Crisis

Top management can uncover and bring to the forefront the real or potential crises that face an organization, as shown in step 1 of Figure 14.2. One method top management can use to create a crisis is asking a probing question, such as one which Kano has proposed: "What are the quality requirements of our major product/service demanded by our major customers?" Frequently, top management is unable to answer this question, creating a crisis when they realize that they are out of touch with their customers' needs.

Another method by which top management can create a crisis is by conducting a **brainstorming** session on the crises that face the organization and analyzing the results with an **affinity diagram**, two tools which were discussed in Chapter 10.

Exhibit 10.1 shows an application of brainstorming to identify the crises facing a university. Exhibit 10.2 shows an application of an affinity diagram to organize and clarify the crises facing a university.

14.6 Creating a Vision

Top management can also initiate action for the transformation via a vision, as shown in step 2 of Figure 14.2. A vision can stimulate top management to expend the energy needed to transform an organization. This idea is critical for organizations not facing a crisis: a vision can replace a crisis as a rallying point for the creation of quality.

An example of a vision that drove top management to transform an organization is a situation that occurred in a social service agency. The agency, a group home program for troubled teenagers, was achieving its mission, adequately providing temporary shelter and basic care for adolescents separated from their families. However, the top management of the agency knew, through surveys of clients and referral agents, what the program needed to change to provide other services. These services included individual, group and family therapy, academic counseling, and an overall plan coordinated by the clients, along with social workers, psychologists, house parents, teachers, and other involved staff members.

Top management had a vision of transforming the agency to one in which the needs of the clients were met in a more professional manner, utilizing a team to carry out an integrated plan. There was no crisis that stimulated this transformation. Top management saw a need to change the organization to exceed the clients' needs, which were not being addressed by the program in its current state.

One technique that can be used to create a vision is to imagine the following scenario, in which the developer(s) of the vision personify the organization; that is, pretend the organization is a person.

> Imagine it is 100 years in the future and your organization has just died. All the stakeholders of the organization are standing around the coffin and the clergyman reads the eulogy. The eulogy ends with these words: Here lies *insert the name of your organization*, it was known and loved for *insert the reason here.*

The reason inserted above is the vision of your organization. A vision should be a noble statement of long-term purpose. It should inspire people to take action to transform their organization.

Once top management has established a vision for an organization and its interdependent system of stakeholders, it can utilize brainstorming and the affinity diagram to identify issues that will prohibit realization of the vision. The topic of the brainstorming session can be: "What are the barriers that discourage realization of our vision."

14.7 Initiating Action for the Transformation

Top management initiates action for the transformation via a crisis and/or a vision, as shown in step 3 of Figure 14.2. They synthesize, study, and digest the crises facing the organization, as well as formulate and articulate the vision of the organization. If they feel it is warranted, they communicate the information about the crises and/or vision to relevant stakeholders. This process promotes commitment to the transformation among both top management and stakeholders.

14.7.1 Retaining Outside Counsel

After management has communicated the crises and the vision, they may wish to retain outside counsel, as shown in step 4 of Figure 14.2, for two reasons. First, expertise in the **System of Profound Knowledge**, discussed in Chapter 2, is not likely to be found within an organization. Second, organizations frequently cannot recognize their own deficiencies; that is, they do not know what they do not know.

14.7.2 Window of Opportunity Opens

Once outside counsel has been retained, a **window of opportunity** for the transformation opens, as shown in step 5 of Figure 14.2. The window of opportunity has an unspecified time limit which varies from organization to organization. If signs of transformation do not become obvious to the stakeholders of an organization, they will not believe that top management is committed to the transformation, and the window of opportunity for transformation will begin to close. This is a common reason for the failure of quality management efforts in organizations.

14.7.3 Collecting Data to Develop a Transformation Plan

An important role of outside counsel is to help top management assess the current status, and predict the future condition, of relevant stakeholders with respect to the transformation. They determine the barriers against and the aids for a fruitful transformation at all levels within an organization and throughout the

organization's interdependent system of stakeholders, as shown in step 6 of Figure 14.2.

Individuals have different reasons for wanting to, or not wanting to, promote quality management. Individuals will have different interpretations of what is involved in quality management. A leader must know each of these reasons, and how the different reasons interact with each other and with the aim of quality management. Consequently, a leader must obtain input from the stakeholders of his or her organization.

A generic **Gantt chart**, discussed in Chapter 10, for a transformation plan is shown in Table 14.1. Top management appoints a team to complete the Gantt chart, asks outside counsel to complete the Gantt chart, or some combination of these two options. The start and stop times in the Gantt chart are a function of top management's urgency to transform to quality management.

Table 14.1
Gantt Chart for Conducting "Barriers Against" and "Aids For" Analysis

Steps	Month												Comments
	1	2	3	4	5	6	7	8	9	10	11	12	
INTRODUCTORY STEP													
Develop a Gantt chart for the analysis													
PLAN THE STUDY													
Identify real and potential crises													See step 1 of the Fork Model.
Synthesize information about crises													Top management studies and summarizes the real and or potential crises facing the organization.
Write out real and potential crises													Top management prepares a document that clearly describes the real or potential crises facing the organization.
Prepare a memorandum													Top management prepares a memorandum explaining that a survey will be mailed to all employees which will study "barriers against" and "aids for" Quality Management. The memorandum contains the following informational items: (1) explanation that the output from the survey will be a series of action plans to deal with employees' concerns about Quality Management, (2) explanation of the crises facing the organization, (3) information on why Quality Management can help address the crises, and (4) guarantees concerning the anonymity of respondents.
Design the survey													Team members design a survey that contains an informational section and a questionnaire section. The informational section includes information from the memorandum and instructions on how to complete and submit the survey. The questionnaire section contains the following questions: (1) In your opinion, what barriers will prevent quality management from working in your organization? (2) In your opinion, what aids will promote quality management in your organization?
Prepare a reminder message for non-respondents													Team members prepare a reminder message for the non-respondents to the first distribution of the survey. The message should say: If you have already responded to this survey, please disregard this message.
Design the data collection plan													Team members design a two-wave mail survey. The reminder message is mailed to the entire mailing list between the first and second waves to encourage non-respondents to respond to the survey.
Distribute the memorandum													See "Prepare the Memorandum" above.
COLLECT THE DATA													
Distribute the survey													Team members distribute the survey to all employees. See "Design the Survey" above.
Collect the completed surveys													Team members collect the completed surveys and determine the number of non-respondents.
Plan for non-respondents													Team members recognize that non-response bias exists in a survey if non-respondents differ from respondents.

Task												Description
Send reminder message												Team members send the reminder message to all persons who received the survey. See "Prepare a Reminder Message."
Determine the severity of non-response bias												Team members determine if the responses to the second wave of the questionnaire are different from the first wave of the questionnaire. If they are similar, then it is assumed that non-response bias is not a severe problem, and first and second wave responses are combined and analyzed together. If they are different, then it is assumed that non-response bias is a problem and expert counsel should be asked for advice on how to rectify the situation.
ANALYZE THE DATA												
Separate the questionnaire data												Team members separate the data from question 1 and question 2. Question 1 yields "barriers against" data and question 2 yields "aids for" data.
Create a code book from the "barriers against" data												Team members create a code book from the "barriers against" data. A code book is used to develop classification categories for verbal statements and to generate a frequency distribution of the number of verbal statements in each category.
Create a code book from the "aids for" data												Team members create a code book for the "aids for" data.
Identify the root cause code book "barriers against" classification(s)												Team members consider the frequency counts for each classification and the effect a particular classification has on all other classifications when selecting the root cause classification(s) for which it is critical to develop action plans.
Identify the root cause code book "aids for" classification(s)												Repeat the above for "aids for" classifications and frequency counts.
ACT ON THE ANALYSIS												
Identify action items for each "barriers against" and "aids for" root cause												Team members determine the detailed action items necessary to resolve root cause "barriers against" quality management and to promote root cause "aids for" quality management.
Assign action items												Team members, with the support of top management, assign action items to individuals or areas using a matrix diagram. The rows of the matrix are action items and the columns of the matrix are people or areas. Team members study the matrix to create logical workloads.
Develop plans for each action item												Responsible individuals or areas develop action plans to resolve "barriers against" quality management and/or to promote "aids for" quality management.
Approve action plans												Top management approves all action plans or calls for their revision.
Initiate action plans												Top management puts each action plan into play in the organization.
Check on the progress of action plans												Team members periodically study the effect of the action plans in resolving "barriers against" quality management and in promoting "aids for" quality management.
Promote the action plans												Top management promotes the action plans to create an environment favorable to quality management.

Step 6 of Figure 14.2 involves the "Introductory Step," the "Plan the Study Step," and the "Collect Data Step" of the Gantt chart in Table 14.1. An explanation of each step appears in the right-most column of the Gantt chart.

14.7.4 Planning the Transformation

Top management develops a transformation plan once the data has been collected in step 6, as shown in step 7 of Figure 14.2. Step 7 involves the "Analyze the Data Step" and the "Act on the Analysis Step" of the Gantt chart in Figure 14.2. Again, an explanation of each step appears in the right-most column of the Gantt chart.

14.7.5 Forming the Executive Committee

Top management forms an Executive Committee (EC) that consists of all policy makers in the organization. The chairman of the EC is the President or Chief Executive Officer of the organization, as shown in step 8 of Figure 14.2. The EC should not exceed five or six members, plus a facilitator. It is important to include only policy makers on the EC.

14.7.6 Training the Executive Committee and Beyond

The EC ensures that all of its members are appropriately trained, as shown in step 9 of Figure 14.2. This training includes: (1) Quality Management theory, such as Deming-based Lean Six Sigma Management, discussed in Chapter 20; (2) the psychology of the individual and team [Scholtes, 1985], (3) basic statistical tools, such as those discussed in Chapters 3 and 5; and (4) administrative systems for quality, including developing competence in daily management, cross-functional management, and policy management, as discussed in Chapters 16, 17 and 18, respectively.

14.7.7 Window of Opportunity Begins to Close

Once the above phase of education and training is complete, the window of opportunity for the transformation begins to close unless the members of the EC take two actions, as shown in step 10 of Figure 14.2. First, they promote the plan to transform the organization, as shown in the last line in the Gantt chart in Table 14.1, from its current paradigm of management to a quality management paradigm. Again, the steps to develop and execute the plan are discussed in the right-most column of the Gantt chart in Table 14.1. Second, they diffuse quality management theory and practice within the organization and outside the organization to relevant stakeholders, such as the Board of Directors, stockholders, suppliers, customers, regulators, and the community.

14.7.8 Diffusion of Quality Management

The **diffusion** step of the model explains how to disseminate quality management among the different areas within an organization and from one organization to another, such as suppliers, subcontractors, and regulators.

It is not always obvious how to achieve this. For example, creating a newsletter or having a meeting for all interested persons is not necessarily the way to reliably diffuse innovations. Other methods are needed. This section discusses such methods for both inter (between) and intra (within) firm diffusion [Cool, et.al, 1997, pp. 543-559; Rogers, 1995].

Potential adopters of quality management fall into one of five categories: **innovator**, **early adopter**, **early majority**, **late majority**, and **laggard** [Rogers, 1995].

I*nnovators* are venturesome, cosmopolitan, and friendly with a clique of innovators. They possess substantial financial resources and understand complex technical knowledge. However, they may not be respected by the members of their organization. They are considered to be unreliable by their near peers due to their attraction to new things. Innovators are frequently the gatekeepers of new ideas into their organization.

Early adopters are well respected by their peers, opinion leaders, and role models for other members of their organization. They are the embodiment of successful, discrete use of ideas. Early adopters are the key to diffusing ideas such as quality management.

Early majority deliberate for some time before adopting new ideas and interact frequently with their peers. They are not opinion leaders.

Late majority require peer pressure to adopt an innovation. They have limited economic resources that require the removal of uncertainty surrounding an innovation.

Laggards are very isolated in their organization. They are suspicious of innovation and their reference point is in the past.

The successful diffusion of quality management must consider several factors. First, it must involve opinion leaders. The EC identifies opinion leaders by asking: "Who would we go to for advice about quality management within our organization?" They prepare a **motivational plan** to induce opinion leaders to undertake quality management. The motivational plan must have the commitment of the Executive Committee and should consider a balance of extrinsic and intrinsic motivators. Second, it must provide a quality management process that is adequately developed and not too costly for potential adopters at all levels within the organization. Third, it must develop the learning capacity of potential adopters of quality management. Fourth, it must systematically improve management's understanding of the factors that affect the success and or failure of quality management and improve their ability to communicate these factors to potential adopters. Finally, it must increase intimacy between potential adopters and the diffusers of quality management.

If the above activities do not occur, or do not occur effectively, then the window of opportunity for the transformation to quality management begins to close. The next step in promoting quality management is for the EC, with the assistance of outside counsel, to focus attention on top management's intellectual and

emotional commitment to quality management. This occurs as the members of the EC enter the "neck" of the fork model.

14.7.9 Decision Point

The end of the handle is the first critical decision point in the fork model for quality management. If the members of the EC discover that the energy to do quality management is not present in the organization, then a "*NO GO*" decision is made and all efforts toward quality management stop. On the other hand, if the members of the EC discover that the energy to do quality management is present in the organization, then a "*GO*" decision is made and the quality management effort proceeds to the neck stage of the fork model.

14.8 Summary

This chapter presents a discussion of the handle of the fork model for quality management. The handle is management's commitment to transformation, without which there can be no transformation. Aids to promoting quality management and barriers to it are presented. Lack of management commitment is a barrier that is addressed in this chapter.

Top management's reluctance to commit to quality management arises from managers who are unwilling to acknowledge success stories of quality management, who are not pro-quality because it is not their own creation, who are scared of failure to meet short-term goals or to manage effectively, or who are reluctant to change because they have been personally successful.

There are two sources for the energy needed by top management to transform an organization: a crisis or a vision. Two cases are presented that show how companies responding to crises were stimulated to begin a process of quality management: JUKI (a Japanese manufacturer) and Florida Power & Light Company (an electric utility). If a company is not currently faced with an obvious crisis, top management can uncover and bring to the forefront any hidden crises that exist.

Alternatively, top management can begin the transformation by creating its own vision as a rallying point for the introduction of quality. This is critical for organizations that are not facing a crisis.

After top management makes the commitment to transformation, the first action may be retaining outside counsel, because an expert in the System of Profound Knowledge will not likely be in-house, and the organization frequently cannot recognize its own deficiencies. Outside counsel may help top management

determine the "barriers against" and "aids for" transformation, and works with top management to develop a plan for the transformation.

Next, top management forms an Executive Committee (EC), which consists of all policy makers in the organization. The EC carries out the plan for transformation. Unless the members of the EC exhibit signs of transformation to relevant stakeholders, the window of opportunity for the transformation begins to close.

Questions for self-examination are presented to stimulate thought and discussion in an organization that is contemplating transformation to quality management.

EXERCISES

1. Can quality management succeed without the commitment of top management? Explain why or why not.

2. Is it necessary to accept all of the paradigms of quality management to start quality management? What are they?

3. Can an organization ease into quality management?

4. What are some barriers that hinder the transformation of an organization to quality management?

5. What are some aids that promote the transformation of an organization to quality management?

6. Does quality management apply to the service aspects of an organization?

7. How much training is needed for quality management, by level?

8. How much will quality management cost? Is it possible to compute this figure?

9. How long will it take to achieve quality management in an organization?

10. What is the best time to begin quality management?

11. Can one organization's quality management process become the blue-print or another organization's quality management process?

12. Is it helpful to visit organizations with successful quality management processes? If yes, why? If no, why?

13. How is quality management spread in an organization?

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