Quality Circles: After the Honeymoon

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Quality circles are a widely practiced approach to improving organizational performance. Numerous articles have been written about their strengths and weaknesses. Both critics and proponents agree that they are typically characterized by a successful start-up or honeymoon period. The initial circles are characterized by high levels of enthusiasm, and tend to produce a number of good suggestions. The problems with quality circles typically develop after they become an organization-wide activity and an effort is made to sustain over a period of years. There are a number of reasons why quality circles typically are difficult to sustain, and these will be reviewed first. Once we have considered them, we will be in a position to look at approaches which can deal with the institutionalization and maintenance problems that are associated with quality circles.

Structure of Circles

Quality circles are a parallel structure approach to getting employees involved in problem solving. A parallel structure is one which is separate and distinct from the regular ongoing activities of an organization and, as such, operates in a special way. In quality circle programs, groups are composed of volunteers from a work area that meet with a special type of leadership and/or facilitation to look at productivity and quality problems. They typically meet for a few hours every week or two. In order to produce change they must sell their ideas back to the regular work organization. Because they are a form of parallel organization they have certain inherent strengths and weaknesses which are characteristic of all parallel organizations.

On the strengths side they allow organizations to deal with issues that cannot be or are not dealt with in the regular organization, either
because of lack of time, the way responsibilities and goals are defined, or because the issues are not salient to appropriate management or staff personnel. In addition, parallel structures can often start quickly and cause a minimal disruption to the organization's performance. The creation of quality circles requires no obvious changes in the regular organization, its structure, activities, or responsibilities. Nevertheless, they allow individuals, who might otherwise not have such an opportunity, to become involved in problem-solving. In many organizations quality circles are the only participative management device that a number of managers are willing to accept. They are willing to accept them precisely because they are minimally disruptive to the status quo, and keep managerial authority and control firmly in place.

The problems associated with parallel structures are also significant. They tend to be viewed as a program, something "extra," and, therefore, the meetings and indeed the structures themselves are subject to cancellation. Parallel structures are also limited in the kinds of power they have and in the problem-solving activities that they can engage in. For example, quality circles typically only have the power to recommend innovations; the decision-making authority remains in the regular organization. Their mandate is to deal only with changes in work methods and procedures or organizational systems that are likely to improve quality and productivity. Because they involve only a portion of the employees, parallel organizations can lead to an "in" and "out" group situation and a negative backlash by non-participants. Finally, the norms and behaviors in the activities of the parallel structures may differ dramatically from those that govern the regular organization.
This can lead to a tension within participants if they see themselves treated as responsible thinking contributors in the quality circle meeting, but quite differently in their day-to-day experience of the organization.

Research on quality circles has shown that there are a series of predictable phases that they go through. The first phase, or honeymoon period, is typically very positive. During this phase a small number of groups are formed. They are extremely motivated to produce good ideas and improvements, and as a result, the organization often realizes significant gains. This period is usually followed by the widespread dissemination of quality circles on the theory that if a few circles are good, a lot of circles are bound to be terrific. At this point, the quality circle programs tend to enter an improvement by the numbers era. That is, the organization counts the number of quality circles and assumes the more there are, the more things are improving.

After the expansion program has led to circles being widespread throughout the organization, the first significant disillusionment with circles tends to set in. The reasons for this are numerous. Briefly, they include resistance by middle managers, the failure to implement a number of ideas, non-productive groups, the extra cost of operating the extensive support systems which groups require, and the failure of some early ideas to produce the projected savings. Whereas the initial groups received considerable high level attention, generally from sponsors or champions of the process, later groups tend to be started more mechanically. Later circles have to compete for management attention and are started in an environment where reactions to the quality circle process have been polarized because some individuals
inevitably oppose them for political or personal reasons. At this point, some organizations decide that quality circles were a mistake, and decide to abandon them. Others recognize that quality circles have had a positive impact on the organization, and ask what they can do to sustain quality circles or to move beyond them to a different form of employee involvement. Inherent in these questions is a desire to build upon the good features of quality circles and to carry them forward to other kinds of organizational performance improvement approaches.

In our view quality circles can be an important first step in moving an organization toward organizational effectiveness through employee involvement. Indeed there are a number of other participative approaches that can build upon the work that is done in quality circles. There also are some things that can be done to sustain quality circles as an effective parallel structure. The remainder of this paper considers various options for companies that have or are considering implementing a quality circles program. These include ways to extend and strengthen the quality circles process and the parallel structures approach in general. An alternative approach that will be discussed is to transition to a team structure in which responsibility for decision-making and problem-solving is moved into teams that are part of the regular organizational structure. We begin by examining the contributions of quality circles in establishing employee involvement in an organization.

Employee Involvement: Where do Quality Circles Fit?

In thinking about what kind of participative structures are appropriate, an organization must deal with two important issues:
1) What issues are to be dealt with in a participative manner; and
2) How much decision-making authority will be delegated?

Figure 1 illustrates the range of choices in these two areas. It differentiates decision styles on the basis of how much influence the actual performers of the work have and how much influence the management structure has. It also considers different kinds of decisions ranging from corporate strategy decisions down to decisions about particular work methods and procedures. As it notes, in the traditional management style, managers make all the important strategy, structure, and work design decisions, and most of the ongoing decisions about work procedures.

Quality circles change organizational decision making to a degree. They provide a vehicle for the performers to influence how work is done. Employees can suggest better work methods, procedures, and occasionally organization design alternatives; but quality circles are generally discouraged from considering broader policies, strategies, personnel matters, and structures. Quality circle ideas usually must be approved by the regular management and staff structure, putting them into the category of joint rather than delegated decision-making. It is this aspect that frequently results in circles ultimately being perceived as a burden on the organization. Instead of resulting in a transfer of responsibility to those that perform the work, they increase the demands on management and staff.

Nevertheless, the use of quality circles does result in the organization becoming somewhat more participative, and it can begin to prepare the organization for other types of participative activities. First and foremost, the training programs that are part of most quality
circle efforts provide a number of employees with important problem-solving and group process skills. They also provide some managers and supervisors with experience as participative leaders. Virtually every form of participative management requires that these skills be present.

Secondly, quality circles typically establish the credibility of employee involvement as a strategy. The positive results which usually come out of quality circles demonstrate once and for all that people at all levels have useful ideas and can contribute meaningful suggestions when they are given an opportunity. In addition, the high volunteer rate usually associated with quality circles convinces managers that people wish to participate.

Finally, quality circles often produce important ideas and ways to improve productivity and quality. Successful implementation of such ideas contributes to a real sense of accomplishment on the part of circle members. It also may lead to a heightened awareness of the how employees can take more responsibility for organizational performance.

Organizations can move beyond quality circles in one of three ways. They can expand the kinds of decisions that are made by participative groups into the realms of strategy, design, and operating decisions. This is generally accomplished by another parallel structure—the task force or the task team. Alternatively, organizations can move from a joint decision-making model to one where authority is actually delegated downward into the group performing the work, by setting up work teams. Finally, they can treat the quality circle as the basic building block of participation, and alter various aspects of the organizational
context to support successful quality circle functioning. These three approaches will be discussed below.

Task Forces

In many respects, creating task forces or task teams is a small and natural step beyond quality circles in that they expand the parallel structure approach. Task teams usually are assigned specific critical problems and involve a cross section of the workforce. The training that is provided to quality circles is very appropriate to the problem solving that task forces must do, and they often allow the organization to get broad input to problems that are not normally grappled with by quality circles. For example, they can deal with policy issues, organization design issues, and, at times, even corporate strategy issues. Depending upon the kind of participation that the organization wants to give to these task teams, they can either decide on policy, strategy, and other organizational issues or they can simply make recommendations on what should be done.

Like quality circles, task teams are easy to establish and, in many cases, quite productive. Also, like quality circles, they are not expected to last forever. The task teams themselves have specific life expectancies based upon the type of problem they address. New task teams have to be constantly formed if an organization wants to keep alive this form of participation. Forming new task teams makes good sense if there are always issues to be addressed by the organization. This is particularly likely to happen in a dynamic environment where constant change and adaptation is needed.

Task teams have the advantage that they can include not only the production employees who are a part of quality circles but management
people as well. Although they may be resisted by some managers who don't like the idea of sharing decision making with lower level employees, they partially eliminate management resistance because managers are included on the task force.

Task forces share an important problem with quality circles, however; only a limited number of people can participate at any one point in time. Therefore, they are not a broad participation vehicle. The limited life expectancy of any particular task team, however, makes it likely that a number of employees may eventually have the opportunity to serve on one. Because of the increased scope of decisions and the opportunity to involve more people at more levels of the organization, task teams can be an important and useful structure for any organization that wishes to broaden the amount and kinds of influence that performers have. Companies such as Honeywell and Xerox have successfully expanded their original quality circles program in some facilities to include widespread usage of task teams.

Work Teams

Work teams are groups of employees who take responsibility for producing a product or service. They make most decisions associated with their production activities. They schedule, assign work, decide on methods, and in some cases select their members, decide on pay, and pick their managers or leaders. Unlike quality circles, they are not parallel structures. They are a way of doing the regular production work of organization. They are sometimes called autonomous work groups, self-managing teams, or semi-autonomous groups. As is shown in Figure 1, they typically allow employees to make decisions about work
methods and procedures and influence decisions about the day-to-day management of the work area.

Historically the work team concept grew up quite independently of quality circles. Teams have been strongly recommended as a participative organization design feature for decades, particularly as part of organizations designed by socio-technical systems approaches. Many new plants in the United States, that have been designed to maximize the involvement of employees, have utilized the work team model. TRW, Digital Equipment, Proctor and Gamble, and Johnson and Johnson have all built plants with teams, to name just a few. Teams are used because they lead to the involvement of employees in managing their own work activities on an ongoing basis. This can be contrasted with the common belief that underlies the implementation of quality circles: that the workforce should be involved in productivity and quality enhancement efforts. The former is a commitment to a philosophy that is the foundation for all aspects of an organization. The latter is a limited commitment that may or may not fit the underlying management philosophy.

Going to teams is obviously a dramatic step beyond quality circles. In some respects, however, teams are a logical follow-on to quality circles. Circles, in effect, introduce the organization to participative processes by providing training for some organizational members and by providing real life examples of how such processes work and what can be accomplished. In addition, circles may well raise issues that result in heightened awareness of the barriers to effective performance in the organization, thus whetting the appetites of many for new approaches. They may also make visible the ways in which a participative approach comes into conflict with the traditional
management model. Thus, teams which reduce functional divisions by combining responsibility into a team, motivate employees to achieve improvements in performance, and reduce the need for supervision and staff, may seem to some a natural next step.

Despite the potential advantages of teams we rarely see them occur as a follow-on to quality circles. There are a number of reasons for this. The primary one seems to be that they represent a much more dramatic step towards participative management than most organizations are willing to take. As was pointed out, they do in fact require a shift in management philosophy. In addition, they do not naturally follow from the quality circles programs of most organizations. As will be considered next, they could follow more directly if certain features of quality circles were designed to facilitate it.

First let's consider the design of the circles themselves. Quality circles typically take only volunteers from a particular work area and put them into a circle. This means that many people in a work area may not have experience with quality circles. The team concept does not allow for volunteers. For a team to be effective, everyone in the work area needs to be a member of the team. In addition, supervisors are critical to the success of a team. In many cases quality circles do not affect the supervisor and indeed the supervisor's behavior may not be altered as a result of a quality circle program. These points lead to specific recommendations with respect to quality circle design if the intention is to move toward teams. First, everyone in the work area should participate in the quality circle program. Secondly, supervisors should be trained as facilitators and should learn the types of
leadership skills that are associated with group decision making. This is necessary to prepare them for being a team leader.

If everyone is trained and the supervisor is trained it is possible that teams will naturally evolve from a quality circle program. This can occur because experience in the parallel organization can be directly transferred from it to the day-to-day work issues that face a group. We know of one FMC plant where this transition was indeed accomplished. What began as in-tact work groups that had special "quality circle" meetings to solve problems, grew into work teams. Gradually, team members were trained in and given responsibility for more and more aspects of their own management and operations. Fortunately, the FMC plant was structured so that their work groups fit easily into the work team model. This differs from a Honeywell Plant that made the transition to self-managing teams, only after gutting the plant and redesigning the technical system to support work teams.

For a team to be effective it needs to have responsibility for producing a whole product or service. In many cases groups and organizations are structured on a functional basis and as a result do not contain natural work teams. For example, in a traditionally structured organization, machine operators that are operating the same kinds of metal working equipment usually report to the same supervisor and are located together. However, they typically are not a good team because they do not have responsibility for a product or service. Instead they have responsibility for running a particular kind of machine. Because they are not interdependent many of the gains that teams produce by doing their own coordination and by their problem solving work quality are not available. Thus, even though everyone in a
work group or everyone reporting to a particular supervisor is in the same quality circle, a team may not emerge, nor should it. It is likely to emerge only if organization design issues are taken into account and circles are created that have appropriate areas of responsibility.

There are a number of contextual issues that must be resolved in order to enable the transition to work teams. For example, personnel practices are a major issue. Teams are productive at least in part because of the cross training and consequent flexibility and knowledge of the team members. Pay systems based on inflexible job grades and job descriptions with no provision for increasing pay as an individual gains more knowledge and skills discourage flexible contributions from team members. In addition, training approaches that limit training to specific job-related skills do not develop in lower level employees a broad understanding of business issues. What is needed is some version of knowledge-based pay and emphasis on cross training and peer training. The logic and philosophy of a work team environment differ in such fundamental ways that organizations transitioning to a work team environment will probably discover that modification is required in almost all of the existing personnel systems.

In summary, quality circles can lead to teams, but a number of design features need to be built into quality circles if this is to happen. In addition to assuring that supervisors are trained and that everyone in the work area is trained, the organizational structure may need to be altered. Teams are not necessarily best formed on the basis on existing work groups and relationships. New reporting relationships and structures typically are needed. Likewise, changes may be required
in many of the major organizational systems, such as personnel practices, that must create a context conducive to work teams.

One implication of this is that although circles may initially operate without major changes in organization design and important relationships, significant organization design changes may need to take place if the movement is to be made from a parallel structure approach to one that incorporates work teams. Figure 2 summarizes some of the changes that may be required in such a transition.

Creating a Supportive Work Organization for Quality Circles

As has been stressed, one of the reasons quality circles often lose their momentum is because the existing organization is not designed in ways to support the parallel structure created by the quality circle program. Circles begin to be perceived as a burden on the organization as people lose their initial enthusiasm and/or accomplishments are harder to come by. So far we have been emphasizing the development of task teams or work teams which are designed to replace or complement quality circles. These approaches in effect open up new participative avenues in the organization. It is also possible to change some characteristics of the existing organization to make it more supportive of quality circles, and to enhance their effectiveness.

A major candidate for change is the reward system. There is a long history of very successful experience with gainsharing plans, like the Scanlon plan, that involve the use of parallel organization structures. In these plans, a financial formula is developed for paying out to employees a portion of productivity and/or cost improvements. Experience with these plans indicates that a combination of problem
solving groups and bonuses for performance improvement can be a viable long-term strategy for performance improvement.

Today, there are Scanlon plans that have been in operation for over three decades, and they continue to be effective. A major reason for their long-term effectiveness is that, unlike quality circles, they affect everybody in the organization and reward performance improvement with an important incentive. The effect is to encourage everyone to think of ideas, participate in problem-solving, and implement the ideas and suggestions that come out of the problem-solving process. In essence, because everyone in the organization shares in the success of the parallel structure, it is in everyone's best interest to ensure that the parallel structure works well.

Just as in the case of the movement to teams, it is important to point out that the transition to gainsharing may involve fundamental changes in philosophy. Underlying gainsharing is the belief that all workers ought to share in financial performance improvements. Many quality circles proponents are quite clear that the benefit to the employee should be intrinsic—outcomes such as satisfaction and pride—not financial. The premise of gainsharing is that financial results improve because of the combined efforts of everyone; this may conflict with organizational assumptions that such results are the responsibility of management, and that incentives should properly reward managers alone for these results. Gainsharing calls for a broad sharing of information and training about the financial performance of the organization, while traditional management thinking argues for keeping this information in the hands of senior management.
In most gainsharing installations the parallel problem-solving approach is put in simultaneously with the bonus for organizational improvement. There is, however, no reason why this particular sequence has to be followed. Indeed, a reasonable argument can be made for following the installation of quality circles with a gainsharing plan. One problem in the start-up of the typical gainsharing plan is that because there is so much to do, important activities get overlooked. Frequently, the participative structures do not receive adequate attention because of a tendency to focus solely on the financial part. In a typical gainsharing plan, for example, there is a need to train people in how the bonus formula works, and to educate them about cost and the financial situation of the organization. In addition, problem-solving and the suggestion process needs to be introduced. An alternative to an "all-at-one-time" implementation is to start with the problem-solving process and then move to gainsharing once there are structures and skills in place to generate gain.

Another factor may argue for the use of quality circles before putting a financial bonus in place. Gainsharing uses a fixed historical base to calculate improvements. If the organization has a lot of easily solved problems and is having financial problems, it may not make sense to share gains that are gathered from simply putting the house in order. If gainsharing is put in right away, these improvements will result in perpetual bonuses for employees. In the case of an already effectively functioning organization, this usually is not a problem, although it may be in an organization that is performing poorly and needs gains simply to be competitive.
There are some other features of the reward system that can be changed to reinforce quality circle activity. For example, some companies in the United States who are committed to sustaining their quality circles have strongly emphasized non-financial recognition programs. These include attending conventions, competitions among circles for the best improvement, and of course, the opportunity to meet with top management and have their work acknowledged. All of these are potentially effective ways of reinforcing the importance of circles and sustaining interest. Unfortunately, they do not deal with the issue of the non-participants. That is, they create neither a participation opportunity nor a reward for individuals not in groups.

One way to reduce the discrepancy between the participative experiences people have in quality circles and the day-to-day work experiences they have is to use the human resource systems to develop and reward participative supervisory practices. Supervisors and managers at all levels can be trained in participative techniques, and appraisal, reward, and promotion can be made dependent on managerial style. Employees who experience a daily environment in which their supervisors solicit input, share information, and are open to suggestions are less likely to resent the time their co-workers spend in circle meetings. "Informal" problem-solving is likely to become a regular part of the work setting, and the tension between the participative model of the quality circle and the daily management philosophy will be reduced.

Finally, changes in the information system and the education system can help quality circles function more effectively. Most fundamentally, the information system can be designed to enable the regular sharing of
key performance measures with all employees in a work unit. When trends in work area performance are made salient to employees in general and quality circle members in particular, employees can set goals, initiate changes designed to improve performance, and experience satisfaction when performance improves. Additionally, the widespread availability of such information, especially if measures are improving, can dispel the subjective perception of managers and employees that the time spent in circle meeting is non-productive and actually impairs unit productivity. This is important because the changes initiated by quality circles more often have an indirect, cumulative impact on performance rates than a direct, immediately measurable impact. Thus, the trends can provide "hard" evidence that is often needed to persuade sceptics.

A problem in some quality circles is that the members often do not have the economic and business education necessary to make good suggestions and decisions. This problem can be partially solved by offering education in economics and organizational performance. We have noticed that circles often stall after they have addressed the more obvious and easy-to-solve problems in a work area. The technical knowledge of the circle members is often inadequate to go any further. This may be overcome if technical staff groups provide technical assistance and training to the circles. In addition, the information system of the organization can be opened up so that people throughout the organization have a better idea of costs, business performance, and even the strategy of the organization. Often circles come up with good ideas which are not practical because of strategy changes, or business decisions they don't know about. Letting them in on more information
can reduce their chances of going down blind alleys and coming up with suggestions for change that are impractical or can't be implemented.

In summary, there are some changes that can be made to an existing organization to help sustain quality circles. Figure 3 illustrates these approaches. Probably the most impactful is to develop a gainsharing formula so that everyone will participate in the benefits from improvements in performance. Other possible approaches include improved information and education for circle members and the use of training, appraisal, and rewards to develop participative supervision. The reward, information, and education system changes suggested involve changing the work organization in some important ways. Basically, they call for making it a more participative organization for lower-level participants by giving them new kinds of knowledge, information, supervision, and finally, rewards. This reinforces the point, that, for an organization to sustain a parallel structure which is participative in nature, it needs to become more participative in the way it does its day-to-day business.

Developing a Strategy for Increasing Employee Involvement

As the discussion has emphasized so far, things can be done in the organization to support the continued effectiveness of quality circles. Alternatively, quality circles can be used as a beginning point for an organization that wishes to move toward a more participative management approach. Which approach is best? The answer may be somewhat different for different organizations that have never had quality circles and those that have already engaged in quality circle activity. Let us look first at the issues that confront organizations that have never engaged in quality circle activities.
Although quality circles can be a beginning point in a move toward participative management, they are not necessarily the best place to start, nor are they guaranteed to lead to other forms of involvement. The argument so far clearly suggests that if they are to lead to more extensive forms of involvement, considerable planning, support, and transition help is needed. Indeed, one alternative clearly is to skip quality circles entirely, and go directly to teams and other participative structures. Just this approach has been used in the start-up in many new plants, and in such new organizations as People Express Airlines and American Transtech. In most cases, this is the preferred strategy in a start-up situation. It causes the organization to move more quickly toward creating a participative culture and organization, and avoids putting in place systems and processes that are incongruent with a high involvement approach.

The situation may be different, however, in existing organizations. An existing organization may not be ready to move toward a team environment, or one where task forces make a number of important organizational decisions. In this case, quality circles can provide a possible first step toward other forms of employee involvement. It is important at the beginning, however, to decide whether quality circles are an end in themselves or a transition vehicle that will lead to other forms of involvement. As has been noted already, circles need to be structured differently and people trained differently, if in fact the intention is to move to teams and task forces. Finally, in an organization which has no experience with participation, it may be desirable to consider starting with a program like gainsharing which introduces a parallel organization structure, and at the same time, changes the
reward system. When this is successfully done, there is evidence that it can lead to relatively rapid improvement in organizational performance.

In conclusion, for an organization that does not have quality circles, it is important to plan on a sequence of change interventions that will lead to the type of participative organization that is desired. The right sequence depends on a number of things including the technology and current attitudes and values of the managers and employees. For example, the more traditional the existing organization, the more likely it is that quality circles are a good starting point. If the organization is ready for a more participative approach, then quality circles may be skipped as a first step.

The decisions confronting an organization that already has a quality circle program are much different from those facing an organization with no program. Stated briefly, organizations with quality circles typically face a choice between transitioning them or institutionalizing them. Institutionalizing them can be accomplished by doing the kind of support activities that were discussed earlier. Transforming them involves the formation of other kinds of parallel structures, and/or the development of work teams as the primary focus of idea generation, problem-solving, and employee involvement.

The choice between transformation and institutionalization is not an easy one. Our reading of the evidence is that transformation is likely to lead to the greatest organizational effectiveness in the long term. However, it is clearly a difficult step to accomplish, as it involves the development of a new philosophy about managing. In addition, it requires significant changes in managerial behavior and the
development of a long-term perspective on organizational performance. For a number of reasons it may not be practical or desirable to think about a major transition effort in an organization. For example, the resources may not be available to support it, or instability may be so great that no long-term commitments can be made. Finally, the power structure in the organization may not be receptive to more intensive forms of employee involvement. In this case, the best strategy may be either to allow quality circles to fade away entirely, or to make the contextual and structural changes to assure that they continue to operate.

CONCLUSION

Quality circles are potentially useful in helping move an organization toward greater effectiveness. Their orientation and structures are consistent with a participative approach to management. As such, they pose a challenge to traditional approaches to management. The challenge simply stated is how well traditional approaches can coexist with quality circles. Our view is that, in the long term, quality circles have trouble existing with traditional management approaches, and as such, they either fade or major features of traditional organizations need to be changed. There is no road map for how to use quality circles. However, there are some strengths and weaknesses of quality circles which suggest that careful consideration needs to be given before they are chosen as an approach to participative management, and that in most cases, it may be best to transition them to another form of participative management.
Selected Bibliography


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FIGURE 2

QUALITY CIRCLES

- MANAGEMENT DEVELOPMENT: A NEW "LOGIC"
- TECHNICAL AND ORGANIZATIONAL REDESIGN
- CHANGES IN PERSONNEL AND OTHER SYSTEMS
- SUPERVISORY DEVELOPMENT: NEW ROLES
- TEAM TRAINING: TECHNICAL BUSINESS GROUP PROCESS

WORK TEAM ORGANIZATION
FIGURE 3
STRENGTHENING THE QUALITY CIRCLE APPROACH

APPROACHES TO CREATE A SUPPORTIVE CONTEXT AND STRENGTHEN THE CIRCLES:
- GAINSHARING
- CIRCLE TRAINING
  - BUSINESS
  - TECHNICAL
- INCREASED SHARING OF INFORMATION
- WORK GROUP PERFORMANCE MEASURES
- BUSINESS ECONOMIC DATA
- SUPERVISORY AND MANAGEMENT DEVELOPMENT, APPRAISAL, AND REWARDS

INITIAL QUALITY CIRCLES

STRENGTHENED QUALITY CIRCLES PROCESS