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The viability of Quality Circles in the Republic of South Africa

M. Mackay
S. Saunders

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M. Mackay
S. Saunders

Pretoria
Human Sciences Research Council
1985

M. Mackay, M.A., Chief Researcher
S. Saunders, B.Comm.(Hons), Researcher

National Institute for Personnel Research
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OPSOMMING

Die lewensvatbaarheid van die GehalteKringe begrip onder Suid- Afrikaanse toestande word ondersoek. Sleutelaspekte voor of teen die sukses van GehalteKringe word bespreek in die lig van in literatuuroorsig en gevalle studies. Riglyne vir suksevolle implemetering word bespreek.

SUMMARY

The viability of the Quality Circle concept under South African conditions is examined. Key issues which would either favour or mitigate against the success of Quality Circles are discussed in the light of a literature survey and case studies. Guidelines for successful implementation are discussed.

1. INTRODUCTION

The Productivity of the South African workforce is generally acknowledged as being low by world standards (Etheredge, 1982; Evans, 1983). One of the central issues in this problem is the necessity of closing the wage gap with a concomitant increase in labour productivity. The serious shortage of skilled manpower in South Africa is one of the reasons why this goal has proven to be elusive. The result has been an inflationary spiral in the country's wage bill and a low rate of productivity improvement.

A recent trend in management philosophy has been increasing use of participatory styles of management. This approach to management has been justified by academics on economic, social and moral grounds. Japan has become one of the leading exponents of this approach. The world has looked with envy at the rate at which Japan has conquered foreign markets. This rapid growth and diversification into overseas markets has largely been attributed to Japan's sophisticated technology and its impressive growth in labour productivity. The underlying factors contributing to the latter have been open to much speculation and investigators have suggested the use of participative management as a key factor in their success. One of the management technicques utilised in Japan has been Quality Circles (QC). Quality Circles have now been introduced to South Africa and it is apparent that the philosophy has been met with a great deal of acceptance on the one hand and a great deal of scepticism on the other.

The primary objective of this study was to explore the viability of Quality Circles in the RSA. Secondary objectives were:

i) to investigate the broad issues involved in the implementation of the quality circles programme;

ii) to investigate those factors favouring Quality Circles, as well as those factors which might tend to operate against the success of Quality Circles in an organisation;

iii) to present some empirical examples of organisations which have utilised the Quality Circles concept; and

iv) to suggest some practical and systematic guidelines for the implementation of a Quality Circles programme in an organisation.

A literature survey was carried out in order to gain a theoretical perspective on Quality Circles and interviews with representatives of some companies which had implemented Quality Circle programmes were conducted in order to develop 'case studies' of Quality Circle implementations. Access was gained to some Quality Circle meetings and in this way some appreciation of the dynamic processes involved was developed. Seminars on Quality Circles were attended, one at which a number of case studies were presented, another at which the accent was on training. At present there appears to be a paucity of academic research on Quality Circles in South Africa.

2. DEFINITION OF A QUALITY CIRCLE

According to Yager (1980) a Quality Circle (QC) is a voluntary group of workers who have a shared area of responsibility. It meets on a regular basis to discuss, analyse and propose solutions to work-related problems and is taught group communication processes, quality stategies, and measurement of problem-analysis techniques.

The QC is encouraged to draw on the resources of the company's management and technical personnel to help solve problems. The QC actually assumes responsibility for solving quality problems, and it generates and evaluates feedback. In this way, it is also responsible for the

quality of communications. The leader is elected by the other circle members and it trained to work as a group member and not as a "Boss" (Yager, 1980).

The QC is normally a group of people who usually work together to produce a part of a product or service. QC leaders generally undergo training in leadershp skills, adult learning techniques, motivation and communication techniques. QC members are generally trained in the use of various measurement techniques and quality strategies, including cause-and-effect diagrams, pareto diagrams, histograms and various types of check sheets and graphs. A typical QC consists of five to ten members. Meetings are held in company time and on company premises.

Usually more than one QC is functional in a company and the person who co-ordinates the various QC activities, undertakes their training, is their link to management and is known as the facilitator. The role played by the facilitator is crucial to the success of QCs.

3. BACKGROUND OF QUALITY CIRCLES

After World War II, a Statistical Quality Control (SQC) system was is introduced to Japan by an American quality control expert Dr W E Deming (Roberts, 1982). His work resulted in the formation of the Japanese Union of Scientists and Engineers (JUSE) which actively and with success promoted SQCs. In spite of this success many problems were encountered as 'ownership' of the concept was usually vested in one department and commitment from either top management or workers was limited.

The impetus for further change was provided by another American, Dr J M Juran (Robson, 1982) who, during a visit to Japan in 1954, indicated that quality control should be vested in line management and not in what could be termed a 'police department' within the organisation. In Japan

this was a highly acceptable view and it went ahead with a national programme called Total Quality Control which involved inter alia radio programmes, prizes, etc.

Although Dr R Ishikawa is generally viewed as the father of QC, the latter was really the outcome of an evolution of ideas which grew out of his book-reading circles which he put forward in an article in the magazine Quality Control for the Foreman. The book-reading groups sought more than theoretical study and became involved in problem-solving. These, now QC groups, spread relatively slowly at first, then very rapidly. Robson (1982) states that by the mid-1970s there were 75 000 QCs registered with JUSE and probably many more operating that had not registered formally. He also states that despite initial resistance QCs had, by the 1980s become a world-wide movement.

The concept of QCs now appears to be generally seen as fitting into the general theoretical framework of Ouchi's Theory Z (Sullivan, 1983). Ouchi (1981) developed this concept after an investigation of Japanese organisations. On the basis of his investigations, he isolated successful Japanese business practices which he thought would be compatible with the Americal Corporate Atmosphere. These practices involve fundamentally different insights about competitiveness, the nature of organisational structures and goals, the relationship between employers and employees, the recasting of lifelong career goal-setting and a deep rethinking of why organisations exist in the first place (Crapo, 1982).

Ouchi distinguished American companies which utilise these practices (Type 2 companies) and companies which rely on traditional American business practices (Type A companies). Ouchi's main thesis was that if American companies could utilise Type 2 business practices they would be able to meet the Japanese challenge for overseas and domestic markets. Ouchi (1981) stated that Type 2 companies are characterised

by their devotion to their human assets. The following are further characteristics viewed as common to Type 2 organisations:

* Long-term employment
* Collective decision-making
* Individual responsibility
* Infrequent evaluation and promotion
* Implicit, informal evaluation
* Non-specialised career paths
* Holistic concern for people

(Ouchi and Johnson, 1978)

Hatvany and Pucik (1981) developed a Japanese management paradigm focused on human resources, incorporating these points, presented in Figure 1.

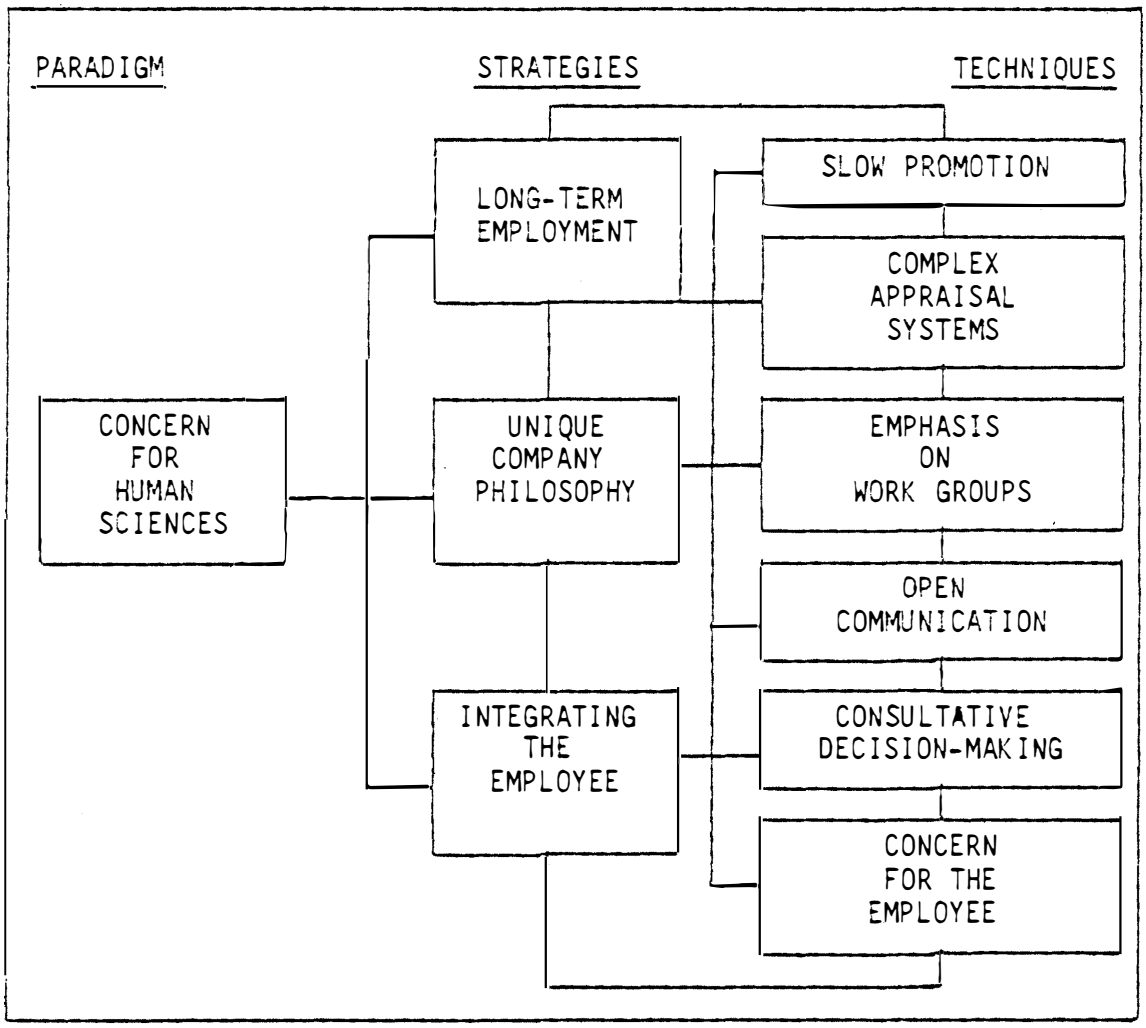


FIGURE 1: JAPANESE MANAGEMENT PARADIGM
(SOURCE: HATVANY AND PUCIK, 1981)

Sullivan (1983) cited empirical evidence which calls into question Ouchi's description of the way in which theory 2 describes descisionmaking in Japan. Ouchi's formulation was also attacked by Sullivan on purely theoretical grounds and he further asserts that theory Z does not really emerge out of Japanese conditions as Ouchi finds them. Rather Japanese firms just exhibit bits and pieces of the theory. Applying this to quality circles, Yager (1980) stated that 25 percent of all Japanese hourly employees were at that time members of a voluntary Q C, and Hodgson (1983) that 50 percent of all Q C's operated on a successful basis which may lend credence to Sullivan's criticism.

However a survey of the literature tends to give contradictory data on the success or failure of Q C's. It is certain that extravagant claims of success abound, as do equally sceptical views.

In terms of the RSA situation, it is perhaps useful to examine further the Type Z organisation since it would appear that in the Japanese context, these are the companies in which Q C are most likely to be successful.

Bryan (1982) noted that employees in such companies were extremely curious about all aspects of their jobs and products. Thus group-directed quest for knowledge was based on the premise that the more the employee knows, the more effective he can be. These companies also emphasise 1) quality control and attention to detail to the extent that an awareness of quality control permeate, 2) all the traditional business functions like planning, scheduling, controlling, and inventory management.
Another notable feature of the management philosophy is that the company tends to be regarded as an extension of the family. Sullivan (1983) referred to this type of social structure as an "industrial clan". There is a strong emphasis on life-time employment and a recognition of

co-destiny with the company. Thus approach is reflected in the way in which companies provide housing and home loans, sponsorship of company off-the-jobb activities, employee country clubs and resorts. This promotes "esprit de corps" amongst the employees and increases their commitment to the company. In addition companies select workers not so much on technical skill, as on "how will he/she fit into the company family?"

These organisations are also characterised by a tendency to train employees with company-specific work skills and reward seniority employees with premium wages. There appears to be less concern for hierarchical status symbols, such as private offices, and there are more commonly shared work areas. Type 2 workers are encouraged to share their personal problems with their supervisors at work. This is seen to promote greater equality in singleness of purpose.

Ouchi (1982) also contended that every type 2 company was characterised by a distinctive philosophy of management which supplied the underlying premises for decision making. A type 2 organisation has relatively weak monitoring capabilities and must thus rely on a relatively complete internalisation of its philosophy by all employees. Control is thus maintained through a process of acculturation of socialisation of employees.

Bryan (1982) stated that the type 2 organisation places a lot of emphasis on management by consensus. Managers are willing to arrive by protracted decisions, involving everyone affected. This approach is based on the assumption that workers want to have some control over their working lives. Team-work and group accountability is emphasised which results in greater worker intercommunication and social pressure to be productive.

Johnson and Ouchi (1974) also maintained that this type of organisation emphasises the flow of information and

initiative from the bottom up, in that the people closest to the problem are generally regarded as more capable of generating solutions to the problem. This has the effect of making top management the facilitator of decisionmaking rather than the issuer of edicts. Middle management is used as the impetus for, and shaper of, solutions to problems. This requires highly developed communication skills. Q C's, as tools of consensus decisionmaking, initiate solutions to problems from the bottom up, and at the same time contribute to satisfying the recognition needs of employees.

In a comparison of South African organisations with type 2 organisations, several differences emerge. While there are South African companies which base their management philosophy on human resources, these are thought to be in the minority. Long-term employment, an important factor in the public sector, is not as pervasive in the private sector. With regard to evaluation, the South African emphasis tends to be on formal, regular, explicit evaluation, although only a minority of companies uses a scientifically developed performance appraisal system. The predominant managerial style in South Africa tends to be authoritarian which has an important effect in creating organisational "climates". Although there are notable exceptions in the mining industry, very few South African organisations have succeeded in having their employees regard the company as an extension of the family. Indeed, one could argue that the cultural basis for such a value amongst South African workers is practically non-existent. Finally, relatively few local companies publicise their "distinctive philosophy of management". It is thus difficult to assess whether any particular management philosophy supplies an underlying premise for decision-making.

4. THE PROCESS OF QUALITY CIRCLE PROBLEM-SOLVING

Before discussing the process involved in quality circle problem-solving, it is interesting to note Agnew's (1982) conception of quality circles as an organisational change-agent:

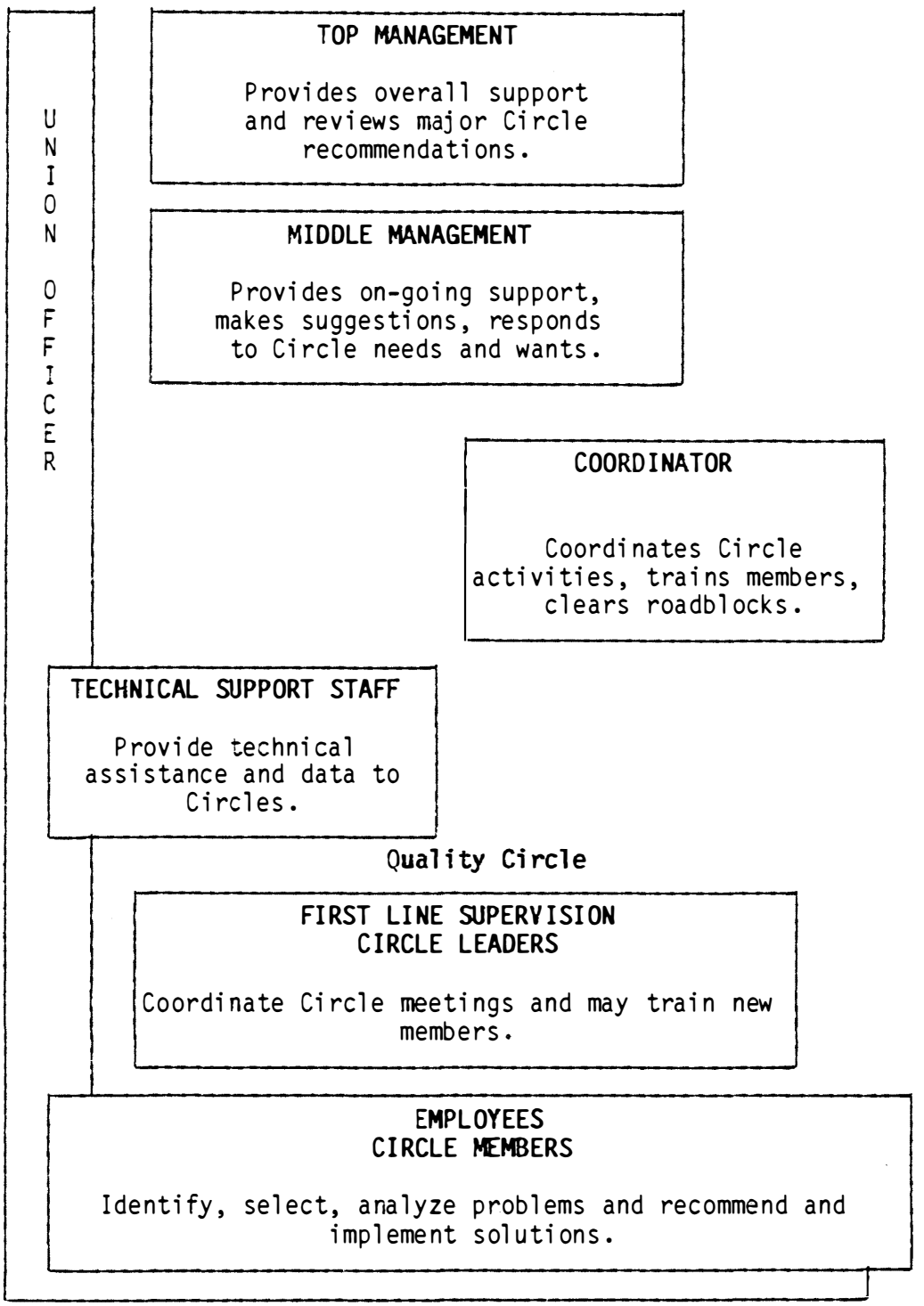
> "This idea is elegant in its simplicity but mind-blowing in terms of normal management philosophy which specialises tasks and isolates people in little boxes to carry them out ..... it is subversive in terms of the organisation structure which tries to separate power and knowledge from work, and preserve them for the top echelons ..... the effects are long-term, unstructured, even uncertain ..... quality circles now provide learning which will make worker participation workable."

Figure 2, places quality circles within the context of the total organisation. It shows the relationships between the various parties involved in quality circles: The Steering Committee, top and middle management, the circle co-ordinator, technical support staff, supervisors, shop-floor employees, and union representatives.

QUALITY CIRCLE SYSTEM

STEERING COMMITTEE

Composed of top management and union leadership, sets policy and organisation support for Quality Cirlces.



SOURCE: Whitehead - Morris Training Course (1982)

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Bendix and Bocker (1982) designed a process flow model of the QC system which provides a sound framework for conceptualising the workings of a QC. This is presented in Figure 3. Much of the following discussion of the model has been extracted from Bendix and Bocker's article.

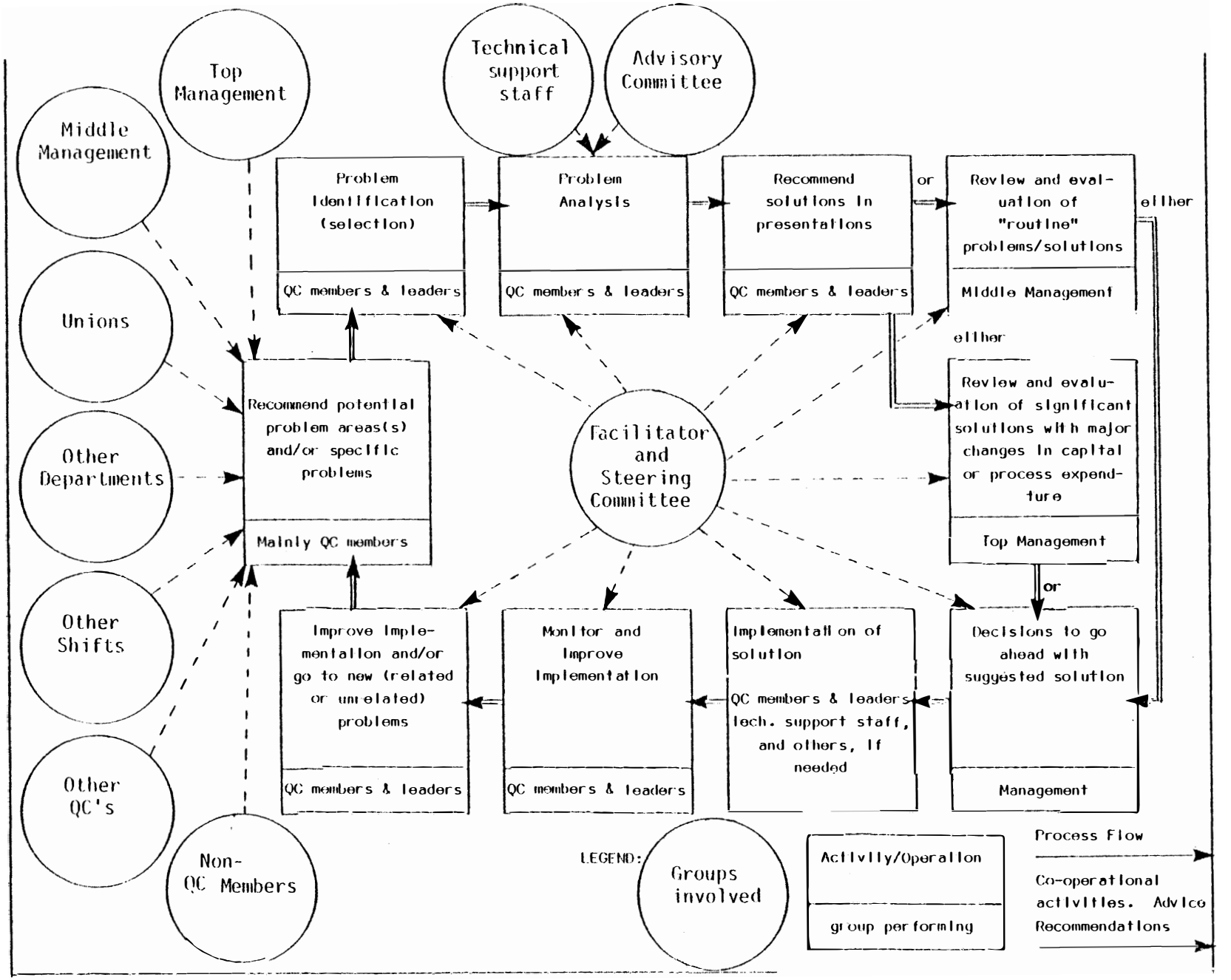
Figure 3 represents a model of the QC process flow for one complete cycle. It shows the various interdependencies of all groups involved. The faciltator or coordinator and the Steering Committee are in a central position. It also shows how the QC system actually works. Once management has made the decision to introduce the QC system, the first step of the process would be a recommendation of problems to the QC. The QC could receive input from seven external sources or groups: Top management, Middle management, Unions, Other departments, Other shifts, Other QC's, and non-QC members. However, the most important source of input is the QC members themselves, and the final decision should rest with them.

Once the problem has been selected, a thorough analysis of the problem should follow. If necessary, the QC members should be supported by the expertise of technical staff, and the Steering Committee. The QC is encouraged to approach the problem in a systematic manner, and to utilise statistical techniques where appropriate. QC's should also be encouraged to "cost" their proposed solutions to problems. The solution is then presented to management in a brief, yet comprehensive, proposal. These recommendations are normally reviewed and evaluated by Middle management. According to Bendix and Bocker (1982), the QC presentation is only made to top management under special circumstances, involving major changes in capital or process expenditure. The proposal is either accepted or modified. the authors state that referrals or outright rejections, should be the absolute exceptions, and should be supported by detailed reasons. The original or modified suggestion is then implemented, modified and improved, if necessary. The cycle

is closed with the selection of a new problem or, very occassionally, the reconsideration of a solution returned for improvement or change.

Further, with regard to figures, it should be noted that the circles indicate the groups involved with some input and the squares represent the activities or operations to be performed during the QC process cycle. The solid arrows show the directions of the process flow, and the dotted arrows show the advisory or recommendational inputs from the various groups to the QC.

It should also be noted that not all QC's function in this manner, and that most South African companies using the QC concept have "adapted" it to local conditions.



From Bendix & Bocker, p. 6

FIGURE 2: The closed cycle model of a QC process flow

5. KEY ISSUES IN QUALITY CIRCLE IMPLEMENTATION:

The following list is not intended to be definitive, but is intended for the consideration of the type of issues which might be relevant in the decision of whether to introduce a QC or not.

5.1. Organisational Readiness

Critics differ as to the impact of organisational climate on the success of QC's. Cook (1982) pointed out that the implementation of QC's in an organisation nearly always involves a major organisational development effort complete with changes in power and authority, and employee roles. He further noted that shifts of power and authority in decision-making and problem-solving processes can pose a threat to middle managers.

Robson (1982) asserted that QC's can help to change the culture of an organisation to one where there is common ownership of corporate goals, underspread commitment of the workforce, and genuine two-way communication. Whatever the critics say, it is evident that a suitable organisational climate is necessary, but not sufficient, condition for the successful implementation of QC's. It is highly unlikely that an organisation which has been characterised by an autocratic style of management, and/or poor industrial relations, would be able to sustain a successful QC programme in the long run.

Another aspect of organisational readiness is managerial competence. In keeping with the concept of an organisation as a socio-technical system, managers first need to attend to technical priorities, before they can expect to deal effectively with human matters.

Whitehead-Morris (1982) proposed an analysis of the forces either facilitating or retarding the installation and maintenance of QC's, is based on Lewin's concept of force-field analysis. Forces seen as acting to encourage

participation are regarded as positive, and include the following:

1. Interdependence of management/workers to have the organisation succeed.
2. Managements's concern for reducing resistance to change.
3. Worker discontent with the present job structure.
4. Improved education and skills of workers.
5. Increasing needs of workers for control over the work experience.
6. Existing quality problems.
7. Stagnant productivity.
8. Loss of jobs due to the organisation's inability to compete.
9. The need for permanent resolutions to problems.
10. Management's recognition of the potential of worker contributions.

Forces perceived as acting to discourage acceptance of worker participation are regarded as negative and include the following:

1. Perceived differences in management versus worker goals.
2. The costs involved.
3. Management's impatience to see results.
4. Past management/union relationships.
5. Lack of a model to structure such a project.
6. Lack of knowledge/skill of underlying principles of how to begin.
7. Mutual mistrust perceived.
8. Managements perceived loss of control.
9. Impact on management-labour contractual obligations.
10. Ambiguity of goals and outcomes.
11. Rigid or autocratic management styles.
12. Unwillingness to commit time.

13. Unwillingness to make the necessary investment in training.

(Whitehead-Morris (1982))

An implication of such an analysis would be that negative "hygiene" factors should be removed before implementing a QC programme. Hygiene factors would include safety and health aspects, workers grievances, pay disputes and the like.

An issue which has often been discussed in connection with QC's is that of national culture. Hutchins (1983) considered it vital to the long term success of QC's to realise that while the national culture and characteristic of a people are not relevant to this style of management, both the culture and philosophy of management within an organisation itself are fundamental to success. While his remarks concerning national culture and ethnic characteristics might be debatable in the South African context, he made a highly relevant point concerning the west's attitude towards quality control. He highlights the Japanese concept ot Total Quality Control (TQC) or Company Wide Quality Control (CWQC) which is based on quality control diagnosis and auditing, participation by all employees, quality control education and training, QC activities and utilisation of statistical techniques. He further quotes Professor Ishikawa, as having repeatedly said that he doubted the long term viability of QC's in the west, given the latter's lack of understanding of Company Wide Quality Control.

Daniel (1982, 1983) and Thompson (1982) also highlighted the importance of assessing organisational readiness. Thompson (1982) stated categorically that if an organisation is not ready for the effort and effect of QC's, the programme will fail in spite of the best implementation strategy. He provided some "organisational readiness" indicators"

1. Internal project staffing - i.e. whether the human resources are available.

2. Openess from management.
3. A time commitment.
4. A financial commitment.
5. A crisis status in the organisation - i.e. whether the organisation has problems which require solutions.
6. A commitment to skills training.
7. Voluntariness of employees.
8. A healthy growth rate.
9. Size - i.e. the organisation must have sufficient resources.

Daniel (1983) stated that many organisations are not able or ready to adapt and change to a management style consistent with the QC way of life. Until most, if not all, of an organisation's management personnel have been given an understanding of QC's, this change should not be attempted. An issue closely allied to that of organisational readiness, is that of managerial commitment.

5.2. Managerial Commitment and Support

Many writers have stressed the absolute necessity of a commitment by management to QC programme. Robson (1982) saw commitment from top management as the most basic requirement for introducing a QC programme. However, he warned that this is the commitment which is easiest given by senior management and least believed by everyone else in the company.

Daniel (1983) stressed that commitment must be demonstrated from the top down in the form of participation, support and involvement. It must be clear that the QC process is just one step in an ongoing effort to develop a more trusting work environment for all. This commitment should entail attendance by managers at QC meetings. Lack of attendance by managers could be seen as a critical factor in the failure of a QC programme. Attendance at meetings

effectively demonstrates endorsement, support, participation, and interest, and builds trust through face-to-face involvement and communication.

(Daniel, 1983)

Commitment should be based on understanding. QC's should not be regarded as a panacea for all organisational ills, not as a "one-shot" gimmick, but as a distinctive philosophy of management which requires a long-term commitment to the success of the programme. As long as managers regard the programme as a "trick" of the Unions to put the workers in command, the programme has no hope of success (Bendix and Bocker, 1982). Middle managers, in particular, are likely to feel threatened by QC's making presentations to top management. They are typically afraid that QC's will undermine their authority.

The answer to this type of problem could lie in the education of middle managers through clear communication of the role of QC's, from the top down. However, many managers are still likely to believe that an endemic part of QC's involves management surrendering its prerogatives. Daniel (1982) believed that management retains its responsibility and right to issue policy statements to QC's, instructing them that there are issues they can and cannot work on, e.g wage and salary matters, union agreements, etc. Much of the problem revolves around the objectives of QC's, as perceived by management, and as they are perceived by QC members.

5.3. THE OBJECTIVES OF QUALITY CIRCLES PROGRAMMES

With regard to management's viewpoint, it is likely that economic benefits apparently associated with QC's are the first priority. This is what Cox (1981) termed the "direct pay-off". Secondary objectives would be the improvement of communication between managers and subordinates, the development of a "quality-mindedness" approach to their work by employees, and the personal development of participants in the programme. Agnew (1982) emphasised the objective of

changing work relationships, the exercise of power and of improving mutual understanding and acceptance between supervisors and subordinates.

O'Neil (1982) adopted an interesting approach to the objectives of QC programmes. He stated that the concept of quality had shifted from conformance to specification towards provision of customer satisfaction. He saw QC's in the context of a totally integrated marketing strategy designed to meet consumer needs. If a company wished to achieve customer satisfaction, it needed QC's in every department. This point of departure appears to be in contradiction of the "panacea syndrome" (Daniel, 1982; 1983).

With regard to workers' viewpoint, it is likely that they would attach a high priority to the perceived "human" or development objectives of a QC programme. The difference in emphasis between management and worker perceptions could create problems when one party takes a decision based on one premise, and the other party evaluates the decision on the basis of another premise. There needs to be a clear understanding on the part of both management and QC members as to the priorities of the various objectives of the programme.

The concept of ownership of QC's is related to the perceived objectives of the programme. Robson (1982) stated that, logically, the QC's belong to the QC members, but warned that there was a danger that this ownership might be perceived as a threat by line management above the QC. He also stated that line management's ownerships must lie in support of the concept of QC's as an integral part of a way of managing. Robson further warned that it was vital for the succes of the programme that the company did not use QC's as a manipulative device to get more out of the workforce. Bendix and Bocker (1982) also warned against this misrepresentation.

The motives of management in introducing the programme, and the possibility of "hidden objectives" and "concealment of ownership", is an asset which would be of particular concern to trade unions. Robson regards the "right frame if mind" as an important prerequisite for the long-term success of the programme. It is felt, however, that when all these aspects are taken into account, it can be argued that QC's represent a means of drawing informal social relationships into a legitimate organisational structure, as a form of participative management. The legitimacy of this structure enables management to control workers more effectively. In the South African cultural environment this can be viewed in both a positive and a negative light by workers, where on the one hand Black workers in particular would be likely to approve of greater participation, but on the other would perceive the technique as an oblique threat.

5.4. UNION INVOLVEMENT

As mentioned previously, the perceived objectives of the QC programme, and the question of ownership of the QC's are likely to be sources of concern for the effective union. Bendix and Bocker (1982) stated that without he Union's support, or at least its well-meaning neutrality, there was not much hope for succes. Union members and leaders had to be convinced that the QC concept was not a trick of management trying to gain influence.

Timing is also an important aspect. It would not be wise to start the programme just before an agreement expires. This would only serve to increase tension. It is advisable to wait until the bargaining process is over. Union leaders or labour leaders in non-unionised environments should be included at the very earliest stages of the programme of discussions and planning. They should also share part of the responsibilities and rewards (Bendix and Bocker, 1982). It is also likely that many unions will perceive QC's as a threat, and will regard them as an erosion of the Union's

powerbase at the grass-roots level in an organisation.

5.5. THE ROLE OF THE FACILITATOR

There appears to be some confusion in the literature concerning the terms "facilitator" and "co-ordinator". Robson (1982) draws a distinction between the two, and merely regards the facilitator as a "circle helper", while the co-ordinator is the individual who initates changes in QC policy matters. However, in practice this distinction is superfluous as one individual normally fulfills both these roles. (See Figure 2). In this report the term "facilitator" will be used.

Robson (1982) provides a useful insight into the role which the facilitator plays in the QC programme. The policy-making duties of the facilitator are summarised as follows:

1. He is required as the focal point for the programme.
2. He administers the QC programme.
3. He must ensure good communication between QC's and others who are not direct participants in the programme.
4. He has to "oil the wheels" as and when is necessary while being careful to ensure that any oiling does not take the ownership of the process of the QC process away from the members.
5. He is required to make policy decisions relating to the programme and to plan any phases of expansion in conjunction with the steering committee.
6. He should attempt to preserve the core principles of the approach and not to allow an dilution for reasons of expediency.

The more routine tasks associated with the facilitator's role can be summarised as follows:

1. His most important task is to make the QC independent of him as soon as possible.
2. He has a vital role in providing feedback about issues of group process within the group, since group process, or how the QC goes about performing its chosen task, has a significant effect on its ultimate success.
3. He has to ensure that the group leader develops in both competence and confidence in the leadership of the group.
4. He should encourage the leaders and members to make it easy for others, managers and staff, to support the programme.
5. His tasks are likely to involve assisting with arrangements, as well as "oiling the wheels" of progress, as necessary, without falling into the trap of doing everything himself.

(Robson, 1982)

It is important to note that the facilitator's role is extremely important in the planning and initial stages of implementation, but that once the QC has been established, his role is of lesser importance, while that of the QC leader assumes increasing importance.

5.6. THE ROLE OF THE SUPERVISOR:

There is a degree of uncertainity concerning the role of the front-line supervisor in a QC programme. The basic question revolves around whether or not the supervisor is to be the QC leader. There has been a suggestion that the South Africa supervisor has lost much of his authority in the work place since the advent of Black trade unions in this country and that QC's could be a means of restoring some of this authority to him. Opponents of this point of view regard this as a major deviation from the core principles of voluntariness and freedom of choice. They feel that QC members should be free to choose a leader from their own

ranks, and that the supervisor must take his chances with the rest. An implication of appointing supervisors as circle leaders is that this only serves to reinforce the perception that the QC programme is a means by which management can control workers more effectively. The solution to this problem could be the institution of QC's consisting only of supervisors thus ensuring homogeniety of the group.

5.7. TRAINING OF QUALITY CIRCLE PARTICIPANTS:

It would be most unwise for companies to introduce QC's without prior training. If the QC is to herald a new and effective rapport between the grass roots and others in the organisation, then it will have to be trained to communicate. (Cox, 1981). In this section various views on training are discussed and the validity of one approach as to another would in general be a function of the type of organisation involved.

There are advantages and disadvantages attached to whether the training is conducted internally or by a management consultant. Cox (1981) feels that while consultants do a creditable job of selling the idea of QC's, there is a tendency to withdraw from the scene at the point where training commences. There is a growing tendency to get over the above-mentioned difficulty by training only QC leaders. This approach is not regarded as satisfactory as the really effective QC will have had its leader trained along with it. The rationale behind this is that only a small proportion of good QC training is concered with problem solving techniques. The bulk is about attitudes, confidence, creativity, and identity within the QC itself. Training the QC without the leader would be more rewarding than training the leader without the QC. (Cox, 1981). Metz (1982) feels that, in the United States, commercially available programmes appear to be superior to "home-grown" products in terms of training content quality and programme design.

Another issue to be resolved in that of the participants in the QC training. While it is relatively obvious that the facilitator, QC leader and QC member need to be involved in the training, the role of management is less obvious. However Metz (1982) states that this is one aspect which is often ignored, short-cut or poorly delivered. Unless management is also trained in QC concepts, programme design, problem-solving techniques and positively to reinforce the leaders, the QC effort will soon experience problems with lack of adequate management support.

Cox (1981) stated that while detailed training in problem-solving techniques infers that these techniques are crucial to the effective functioning of the QC, nothing could be further from the truth. These techniques have but a marginal impact on the success of a QC. They have little or no value in solving problems of communication, of aggravation, of system malfunction, and even the vast majority of technical problems. Most problems do not require sophisticated techniques, but rather the systematic application of experience, creative thought and common sense. (Cox, 1981).

Cox places a heavy emphasis on the importance of restructuring attitudes in training. The following list shows the elements of training given to the QC, in order of priority:

1. Readjusting individual attitudes; learning to behave as a group.
2. Creativity training.
3. Collection and interpretation of information.
4. Communication.
5. The Pareto principle.
6. Cause and effect diagrams.
7. Other techniques tailored to specific situations.

(Cox, 1981)

Cox further suggests that barriers inherent in the QC areas as a residue of formal relationships have to function effectively and with confidence in its new environment.
Metz (1982) adopted a slightly different approach to QC implementation training and places more emphasis on the development of social skills. He stresses that QC training instructors need to be highly skilled in "modelling" relevant facilitator intervention behaviours and QC leader behaviours. Middle managers need to learn not only the basics of the QC process and techniques, but also how to positively reinforce participative behaviours in their supervisors and circle leaders. QC leaders need practice in modelling non-directive leadership behaviours as part of their initial implementating training.

It has also been suggested that it should not be assumed that individuals who have professional backgrounds will be any more effective at solving problems or becoming a cohesive team than will individuals who are blue-collar or factory employees. It appears that all individuals need complete training in the application of QC problem-solving and techniques.

(Metz, 1982)

The QC leader's training should specifically concentrate on QC meeting leadership skills. He should be aware that the leader's tendency to dominate the meeting is likely to result in a reluctance to participate on the part of QC members. He should be trained to recognise the contributions of members, as well as group process issues, e.g. counterproductive member behaviours and competition within the group. The importance of setting and sticking to an agenda should also be stressed. Time-management, planning and scheduling skills form another important component of leadership training. Finally, training in communication skills is vital for the QC leader..

A highly relevant question in South African context concerns

the extent to which relatively uneducated black workers can be expected to handle this type of training. It has been suggested that the NIPR's 6M programme, which aims at inducting unsophisticated workers into basic business concepts, should precede any QC training for low-level workers.

5.8. THE CONCEPT OF VOLUNTARINESS

Voluntariness is regarded as one of the core principles of QC programmes (Robson, 1982; Whitehead-Morris, 1982), yet this is often misunderstood by both management and staff. Robson considers a vital strength of a QC programme that should there be people who do not wish to join in their views should be respected. The advantage of voluntariness is that it will increase the commitment of members to the programme.

An interesting proposal, not often considered, is that voluntariness should operate on a week-to-week basis. Members should feel free to participate or refrain from participation if they so desire. (Robson, 1982). This could, however, lead to discontinuity in the QC programme especially when the QC programme is newly instituted.

5.9. EVALUATION OF QUALITY CIRCLE EFFECTIVENESS

The question of evaluation of QC effectiveness is one which has received scant attention in the literature. However, it is an issue which requires due consideration prior to the QC implementation decision. While it is relatively obvious that the effectiveness of QC's should be evaluated against the objectives of the QC programme, this is difficult in practice. Measurement problems with regard to both economic and human objectives are a major stumbling-block.

It is possible to conduct a cost-benefit analysis of individual QC's. Indeed, each QC should be encouraged to cost its proposals to management. The return on investment

(ROI) can be calculated for each QC, and savings attributable to QC activity can be estimated. However, it is also unrealistic to expect significant financial gains over a short time period. Whitehead-Morris feel that a year or more may be required before this particular aspect begins to pay off, but that significant gains in terms of human relationships will become apparent much sooner.

An important aspect would be the provision of feedback to participating circles. This should also be linked to the public recognition of achievements. This not only contributes to the cohesion of the group, but it can also satisfy the recognition needs of participants. A particularly useful means of public recognition, is the company newsletter.

A certain amount of doubt surrounds the use of monetary incentives. The use of economic incentives might serve to reinforce perceptions (or misperceptions) of the motives of management. The QC purist would regard this as contrary to the principle of voluntariness, however, some companies have found this an effective method of motivation of QC's to function effectively.

6. QUALITY CIRLCES IN THE RSA

QC's are at present receiving widespread attention in this country, a great many consultants offering their services to companies who wish to implement QC's. Unfortunately some of these consultants are chiefly interested in selling a "package deal" and do not pay sufficient attention to factors such as organisational readiness, level of employees, etc., and also do not follow up on their clients. Some consultants, on the other hand, offer excellent courses and are already adapting these on the basis of feedback received. Companies are also adapting or tailoring the original QC concept to fit in with specific in-company

demands. In the process both companies and consultants have, in many cases, changed the name for a variety of reasons. Some have felt that the term QC is too closely linked with Japan in the minds of employees and thus open to the criticism that is inapplicable in the South African context. Others have indicated that the term QC can be confused with Quality Control and thus be perceived as a threat.

It is clear that there are many misconceptions about the QC on the part of commerce and industry, the most common being that it is something which can be "grafted" onto the concern. The National Productivity Institute (NPI) has instituted a QC forum to promote QC's, provide information and training and to monitor progress being made in the RSA. This is called the National Association of Productivity and Quality Circles of South Africa (NAPROQCSA). This is managed by a council selected as follows:

- six from commerce and industry
- two from the public sector
- two academics
- one from NPI
- two others

Prof J G Riddell, President of NAPROQCSA gives a more detailed statement of its aim:

> "The formation of the National Association of Productivity and Quality Circles of South Africa is the culmination of hard work, co-operation and conviction of many people. NAPROQCSA has been established to be of assistance to all people, institutions and consultants who are interested in promoting the small group activity concept with the objective of improving the quality of work life of everyone.
>
> The main objective of NAPROQCSA is to co-ordinate, in an

orderly manner, all interested parties in order to disseminate information, give guidance and to arrange for seminars and conventions on an ongoing basis. Productivity circles, quality circles or small group activities are here to stay and if we want to make them an ongoing success, we must ensure training, opportunities and leadership to all.

It is of paramount importance that we pool our efforts, share our successes and non-successes and be particularly aware of shortcomings in order that we may improve in effectiveness and efficiency.

The aim of all our efforts is to increase individual productivity and more important to raise the status of all members of any organisation and indeed the entire working population in South Africa.

Our aims, ideals and objectives must not be conflicting - this would be counter-productive. We must ensure that that all action we take is pro-active and effective.

It is the aim of NAPROQCSA, not only to look after the interests of the individual and organisation, but also to act as a co-ordinating body for all consultants, educational institutions, administrators, facilitators and co-ordinators and also act as a clearing-house for all matters pertaining to this wonderful concept."

Very much a problem in the RSA is the heterogenious nature of its work force. QC's have failed in some companies at low level jobs due to illiteracy, lack of understanding of basic concepts involved, union misconceptions, and social factors (e.g. increased productivity seen as a means to reduce work force, thus doing someone out a job). The role of education in this context becomes very important - Prof J P de Lange made the following points in a speech at NAPROQCSDA's General Meeting:

He highlighted the vital role of education in the country noting that it was necessary to take into account the aspirations and talents of the individual. He stated that there were in fact three basic types of education:

(a) Formal education, which takes place at schools, universities, technikons and other such institutions.
(b) Non-formal education, which comprises organised attempts at specific learning needs.
(c) Informal education, which is education of life.

Prof de Lange went on to discuss the various types of economy existing in the world today:

(a) Third world economy, in which little capital is used and the labour is not highly trained.
(b) Second world economy, in which, as the process becomes more sophisticated, there is a need for both trained labour and trained users. This requires that there be a certain technical literacy.
(c) First world economy, which is even more sophisticated.

Prof de Lange stated that our third world economy in South Africa needed technology in order to enable it to graduate to a second world economy and that this means more education. In order for us to be effective economically, we must operate on all three levels of education.

We in South Africa are confronted with a technically naive society and consequently the role of non-formal education becomes more important. We must use it as the agent of change. By using it effectively it will be possible to bring about an improvement in the quality of

work life. This in turn will bring about an improvement in the quality of family life.

While formal education is of course important, it has tended to become distorted by economic considerations. Formal education concentrates more on basic literacy and neglects technical and scientific factors, particularly during the first six years. There was, he stated, certainly a need for a broader base: the problem of course being that this was very much a long-term solution.

Where QC's have been successfully implemented most of the conditions mentioned earlier in this report were met, whilst unsuccessful QC's were generally those "grafted" onto companies which were not mature in terms of organisational development and where middle management had little or no commitment to the project. Distinct difficulties also arose where low level illiterate Blacks were concerned.

When QC's work they tend to seem to do so spectacularly, vide this feedback from Middelburg Steel and Alloys.

"What does the Quality Circle do for me?

Well, it gets all the people in my department together, irrespective of race.

We **identify** and **solve** problems related to our work. This is done because we are the **experts** in our particular field. In doing so, we create **motivation, team work, safety awareness, better communication** - not only with ourselves but with others. It also allows us to make our own decisions.

In our meetings everybody is treated as **equals** , thus giving all those participating a morale booster. Our decisions are made by the majority and we can choose our own problems to investigate.

Other spin-offs from QC are - we **streamline procedures, save the company money, get involved with all aspects of the job** (which gives us a better insight into our department).

We can speak freely but orderly, and we have a direct line to management due to our management presentations.

The ideas which arise from these meetings are quite heartwarming and encouraging."

However, QC's are not the sole contributor to a company' productivity as technology, capital and labour quality, together with the quality and age of machine tools, for example, also play a major role.

6.1. QUALITY CIRCLES MINI-SURVEY

A random telephone survey of 31 South African companies and organisations was conducted in order to obtain a sample of the extent to which QC's are being used in South Africa. This sample is probably not representative, although a wide variety of organisations from both private and public sectors was contacted. The respondents were asked to indicate whether their companies had, at the time of the interviews conducted in April-May 1983, started to implement a QC

A "Yes" response indicates that the company has begun to implement a QC-type programme. An "undecided" response indicates that the organisation is still investigating the possibility of introducing QC's, whereas a "No" response implies that the company has definitely decided not to introduce QC's.

TABLE 3

RESULTS OF QUALITY CIRCLES MINI-SURVEY
(N = 31 COMPANIES)

COMPANY	YES	UNDECIDED	NO
Manufacturing Company	x		
Manufacturing Company		x	
Insurance Company	x		
Manufacturing Company	x		
Manufacturing Company			x
Food Industry		x	
Motoring Industry			x
Pharmaeceutical Company		x	
Pharmaeceutical Company		x	
Glass Manufacturing Company			x
Manufacturing Company			x
Food Manufacturing Company	x		
Public Utility	x		
Manufacturing Company	x		
Manufacturing Company	x		
Manufacturing Company	x		
Manufacturing Company	x		
Furnishing Company	x		
Process & Engraving Company	x		
Manufacturing Company	x		
Food Manufacturing Company			x
Public Utility	x		
Public Utility	x		
Manufacturing Company	x		
Manufacturing Company	x		
Manufacturing Company			x
Manufacturing Company		x	
Manufacturing Company			x
Housing Company		x	
Car Rental Company			x
Banking		x	
RESPONSES	15	8	8
PERCENTAGES (%)	48	26	26

It appears that almost half of the organisations surveyed have, at some time or another, introduced a QC programme, or an adaptation, (approx. 90 percent) had introduced the concept in an adapted form. In addition, three companies (20 percent) experienced the failure of a QC-type programme. This figure is probably slightly higher, given the nature of the survey.

Eight organisations (26 percent) were still investigating the possibility of introducing a QC programme. Of these, half definitely intended using the QC concept, but "not at the moment", due to reasons such as "lack of expertise" and "thorough assessment necessary".

Of the eight organisations which had decided not to use the QC concept, most stated that the concept would be "premature" for their organisations. Other respondents felt that there were more pressing problems such as "supervisory training", "education and literacy training" or that the programme was just "not necessary".

7. CONCLUSION

The QC concept, given certain pre-conditions, appears to be viable in the Republic of South Africa, but not at all levels of the work force. It is enjoying fairly widespread popularity in industry and commerce and the active role of NAPROQCSA in promoting the concept and assisting interested parties is a valuable positive force. However it must be stressed that QC's cannot and should not be forced onto a company or utilized by an unready company as a panacea for all ills. Much still needs to be done before QC's can be utilized effectively at all levels and is fully understood in terms of basic function by concerned parties - it is a concept that can readily be over-simplified and consequently applied in a manner leaving a organisation worse off and with poorer labour relations than prior to its application.

QUALITY CIRCLES
REFERENCES

1. Metz, Edward J. Do your Quality Circle Trainers need more training? Training and Development Journal, Vol. 36, No. 12, December 1982, p.108.

2. Thompson, Walt. Is the organization ready for Quality Circles? Training and Development Journal, Vol. 36, No. 12, December1982, p.115.

3. Van Niekerk, G. and Esterhuysen, P. A South African Quality Circle experiment (AFR.), UNISA, School of Business Leadership Seminar 27 October 1981. (Xanthe Williams).

4. Crapo, R. T,D, and Z. Training and Development Journal, May 1982.

5. Agnew, B. Quality Circles, Industrial and Commercial Training, March 1982.

6. Cook, M H. Quality Cirlces - They really work, but ..... Training and Development Journal, January 1982.

7. McDermott, L C. The Productivity Bandwagon - The Hottest Game in Town? Training and Development Journal, April 1982.

8. Bryan, L A, Jr. The Japanese and American First-line Supervisor, Training and Development Journal, January 1982.

9. Simmons, J and Mares, W. When the workers and bosses unite, The Star, Wed. 10/11/82.

10. Daniel, R. Making Quality Circles work in your Company, Hrd People Journal, No. 6, 1982.

11. Bendix, D W F, and Becker, H J. Quality Circles as a managerial response to the productivity crisis, IPM Manpower Journal, June 1982.

12. Ingle, S. How to avoid Quality Circle failure in your Company, Training and Development Journal, June 1982.

13. Scott, D and Deadrick, D. The Nominal Group Technique: Applications for training needs assessment, Training and Development Journal, June 1982.

14. Grossman, S R. Training creativity and creative problem-solving, Training and Development Journal, June 1982.

15. Sullivan, J J. A critique of Theory 2, Academy of Management Review, Vol. 8, No. 1, January 1983, p. 132.

16. Ouchi, W and Johnson, R j. Types of organizational control and their relationship to employee well-being, Administrative Science Quarterly, 23, June 1978, p. 293.

17. Johnson, R J and Ouchi W G. Mae in America (under Japanese management), Harvard Business Review, Sept-Oct 1974, p. 61.

18. Howard, N and Teramoto, Y. Japanese vs Western Management, Management International Review, 21, 3.81, p. 19.

19. Pasmore, W and Friedlander, F. An action-research program for increasing employeen involvement in problem-solving, Administrative Science Quarterly, 27 (1982), 343.

20. Hatvany, N and Pucik, V. Japanese management practices and productivity, Organizational Dynamics, Spring 1981, p.4.

21. Burke, W W. Conversation: An interview with Richard D Wood, Organizatinal Dynamics, Spring 1981, p.22.

22. Ouchi, W G. Organizational paradigms: A commentary on Japanese management and Theory 2 organizations, Organizational Dynamics, Spring 1981, p.

23. Lim, H. A Japanese agenda for management development, Training and Development Journal, Vol. 36, No.3, 1982, p. 62.

24. Yager, E. Quality Circles: A tool for the 1980's, Training and Development Journal, Vol. 34, No. 8, 1980, p.60.

25. Marshall, G. The factory suggestion box, Industrial and Commercial Training, Vol. 14, No. 3, 1982, p. 89.

26. Etheredge, D A. The problem of productivity in South Africa, IPM Manpower Journal, October 1982, p. 15.

27. Hall, R S. Research that could be undertaken by the NIPR in the field of Industrial Relations, CSIR Special Report, Pers 342, August 1982.

28. Mackay, M, Tabane M, and Pooe, E. Aspects of upward occupational movement of Blacks; Part 11: Experiences of a Group of upwardly mobile Black Managers, CSIR Special Report, Pers 313, August 1980.

29. Farrell, J D. Swart Arbeld - Knelpunte in Arbeidsbetrekkinge, Special Report, Institute for Industrial Relations, UNISA, January 1978.

30. Roux, J V N. Die Aktivering (Motivering) tot selfstandige ontwikkeling van die swart gemeenskappe: Deel 1: Waardoriëntasie met betrekking tot gesag by Swartwerkers, Buro vir Ekonomiese Navorsing: Samewerking en Ontwikkeling (BENSO), April 1982, R18/82.

31. Cole, R E. Functional alternatives and economic development: An empirical example of permanent employment in Japan, American Sociological Review, 38, 1973, p. 424.

32. Van Niekerk, A M. The Black employees understanding of abstract concepts regarding the human factor in industry, CSIR Special Report, pers 344, December 1982.

33. Kellerman, M C. Black Workers' Comprehension problems in Industrial Training Programmes, CSIR Special Pers 347, November 1982.

34. Cox, J. Introducing Quality Circles - Training's key role, Journal of European Industrial Training, Vol. 5, No. 7, 1981, P. 17.

35. O'Neill, H. Quality Circles: Let's make it work, Industrial and Commercial Training, Vol. 14, No. 8, August 1982, p. 274.

36. Metz, E J. Caution: Quality Circles Ahead, Training and Development Journal, August 1981, 35 (8), 71-76.

37. Yager, E. The Quality Control Circle Explosion, TDJ, 35, No. 4, April 1981, p. 98-103.

Zager, R and Rosow, M P. The Innovative Organization: Productivity Programs in Action, 1982, Pergamon Press, Inc, New York, 3-20.

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Republic of South Africa
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P.O. Box 32410 Braamfontein 2017
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Telegrams NAVORSPERS
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