Title: Small Business TQM

Course: EMGT 589/689
Term: Winter
Year: 1998
Author(s): Y. Uslu

Report No: P98018

Abstract: Total Quality Management has become one of the major driving forces among businesses in the United States as a response to global competition. Many of these businesses are large organizations. Small businesses do feel the same pressure and realize the importance of quality and quality management for their survival. This paper examines TQM and its implementation in small businesses. Advantages and disadvantages in implementing TQM in small businesses are discussed, and a basic framework for designing the TQM implementation process in small businesses is developed.

"Small Business TQM"

Y Uslu

EMP-P9818

EMGT 506
CAPSTONE PROJECT

"SMALL BUSINESS TQM"

06/09/1998

Submitted to:
Dr. Dragan Milosevic

Submitted by:
Yasemin Uslu

Portland State University
Engineering Management Program
Spring 1998

ABSTRACT

Total Quality Management (TQM) has become one of the major driving forces among businesses in the United States as a response to global competition. Many of these businesses are large organizations. Small businesses do feel the same pressure and realize the importance of quality and quality management for their survival. This paper examines TQM and its implementation in small businesses. Advantages and disadvantages in implementing TQM in small businesses are discussed, and a basic framework for designing the TQM implementation process in small businesses is developed.

INTRODUCTION 2

DEFINITION OF SMALL BUSINESS 3

THE IMPORTANCE OF QUALITY IN SMALL BUSINESSES 5

TQM AND TQM PRINCIPLES 7

TQM TOOLS 10

TQM AND SMALL BUSINESS 11

TQM IMPLEMENTATION IN SMALL BUSINESSES 13

GENERAL PERSPECTIVE 13

DESIGNING THE IMPLEMENTATION PROCESS 15
Clarifying The Need To Implement TQM 15
Establish A Leadership Structure 16
Present TQM Program To The Company 17
Situational Analysis 17
Establish the Organizational Structure 20
Training and Education (Implementation of TQM Tools) 21
Establish a Feedback and Communication Structure 22
Develop an Effective Reward and Recognition System 23
Establishment of Continuous Improvement Notion 24

KEY SUCCESS FACTORS OF TQM IN SMALL BUSINESSES 24
Management Commitment 24
Leadership 25
Customer Focus 25
Benchmarking 26
Training and Education 27
Employee Involvement 28
Continuos Improvement And Measurement 29

BENEFITS OF IMPLEMENTING TQM 30

CONCLUSION 31

REFERENCES

EXHIBITS

APPENDIX I

APPENDIX II

INTRODUCTION

It is a well known fact that small companies are recognized as catalysts and as fuel for the growth of the economy. Small business owners are usually vigorous entrepreneurs who are eager to make a difference in their market place. Sometimes being small is an advantage in a fast changing market place. These small companies have the ability to respond quickly to changes in the market and to adapt faster to new and developing circumstances. They can experiment on a smaller scale and bring innovations to market in a shorter time frame. They can practice their relationship in day to day activities and keep their passion for their vision energized and pervasive throughout the organization [15]. However, in today's marketplace these efforts might not be enough for success as customers demand higher quality and lower costs.

Over the past decade, quality has gained a new meaning in the United States. Consumers demand quality, and firms must respond or perish. More and more companies have made customer satisfaction their primary goal and have learned that quality management is crucial to their success.

Although small businesses make up the majority of enterprises in the United States, until recently whenever the topic "quality" and the responsibility for it came up, only large and powerful companies have been considered to be effective. Most of the studies focused on the impact of these large corporations' impact on quality and quality management. Likewise whenever quality or quality programs are mentioned only the giants like AT&T, Motorola, Toyota comes to mind [26].

Despite all their innovativeness and ability to respond to changes quickly, one of the challenges that small businesses have been facing is to keep pace with the worldwide revolution of quality and the ever growing competition that their larger competitors are developing in the field of Total Quality. Moreover, small businesses lack the ability to impact the methods chosen to report the quality of their products, the development of new methods of quality control, or the shaping of their industry's acceptable quality standards and procedures [26].

If a small business is to survive, it is important that entrepreneurs and owners understand the impact of quality on their survival. Total Quality Management (TQM) is one of the most effective strategies that drives the success and survival of companies. Primarily, TQM focuses on the customer not the product. Secondly, this quality management approach emphasizes that quality improvement is not an individual's responsibility, but a joint effort of management, employees, suppliers and customers. Thirdly, the improvement should never end; it should be continuos. Unless small businesses understand the full meaning and the implications of quality, it is difficult to expect changes in their culture [50].

Of course, it is easier said then done; developing a quality culture is a very difficult and frustrating undertaking for small entrepreneurs within their organization. While converting the culture of an organization to Total Quality, there is an acute need to bring order and clarity to the whole process. Small businesses need a comprehensive framework for their journey to Total Quality. They should be familiar with each step of implementing Total Quality and be in a position to assess their progress throughout the process. They need to know how a Total Quality culture relates to their prosperity. Small businesses need a road map that gives order and clarity to the continuous improvement process, in turn, helping them provide the leadership to its

implementation and, once developed, assuring it a long and healthy life as a culture. This paper will be a source of information, explaining the importance of TQM and its benefits for small businesses that attempt to implement TQM.

The first part of this paper will discuss the definition of small businesses and the characteristics that define small businesses. The second part will review the role that quality plays in these organizations' lives. Then, in order to give readers a general idea about TQM, there will be a brief discussion on TQM and TQM principles. At this point, a more detailed discussion on TQM and, specifically, small businesses will take part. Then, the paper continues with a discussion on TQM implementation in small business and outlines a comprehensive designing process for the implementation of TQM. At the end of this section, key success factors for a successful TQM implementation process will be explained with a conclusion on the benefits of implementing TQM.

DEFINITION OF SMALL BUSINESS

Trying to define small business is quite complex, each small business related organization and researcher use different boundaries for the number of employees that determines whether a firm is small or not for their own purpose. Thus, Struebing and Klaus advocate that these ambiguous definitions do not matter that much, the defining number depends on how the company perceives itself [55].

For example, based on the Malcolm Baldrige National Quality Award criteria, a small business has less than 500 employees [8]. According to U.S. Small Business Administration (SBA), small business is defined by the number of employees or annual revenues. The U.S. SBA defines small business using size standards based on Federal Acquisition Regulations. The size standard for a business is determined by the type of industry, specifically the Standard Industrial Classification (SIC), that the business operates. Most SICs indicate that companies with up to 500 employees are small, but there are some that define small businesses as companies with as few as 100 employees and as many as 1,500 employees. Along with this classification, SBA also uses different employee sizes for programs such as small business loans and government procurement [5].

Researchers use different thresholds for defining a small business. For example, according to a survey conducted by Dun & Bradstreet Corporation, the typical U.S. small business:

- Has three employees (median)
- Generates between $150,000 and $200,000 in annual revenue (median)
- Is owned by a white male (53.4 percent)
- Operates at 1.3 locations
- Owner works 50.4 hours per week
- Is privately owned (not a franchise)
- The geographic center of small businesses is near Kansas City, in Carroll County, Missouri, indicating that small businesses are fairly even distributed across the nation [7].

Ahire and Golhar used a cut of 250 to study the differences of quality management between small and large businesses [1]. A more detailed classification divides 1-499 range further in the subcategories: very small (1-19); small (20-99); and medium (100-499). With this classification, any company that employs more than 500 employees is considered to be a big

company. For the purposes of this paper, companies that employ up to 500 employees will be considered as small business.

Of course, the size of a company is quite important in TQM implementations but it is not the only criterion that characterizes small business. More information is needed regarding the structure of a small business. As Haksever reports, The Committee for Economic Development proposed that the firms that can be considered as small firms should be characterized by at least two of the following: 1) Management is independent; usually the manager is also the owner, 2) Capital is supplied and ownership is held by an individual or a small group, 3) The area of operations is mainly local; workers and owners tend to be in one home community, although the markets need not to be, 4) The business is small compared to the biggest units in its field.

This qualitative approach offers valuable insight into understanding small business. Haksever also makes another distinction between big businesses and small businesses by discussing issues in four categories: (a) ownership, management, and organizational structure, (b) capital and resources, (c) objectives, and (d) markets and customers [27].

Ownership, Management, and Organizational Structure

Mostly small business owners are entrepreneurs, or the business is owned jointly by family members. Generally, the owner also manages the business and either reports to no one or just to other co-owners [27]. Many small business owners are the experts in their field of industry; however, most of them lack professional managerial expertise or education [50]. Lawrence and Dunn state that this lack of expertise accounts for about 90 percent of small business failures [40].

The owner has the decision making power by him or herself [50]. Haksever states that "often they do not know how to delegate authority and responsibility, or the organization lacks qualified people to assume some of the authority and responsibility." So what happens is the owners end up making the very critical decisions in areas like finance and inventory that are usually the responsibility of expert professionals in large firms [27]. Even when the firm grow in size and expand their resources in terms of human resources, the owner may remain the most skilled person in the company in most areas [40].

Lawrence and Dunn's study, which was conducted to assess the knowledge of small business managers on management concepts suggested that there are still managers who believe they can achieve their objectives without an explicit business plan. However, there is a strong belief that when workers understand a plan, they will help to implement it. Besides, the majority of managers still exhibit a tendency to maintain direct control and involvement. They don't really want to delegate the decision-making authority and prefer to deal with problems personally. This study also found that these small business managers prefer to use informal methods and direct contact with employees [40].

Small companies have fewer layers of hierarchy; this brings upper management closer to the actions that take place at the work level. Managers of small firms tend to know all the employees personally. Small companies also have fewer functional departments, so employees wear several hats and have more responsibility [9], [36]. Thus, the number of managers is fewer in small companies, which simplifies the work of communication and coordination [36].

Ryans states that "Small businesses are independent in the sense that they are not part of a complex enterprise." Owner/managers have the ultimate control over the business. However, their freedom may be constrained by obligations to financial institutions [50].

Capital and Resources

Small businesses often suffer from capital and resources [1], [9], [26], [27], [50]. It is reported by the Office of Advocacy of SBA that overall, small businesses rely more on owner capital and less on external debt capital than larger businesses. Thus, small businesses are more dependent on short-term debt more than large businesses relative to long-term debt. Small businesses use external financing only occasionally. The report indicates that less than 50 percent of small businesses borrow once or more during a year. Thus, the cost of using external resources is more expensive for small companies [6].

In addition to financial capital problems, small businesses are also limited in human resources, and cannot attract highly qualified and experienced managers or professionals [26], [27]. However, small companies can be a very good source for employees in learning, because of their focus on craftsmanship, multitude and variety of tasks required of them [27]. Ahire and Golhar mention that small business owners and managers tend to view human resource management strategies as less important than finance, marketing and planning [1].

Small businesses also lack power with suppliers, which can impact an organization's ability to control the quality of incoming material [1]. Managing small businesses under these conditions requires much of an owner's time and energy that otherwise could be devoted to planning [50].

Objectives

Most small businesses are established because of the owners' willingness to be self-employed. Being self-employed provides more flexibility and a less competitive environment to the owner. The pride of accomplishing things by means of the business is the main motivator. In addition to, another important objective is to have all the power and control of the business. Furthermore, as Haksever states "growth is not an objective for many owners [27]."

Customers and Market

The scope of the business in small companies is limited to a niche involving a relatively narrow product or service line [26], [36]. Usually their markets are local, so they have the advantage of being close to the customer. Depending on the nature of the business, the owner and the employees can be constantly in contact with the customer. Thus, they might have established close relationships with their customers as result of being in the same community [27].

THE IMPORTANCE OF QUALITY IN SMALL BUSINESSES

The number of small businesses in the United States has increased 57 percent since 1982 as reported by Office of Advocacy of SBA. Twenty three million three hundred thousand small businesses employ 53 percent of the non-farm workforce, contribute 47 percent of all sales in the country, and are responsible for 51 percent of the private gross domestic product [6]. According to National Coalition for Advanced Manufacturing, small and midsize companies account for

half the total value added by U.S. manufacturing. They also produce nearly half of all U.S. exports, hence U.S. competitiveness depends so much on them [45].

Despite their importance to the economy and its need for survival, background literature yields little evidence that suggests that small businesses recognize the increasing importance of quality and customer satisfaction [15], [16]. According to Brown, Davig and Tabibzadeh, most companies view quality from inside out and no consideration is given to the broader aspects of customer satisfaction. Their study's findings suggest that although improvements in quality are viewed as important by some managers, they feel that this improvement will increase the overall cost [16]. Deming criticizes this attitude of small business management and he argues that if the focus is on cost and quality, then there is no chance of actually improving the performance [32]. This kind of approach to quality will create an environment where companies loose market share and experience declining profits. [16].

Without a doubt, in order to survive and grow, small businesses must provide quality products and services [53], [59]. "It is strictly a survival issue," says Thomas Klobucher, the owner of Elmhurts, Ill. based Thomas Interior Systems Inc., an 80-employee firm. He adds, "Any company that is not involved in some sort of quality improvement process is already out-classed. If they don't begin to learn the quality language and quality life, they will be out of business" [31].

In fact, regardless of their size and the industry that they are in, quality products and services are critical for all the companies. Since most of the small manufacturers' customers are U.S. major corporations and these big corporations put intense pressure on their suppliers to continuously improve their services and products, small businesses have come to a point that they won't be able to do business with the giants in their industry unless they manufacture quality goods and provide quality services [10], [16], [23], [26], [31], [45], [55], [39]. 1990 Baldrige Award winner in small business category, Wallace Co. Inc., a Houston based pipe valves and fittings distributorship, has come face-to-face with a position where the company had to implement TQM or their relationship with their customers would be damaged. The company's customers made it clear that their remaining vendors would be only those who could successfully incorporate a Total Quality Management philosophy, including continuous improvement with on-time delivery, as well as error prevention techniques [23]. Bonvillian reports that the quality problems experienced by both Xerox Corp. and Ford Motor Co. have forced them to cut their supplier base in recent years. Some of these large corporations, like Motorola, encourage their suppliers to apply for the Baldrige Award. The Big Three- Chrysler, Ford and General Motors all require their first-tier suppliers to obtain QS-9000 certification [13]. Barrier states that "There's a simple reason for such customer pressure: When an automaker, say, is trying to produce defect-free products, it can not tolerate defects in the parts provided by it's small suppliers" [10]. These are some of the examples of those large corporations sending a message to the small firms: "Quality or else".

In a 1992 Gallup survey, commissioned by Arthur Andersen's Enterprise Group and National Small Business United results indicate that improving the quality has been effective in improving the companies' bottom lines. The survey results indicate that 28% of companies with up to 20 employees, 43% of companies with 21 to 100 employees, and 57% of companies with 101 to 500 employees are concentrating on improving quality [Exhibit 1]. The survey found that

when the companies improved their quality and productivity they also increased their sales or profits 10% in the past year [12].

Brown and Falk support the importance of quality for small businesses by stating that "To retain their competitive positions, small businesses must become aware of the changing quality concept and it's strategic implications." They also advocate that "There is growing evidence to suggest that smaller business, who do not make the shift to this business approach (quality management), will find starting, competing, and surviving more and more difficult" [15]. Ross and Klat suggest that "Today's consumers have tasted quality, and that if the firm is to be successful it must embrace quality as the fundamental strategic weapon for the future." The owner or the manager of a small company needs to recognize that quality, whether in product or service, can be the organization's single most competitive edge. Competitiveness and market realities demand on an increased focus on quality, especially when small firms are competing or working with giants [48].

The literature review reveals that quality is a way of growing the business, saving money and certainly is a survival issue. The payoff is lucrative: higher efficiency, greater customer satisfaction and better employee relations. Haksever states that "Quality and productivity seem to be the indispensable main ingredients in a small firm's struggle for survival." As a result of the importance of quality in small companies' lives, TQM has become one of the most effective ways of doing business in today's market place [27]. Before getting into more detail about implementation of TQM in small businesses, the next section will give brief background information on TQM, its principles and tools.

TQM AND TQM PRINCIPLES

There have been as many interpretations of a TQM program as there are researchers that have studied the concept. Much has been written about how quality should be managed in an organization. Four preeminent experts in the field of quality management are Deming, Crosby, Juran, and Taguchi. However, the basic route to the TQM program is essentially the same:

- Obtain management commitment,
- Develop a strategy,
- Provide training for employees,
- Involve employees in the decision-making process,
- Adjust rewarding and incentive systems,
- Establish measurements,
- Eliminate the source of problems
- Focus on continuous improvement to achieve customer satisfaction.

TQM principles can be summarized as shown in Exhibit 2. As Bend and Merry indicates, the TQM concept overall relies on prevention of problems as opposed to the more traditional approach of detection and correction [28].

Lindsay and Evans state that TQM is grounded on three core principles:

- Customer focus
- Participation and teamwork
- Continuous improvement

These principles as Exhibit 3 illustrates, supported and implemented by an integrative organizational infrastructure, set management practices and a variety of tools and techniques. All these components must work smoothly together and support each other to create a successful TQM environment [20].

TQM recognizes that the customer is at the center of every activity. This customer may be external or internal (ie the next step in the process). The key is to determine the gap between what the customer needs and what the system delivers. Once this gap is recognized, people systematically work on reducing it. The result is never-ending improvement in customer satisfaction at every level.

In order to make improvement a way of life in an organization, key principles must be embraced by everyone. This is where employee involvement and participation come into the picture. In the TQM culture, employees, while they are doing their regular work, are expected to call attention to address quality problems in order to find solutions to those problems. They are also expected to be part of the continuos improvement culture that involves finding out how to improve employees' own work as well as the overall organization's performance. In order to produce better products and services, the TQM philosophy requires management to give employees the tools to make good decisions and freedom and encouragement to make contributions [34].

A further important element of employee involvement is teamwork. A team approach provides an environment to individuals to solve problems that they may not be able to solve on their own. Quality circles, cross-functional teams, self-managed teams are examples of this approach. Bendell and Merry state that "teamwork results in improved communication, motivation, analysis and problem-solving capability and the development of a collective responsibility" [28].

Another key principle is that any work activity should be viewed as a systematic process. To ensure that a system produces exactly what the customer needs, these needs must be operationally defined, then the system variables must be studied and a mechanism should be designed to perfect the process. The result is continuous improvement. The continuous improvement approach assumes that processes can not be optimized, but can be altered, refined, and modified toward the organization's goal of quality.

All of these efforts in implementing TQM are handled in the infrastructure of the company. Evans and Lindsay refer to infrastructure as "the basic management systems that enable a firm to realize the core principles of TQM. A TQM infrastructure includes leadership, strategic planning, data and information management, process management, supplier management, and human resource management" [20]. The following sections will discuss, in detail, each of these elements.

Leadership

The success of any organization depends on its leader's attitude and the level of involvement of activities. The leader uses teamwork, interaction, commitment from top management, and open-mindedness to get the vision for change to permeate the organization. Their task is to create clear quality values and set high expectations like going beyond

incremental improvements. Since they are the ones who promote the emphasis on quality, quality leaders should be visible, committed and knowledgeable. The leaders' personal involvement is very important in education, training and recognition since it builds the trust between employees and the leader. Exhibit 4 shows a model of the quality management approach to leadership. In a TQM environment, leaders empower and encourage employees to participate in quality improvement efforts. [20], [28].

Strategic Planning

A strategy that reflects long-term commitment to customers, employees, stockholders and suppliers is another important ingredient for creating a successful organization. Every organization must have a clear understanding of its mission, goals and objectives so that it can provide continuity in its programs and services. "Strategic planning is the process of examining the organization's environment, establishing a mission, setting desired goals and objectives, developing an operating plan, and developing a portfolio plan" [34]. Organizations must also have the ability to respond to immediate threats and opportunities. A viable strategic plan is the most effective way to ensure that organizations keep and improve their positions in the market place [20].

Data and Information Management

Data and information analysis is very crucial to TQM. In order to understand variation, identify causes of problems and achieve continuous improvement, there is a need for reliable information, data and analysis [49]. According to Evans and Lindsay customer needs, product and service performance, operations performance, market assessments, competitive comparisons, supplier performance, employee performance and cost and financial performance are the types of data that are needed for quality assessment and improvement [20].

Process Management

The TQM approach focuses on the design of processes to achieve customer satisfaction that delivers products and services to meet customers needs. As Evans and Lindsay indicates "Process management requires that organizations anticipate and understand customer needs as well as control processes to eliminate unwanted variation." Process management practices reduce the opportunities for defects and errors [20]. Ebel states that all activities performed in an organization are part of one or more processes. He advocates that process management itself is a process and can be subdivided into subprocesses. In order to manage process, the first step should be defining the process, which includes definition of boundaries, work activities, establishing the characteristics to be measured and points of control, and documentation [19].

Supplier Management

Suppliers provide essential raw materials for the organization. The total quality approach focuses on developing a long-term relationship with suppliers. Suppliers play a very important role in organizations' TQM effort as they might lower the cost as well as help meeting the strategic objectives. "By partnering with suppliers, an organization can improve its ability to satisfy customers and boost productivity and quality" [20].

Human Resource Management

Human resource management enables the workforce to develop its full potential to pursue the company's quality and operational performance objectives. In a TQM culture, employees

need to understand what is the purpose of the company and how they can make a difference. "In TQM organizations, uman resource management units develop policies and procedures to ensure that employees can perform multiple roles, improvise when necessary, and direct themselves toward continuous improvement of both product quality and customer service" [20], [34].

TQM TOOLS

TQM, as stated before, is a company-wide continuous improvement process that involves everyone in the organization in problem solving as well as preventing them. Without doubt, organizations that are initiating a TQM approach will need to use a selection of quality management tools and techniques to assist them with the process of quality improvement. However, Lascelles and Dale suggest that organizations should be careful not to rush impetuously into the use of tools and techniques [28].

Quality management tools and techniques fulfill a number of roles, such as planning for quality, process improvement, improving the design of the product, listening the voice of the customer, controlling the process, capturing and documenting quality system data, involving people, motivating and promoting quality. It is important that management is fully aware of the purpose of the tools and techniques that are selected for use in their TQM efforts [28], [32].

Using TQM tools involves data collection and displaying them in simple, visual formats so that everyone speaks the same language. Consequently, misunderstandings can be prevented. The use of the tools is not restricted to quality problems; safety, other issues such as productivity, cost efficiency, personnel problems can also be tackled.

The seven old tools- flow charts, run charts, control charts, fishbone diagrams, Pareto charts, histograms, and scatter diagrams are basic components of statistical quality control. These tools are used to evaluate current performance, make improvement to it, and then control the process at the new level. [Appendix I]

In addition to these seven old tools, some newer tools go beyond them both in complexity and in the depth of analysis. These tools- relations diagrams, the affinity diagram, tree diagrams, the matrix diagram, matrix-data analysis, the process decision program chart and arrow diagrams are often considered to be management tools, with the exception of matrix data analysis. These new tools, address verbal rather than numeric data and they are mainly used for improvement projects. [Appendix II]

The Deming's Plan, Do, Check, Act (PDCA) cycle is an ideal technique for linking these tools in a TQM environment [Exhibit 5]. In the PDCA cycle, the first step is to plan the quality improvement. The *plan* stage involves a full investigation of the problem-data collection, analysis and then proposal of solutions. The *Do* stage involves performing or producing a small version or batch of the procedure/product. *Check* means to monitor the trial and observe the results of the change. The *Action* stage involves the action decided upon as result of the assessment of the trial [34].

Benchmarking, quality function deployment, statistical process control, design of experiments, cost of quality, input/output analysis, time management, nominal group technique and team building are the other management tools and techniques that are used to improve

processes. Facilitation in the use of the tools and techniques of TQM can be a source of help in the transformation process by encouraging teamwork, breaking down barriers, and stimulating the learning of new skills and techniques [28].

TQM AND SMALL BUSINESS

Although considerable number of small businesses in U.S. practice TQM, there are only a few studies that analyze how it is applied. Shea and Gobeli conducted an exploratory study of ten small businesses that are actively using TQM and found that each organization reported significant improvements in their overall performance [53]. Kaldenberg and Gobeli's study also found a significant positive relationship between the use of TQM and the company's performance. This study of dental practices concluded that significant improvement occurred in gross income, net income, and the number of new patients over a three-year period [37].

In previous sections four qualitative categories - (a) ownership, management, and organizational structure, (b) capital and resources, (c) objectives, and (d) markets and customers have been used to characterize small businesses other than their sizes. In this part of the paper, the same categories except objectives will be used to point out what differences small businesses have in practicing or implementing TQM.

Ownership, Management, and Organizational Structure

The implementation process of TQM in small businesses can be easier compared to large organizations [3], [45], [55]. Bemowski states "The advantages of being a small organization lie in the fact that there are fewer people and everybody knows each other. These conditions help the small company in quality awareness, training, and implementation" [12]. Once the small businesses are convinced for the implementation of TQM, they will go forward quickly. Reimann from NIST thinks that quality programs seem to take an extra year for each additional layer of management [45]. Ebel states that the final management system will be simpler in small organizations and they will have fewer personality constraints to contend with [19]. According to A. Blanton Godfrey, chairman of the Juran Institute Inc. in Wilton, Conn. there is another advantage of being a small company; "In tiny organizations with only a couple of dozen people, teamwork, empowerment, and the other hallmarks of total quality come naturally" [45]. As A. Blanton Godfrey suggests, in small businesses TQM is in it's native state. These small business employees are in constant contact with each other and with their customers, so they practice TQM without realizing it [10].

It has been suggested that the management style and experience of management are the most important factors in determining a business' success. In one hand, owner/managers' limited formal business education and lack of managerial skills might cause a problem when TQM is an issue for small businesses. On the other hand, once the owner/manager acquire the necessary skills, being small helps her/him to spread his quality message more quickly and clearly [12].

In small companies, people have a wider range of responsibilities than their counterparts in the big companies, so they have to work harder in order to get the job done [9]. They usually don't have idle time, so if there is a need for change, then they need to take some time from their current jobs. This is very difficult and very costly for the employer [12]. Most small companies have to take resources away from other parts of their organizations rather then hire new people to make it happen. This can cause some undone jobs for a while [19].

After all, Bemowski claims that small business people do not have a formal educational background. Because of this reason, they might be more resistant to change compared with their counterparts in the larger organizations. So when transforming to TQM, leadership and leading through example become very critical issues. In small businesses, if the leader (usually the owner) has necessary skills to motivate people, she or he can more clearly and quickly spread his or her message. Bemowski states that in small organizations "The employees will not only hear the leader's message directly, but, more important, they will see the leader's actions first-hand" [12]. The president of the 1991 small business winner of the Malcolm Baldrige National Quality Award, Marlow Industries in Dallas, thinks that it is easier for a small company to implement TQM because the CEO can be visible to the employee daily and can emphasize the importance of the quality system [9].

Capital and Resources

There is no single formula that works for everyone when implementing TQM. Implementation process differs not only from one company to another but among companies level of performance [47]. However, generally implementation of TQM in small companies is not much different than in larger ones says Bemowski. The same quality processes like brainstorming, problem solving, tools such as flow charts, Pareto analysis, and elements such as top management commitment, employee participation and leadership are needed. However, there is one important difference between them: RESOURCES [9], [12], [26], [27], [31], [33], [55]. Ebel states that "There is a perception that big companies have the resources necessary to undergo quality changes and small companies don't" [19].

However, this disadvantage is not enough to keep any company from successfully implementing quality. Andreichuk also advocates that there is a misconception that large companies, because of their extensive human and financial resources can do a better job of educating and motivating their employees to make quality improvements. He points out that "The truth is that smaller companies can be even more successful at soliciting employee support and involvement because there are fewer management layers to permeate and fewer people to convince of the benefits" [3].

Customers and Market

Ahire and Golhar's study findings suggest that despite a lack of market clout, capital, and managerial expertise, small firms reported that they can and do implement TQM elements as effectively as in large firms. They also reported that small firms who implemented TQM achieved high product quality [1].

Most of the companies who implemented TQM expect to see immediate changes in sales and productivity. However, their results don't come instantly after the implementation. In 1992, consultant Arthur D. Little conducted a survey on 500 manufacturing companies and found that only 36% of the companies felt that TQM was significantly boosting their performance. Another survey that is conducted by Rath & Strong Inc. asked 95 companies to analyze whether their TQM efforts raised their market share or increased customer satisfaction. Only 26% of these companies rated TQM efforts worthy for implementation. These results clarify and emphasize the importance of careful planning when considering to implement TQM. One common mistake, says Joshua Hommond, president of the American Quality Foundation in New York, is a failure

to think quality efforts are the bottom line. They believe using some of the tools of TQM will solve all their problems. He adds that TQM should be a means not an end [45].

TQM IMPLEMENTATION IN SMALL BUSINESSES

GENERAL PERSPECTIVE

Implementing TQM is a huge cultural change for the organization as well as for the people who are involved with the organization by any means. Implementing TQM means changing the perception of management and managing, changing the way in which people see themselves as owners, managers or employees [44], [51].

As stated before, implementing TQM in small businesses is not much different from the large ones. However considering their fewer resources and different organizational structure, the process of implementing TQM in small companies should be modified from the process that is used for large companies. "The process is the same, but the rate at which you put it into force is greatly affected by your resources," points out Mark Hordes, president of Productivity & Quality Consultants International, Houston [31]. It is therefore logical to take advantage of the properties that may be advantageous in TQM implementation, and be careful specifically for the properties, which might cause problems.

Implementing the quality concept to a company will take dedicated leadership from the management, the education and training of every employee, practice and more practice, and a great deal of patience to make it work. Every employee in the company, management or non-management, will need to work as partners, in order to meet and exceed the customers' needs.

Regardless of its size, having a well-structured and organized plan is very critical for the success of the implementation process. Sometimes small companies think that, because they are small, they don't have to follow a structured plan. In fact, it is maybe even more important for small companies to hold onto an implementation plan, since they often don't have a full-time quality expert to guide them. Ehresman states "There is no room for waste or rework or trial and error in trying to implement something like this in a small organization". He adds "It could be costly and it could take time away from doing the real job. Oftentimes I've seen implementation efforts get started with the company following a random approach, and they get halfway through and realize they are stuck because they haven't laid the foundation they need to" [55].

Since implementation plans reflect the specific needs of each company, there isn't one that can be applied to every company [51]. The plan should define what organization does, what it is trying to do, and how it is going to do it according to their needs, resources and goals. A strategic plan should also identify the major tasks needed to achieve the requisite changes in the organizational culture and the way of doing business. Goals and methods for implementation TQM should be included in the plan, and should be updated as the conditions change [27], [55].

Henricks advocates that implementing TQM one step at a time is the best way for small companies. He suggests that although some of the quality consultants and theorists insist that TQM can be implemented at once throughout every department in the entire company, insufficiently capitalized small businesses must be very careful not to over commit to sweeping change in their early enthusiasm [31]. During transformation periods, often the changes are more

than some people can handle; therefore, it is important that a company not to try to change everything at one time. Hordes suggests that small companies conserve their resources by choosing one or few areas where they think that the implementation of the quality initiative will be inexpensive and cost-effective [31]. This philosophical change must be total as Robert Freese, CEO of Alphatronix, says, but the transformation process can be done in stages [10].

Struebing and Klaus advocate that small businesses are more likely to experience resistance to change when compared with large businesses. It is a more challenging job to convince all employees that there is a need for a quality program. In small companies, most of the employees may have been with the organization for a long time even from its beginning. Hence, they might think that there is no need to change because if the way they were doing things was not right, they wouldn't have come this far. On the other hand, in large businesses, TQM is just another program for the employees [55].

Time is maybe the most discouraging and probably the most difficult aspect in implementing a quality program. Before even making the decision for implementing TQM, companies need to realize that the implementation process takes time and results are not immediate. Many companies get discouraged because they don't see an immediate return on their often significant initial investment of energy and funds as Axland states [9]. Ehresman states "There is a thought out there that TQM is great, but it takes forever, and managers and owners of small businesses have always been quick to point out that they can not afford a long, drawn-out program [55]. Haksever states that the smaller the company, the greater the difficulty is. In general he says, "An owner/manager does not have time to think strategically or manage with a long-term view" [27]. Naturally, before beginning a program like TQM, they want to know how long it would take to implement it, and when they will be able to see the results. However, small businesses, although it is reasonable that they want to see some immediate results at least for motivating employees, must realize that the greater benefits are slower in reaching [55]. The founder and the president of Marlow Industries states that in order to implement TQM you have to have patience because it is going to take time. He believes that it takes a couple of years for employees to work efficiently and smoothly together in problem solving teams and managers to adapt the new way of management [10].

Small and large companies differ in their attitude toward the payoff time of TQM programs. Larger companies can withstand for continuos investment for the implementation process; however, smaller companies can't afford to invest in areas that will not show quick payoffs. Therefore, what small companies should do is invest their resources in the areas that need to be improved urgently but also promise to yield the quickest payoff [31]. Paul Vita, the former director of national accounts points out that "There is a danger in providing quality awareness training and not implementing it soon." He also adds, "People get discouraged if they buy into a program but don't see some quick tangible results. The transition from awareness of quality to implementation of quality is crucial. There can be zero lag time"[2].

Because of their limited resources, many small companies cannot afford to have a quality expert within the company who will help them to implement quality. Yet, it has been argued that companies should not have a quality department, or someone whose responsibility is only quality. Customer Research Inc., Minneapolis, MN, winner of the 1996 Baldrige Award for small business agrees that companies don't need a separate quality department. Quality should be

everybody's job, not only one person's or one department's. According to Ehresman, small companies really don't need on-staff quality experts. There are outside resources available, such as consultants, books, and seminars. Hiring a consultant, who will be a guide for a successful implementation may help small companies to save a lot of money and time. Consultants work with various companies in different industries with various sizes. Their broad experience qualifies them to prevent the company from making common mistakes that other companies have made. Therefore working with a consultant through the implementation process makes this transformation phase smoother.

However, not all small companies can afford to hire a consultant. In this case, Ehresman suggests using a well-written book as a guide for implementation. Small companies that decide to implement TQM without outside help should be careful because using books or attending seminars will not customize the implementation process. Thus, as in any case, top management or the owners will have the biggest responsibility to adapt the implementation process according to the company's needs [55].

One of the disadvantages of being small when implementing TQM is that it is much easier for small companies to loose the momentum compared with the large companies. This is because small organizations don't have a dedicated quality manager who makes sure that initiative does not die. Besides, in small organizations, since their job is not very specialized, employees have many responsibilities. Sometimes, it can be difficult for them to attend seminars or read books in addition to doing their regular jobs. In these times, TQM implementation can be puzzled and get behind. Especially, in situations like loosing the momentum, brings the importance of management commitment to the picture. Top management must take the responsibility for ensuring that the effort continues and ideas get implemented [55].

When implementing a quality program, communicating the company goals, mission, and instructions, constant feedback and positive reinforcement are very critical. Small organizations are less likely to have communication problems in comparison with their larger counterparts. Roger Tunks, president of Richard-Rogers Group Inc. and author of *Fast Track to Quality,* points out "in a small organization you can have every person in the room at the same time catching the excitement. That's a very significant difference" [31]. In small organizations, it is possible that everyone can see a stake in what they do and how it drives the improvements. Employees can see spontaneously the results of the changes that have been made when implementing TQM, which keeps employees motivated [55].

DESIGNING THE IMPLEMENTATION PROCESS

Successful implementation of TQM depends on the design of the implementation process. The process should be designed according to the company's own needs and resources. The following section will discuss one possible design for TQM implementation [Exhibit 6].

Clarifying The Need To Implement TQM

Before deciding to implement any management philosophy, a company needs to determine if change is really a necessity. Although TQM "works" in small businesses, there is a need to identify if TQM is the answer for a particular firm, as well as if TQM is worth the investment. In addition, the specific reason for considering TQM should be clear. Hodgetts

suggests that asking questions like "Over the past three years, how have customers' demands changed?" help to identify the need for change [32].

Shea and Gobeli's findings have concentrated on five reasons that the small businesses implemented TQM. The first one is to achieve a growth in business. Most of the firms use TQM as a marketing tool, just to say that they practice TQM. For example, well-run businesses are more likely to qualify for financing. A stable management practice and growth prospect can make it easier to convince banks and financing firms when seeking additional resources for the business. Another relevant reason is that small firms who are practicing TQM can attract qualified employees, so that the owner can be freed from day-to-day operations. Secondly, TQM provides a consistent management style that makes the company attractive to customers. Another reason for implementing TQM is the changing requirements of customers. Since TQM provides an environment where customers are treated as kings, some of the firms implemented TQM just to understand their customers better and to satisfy their needs. The fourth reason is to make the work environment more enjoyable for everyone in the organization. Surprisingly, the study's findings indicate that the least important reason to implement TQM is to improve poor company performance [53].

The reason many small businesses avoid even thinking about implementing TQM is that they don't think they have enough resources to implement a quality program. In order to grow, small companies need to analyze the impact of poor quality and get rid of the activities that add no value. Understanding the cost of quality is one of the most important and actually the beginning of the TQM journey. Realizing the importance of the cost of quality and the need for isolating the root causes for that cost allows company to concentrate on the source of the problem. Besides, they need to rework their production and administrative processes that make them spend more money than necessary [32], [55]. [Exhibit 7]

Companies also need to assess carefully and make a cost/benefit analysis between the cost of investing money into the TQM process vs. the value that will come with implementing TQM [55]. It has been stated that the companies, which have gone through TQM, declare that it's paid for itself 100 times over. In addition, small companies can buy into TQM a lot more cheaply than large companies. Once the quality program is implemented, customers will be more happy, products will be defect-free and deliveries will be on time; the companies will than recognize that they have more employees than they thought they had. This is because employees will be spending less time correcting problems [10].

The decision of implementing TQM should be well thought out, benefits and costs should be analyzed and evaluated like all other operational decisions. TQM should be examined as a long-term decision, which requires funds, time and commitment.

Establish A Leadership Structure

Hodgetts advocates that one of the most important steps is to find a person; an internal champion who can lead the TQM effort and make it succeed. In small businesses, the leader can be the owner him/herself or someone who has been delegated for this purpose. This person must have the responsibility, authority and funding to make things happen. If there is a doubt that this task can not be achieved with the leadership of one person, then the author suggests forming up a small Quality Council (QC). In the case of leading the TQM effort with the QC, it should be

kept in mind that the group should not be too large. Hodgetts suggests that five members would be adequate for companies with twenty-five or fewer employees for the QC. For companies that have twenty-six to hundred employees, a QC that is formed by seven members would be sufficient, and for companies with more than a hundred employees ten to twelve is usually needed [32].

Ebel suggests even if the company is too small, there should be at least two members in the QC. If there is only one manager in the organization, someone who is a leader among the other employees and who is an achiever should be included in the QC. First, the QC should gain understanding of quality percepts and principles of quality management and become familiar with the transformation process. There is also a need for QC to obtain training on team leadership and team problem solving. As the QC obtains the necessary understanding and skills for quality management, the council should chart a plan for the transformation process. This plan should be a living plan that evolves with the organization. The plan also should provide an overall outline for the transformation process and initial estimates and for the resources and schedule [19].

Present TQM Program To The Company

After realizing the need for quality improvement and establishing a leadership structure, the next step should be communicating the TQM approach to the rest of the organization. Since the TQM approach involves the participation of the workforce at every level of the organization, getting employees' buy-in is very crucial for its success.

The owner/manager and the QC must communicate that they are making a commitment to achieve total quality in everything that's done in the organization. They also need to communicate the following issues:

- What's meant by total quality management,
- Why it's important,
- How it will be accomplished,
- Why the top management is involved and committed,
- What benefits will be achieved.

Although TQM may be initiated from the top management or owner, it must be practiced by all the staff. This is why this stage is very crucial. Management and QC should be prepared for resistance to change of any normal pattern or set of procedures [34].

Situational Analysis

TQM implementation creates a need for an integral evaluation of organizational strategies and objectives, cultural characteristics of the company, and TQM tools and techniques [51]. Companies should know where they stand in terms of 5p, plant, personnel, process, product and policies before attempting to do anything [22]. This assessment, that identifies the problem areas and the operations that need more emphasis, should be directed by QC and if the top manager or the owner is not included, he or she should be involved in this phase [19].

Companies that want to create a TQM environment within their organization must know where they are and decide what they want to do. In general, it is apparent that the company wants

to make better products, achieve total customer and employee satisfaction, and increase its market share. However, these purposes should be more specific [17], [32].

Another important step in this phase is to define total quality in the context of the firm's own environment. It is critical to know what quality is all about and how it is defined within the company. Bonvillian suggests that neglecting this step can be very costly and yield minimal results in total quality effort [13]. Accompanying this resolution, the company should also identify its major strength and selling point, in order to focus its quality efforts in that direction. In addition, the company needs to know what the competition is doing and what are the trends in the industry. There is also a need for the company to identify where it stands in terms of employee and customer satisfaction. Hodgetts suggests that most of the small and medium-sized companies tend to overlook the fact that their employees are in fact the internal customers. This analysis can serve as a basis for developing the company's employee involvement in the implementation process [32].

In order to assess the organization in terms of current quality, competition, and customer satisfaction, a definition of the level of quality that is wanted must be established in the vision and mission statements and the company's goals.

Vision

In order to implement TQM, the leadership must create a vision and have the ability to convey that vision to the entire company. A company's vision clearly defines what business the company is in and more importantly where it is going. Creating a clear vision of the transformation should be the first step. Actually, the vision of quality transformation should be no different than the overall vision of the organization. The vision provides long-term focus and continuity to decisions and actions, along with recognition of change and competition. It forms the basis for decision making. In this manner, the vision should evolve with the company, and should be thought over within the organization as needed [38]. Hodgetts suggests that each company is different in their way of doing business that's why each of them should develop its unique focus and vision for quality. In order to define quality vision that is unique and meaningful to the company, there is a need to identify what better quality really means to the people involved in every level of the organization [32].

Mission

Establishing a mission statement is a very critical step for TQM implementation [46]. As Hand points out a successful mission statement should provide people with a sense of purpose and unity and should establish the organization's attitudes towards it's staff, customers and suppliers. A mission statement has three components:

- Purpose – explaining explicitly why the company exists,
- Strategy – explaining where the company positions itself in relation to competitors and what it is good at doing,
- Culture – describing the policies toward customers, suppliers and staff that underpin the beliefs and values of the business [28].

While establishing a mission statement, an organization must take its history, and distinctive competence into consideration. For established organizations, the mission should be consistent with what it has accomplished or failed, its objectives, policies and relationships with

its employees in the organization's history. While assessing the history, the firm should also concentrate on its distinctive competence that is the capacity that's unique to the firms and valued in the market. Before a mission is articulated, opportunities, constraints, and threats must be analyzed and evaluated [34].

The way that the mission statement is communicated is almost as important as itself. This pivotal aspect of the TQM concept was developed as a result of their needs assessment in Wallace Co. Inc. as Forbes reports. The mission statement that addresses the company's commitment to innovation, training and continuous improvement was displayed strategically around the company. John W. Wallace, the CEO of the company, states that "Every single Wallace associate evaluated our mission statement during the six months it took to create it-from the warehouse people and the truck drivers to our top sales staff"[23].

Goal

Once the mission is established, it should be further translated or reduced into meaningful goals, which specify in more concrete detail the firm's long-term aspirations. Quality goals must be established in the early stages of the implementation process and clearly communicated through out the company [22]. Salegna and Fazel suggest that since companies differ depending on the industry and competitive environment that they are in, they should establish their goals consistent with their competitive strategy. For example, although overall the major goal of any business is to improve its market share and long-term profitability, if a company competes on low price then its goal should be increasing its productivity [51].

The goals should be challenging as well as rational so that employees don't feel that they will fail to achieve it. It also has to be precise and measurable in order to have a common ground. As Andreichuk indicates, "The point is to make a substantial improvement that inspires subsequent victories," once a pervious goal has been met, it shouldn't be let fall by the wayside as new goals are identified [3].

Salegna and Fazel emphasize the importance of prioritizing the goals and assessing them for establishing a TQM plan. They suggest that "The company must evaluate (1) the priority and current status of its goals; and (2) the strength of the relationships between the TQM implementation strategies and the organizational goal" [51].

Identify Customers And Their Needs

Following the situational analysis and developing the vision, mission and goals, identification of customers and their needs come as the next step [32]. TQM definition of customers embraces internal as well as external customers. Customer satisfaction serves as a base for all TQM activities and the bottom line of all these activities is "Does it satisfy the customer?" [10], [19], [31], [35].

Since TQM covers internal and external customers, there is a necessity to identify both of their needs. However, Hodgetts indicates that a company should start surveying its internal customers, which are its employees. This is because the TQM transformation needs the support of the internal personnel and this is the best way to incorporate them into the process from the beginning. Since they will be willing to cooperate, gathering information from the company's own people will be a lot easier and quicker than getting it from external sources. Moreover, by

focusing primarily on internal customers, the company can reduce possible resistance. The company will also be able to identify areas where the quality is suffering internally by surveying its employees.

After analyzing where the company stands from the perspective of the internal personnel, the next step is to conduct a survey with the company's external customers. Before preparing the survey the company should identify who the customers are and what type of information is needed [32]. The survey questions should be simple, objective and to-the-point. With the surveys, it is possible to determine problem areas, and measure customer satisfaction. Along with questions aimed to discover particular areas, companies can gather additional information with open-ended questions [20].

In the transformation process, while focusing on the customers' needs, the company should also discover their perceptions of quality and satisfaction when they are doing business with the company. In addition, it should be kept in mind that determining the potential sources of dissatisfaction, if any, is very crucial, because most customers who are dissatisfied will never tell; they simply stop doing business.

Evans and Lindsay suggest focus groups, comment cards, direct customer contact, field intelligence and customer complaints as some of the key approaches for gathering customer information other than surveys. Companies should extensively look into these approaches and find the best that fits their needs and the customer base in order to get the best out of their efforts [20].

Identify Suppliers

Suppliers are the ones who provide essential raw material for the organization. In the TQM approach, suppliers are considered to be partners with their customers [20], [34]. When identifying the suppliers, the objective is not to obtain a definitive list of suppliers, but to build a better understanding of the critical role of suppliers [58]. Partnerships with suppliers aim to encourage innovation, reduce variation, conflict, lower costs and improve quality. Reducing the number of suppliers and building long-term relationships help to achieve this aim [20].

As it is when identifying customers, suppliers should be considered as both internal and external. Some suppliers are departments in the company, others are external to the company [58].

Establish the Organizational Structure

Once the necessary information from internal and external customers is gathered, and the problem areas are identified, there is a need for an effective TQM organization structure [32]. Before establishing an organizational structure for TQM, the current structure like reporting relationships, authorities and responsibilities should be evaluated and redefined by the QC [19]. This evaluation will assist companies in choosing the best approach to accommodate their own needs while establishing the structure.

Organizational culture plays a very important role in establishing the structure as well as the success of TQM efforts. All organizations have a distinct culture that demonstrates its history and tradition, reward systems, industrial relations, technology, leadership styles, and past and present management styles [28], [51]. Hand states that changing the culture is difficult and at times painful. Because of this reason, company culture should be examined and any barriers to

TQM should be identified [28]. Salegna and Fazel state that the goals, implementation strategies and the structure should be congruent with the organizational culture. Neglecting to establish the structure compatible with the organizational culture may sometimes be the reason why transformation efforts fail [51].

As Hodgetts suggests, Quality Teams should be set up for each of the specific projects or quality objectives that have been identified. In the beginning, one or two pilot projects, which are not very difficult, time-consuming and expensive should be selected. Selecting a project that has the above attributes enables a company to acquire some familiarity with TQM and provides time to Quality team leaders to develop the necessary leadership skills, and initial success to build up momentum [32]. Hand suggests that it would be better if the company does not tackle large and complex problems at the beginning. These problems rarely have a single root cause, hence these problems should be tackled piece by piece. Therefore, it is important to choose problems or projects that have a reasonable chance of success, but are sufficiently high-profile to create interest. Whatever approach is taken, it is essential to get some good results early on to establishing credibility [28].

As Ebel states, the following are important considerations in the development of the organizational structure.

> 1- The organization should be as flat as feasible. Extensive layering in the organizational structure tends to reduce the flexibility of the organization, increase the cost of operation, and insulate upper management from the people who actually produce the products and services for the organization's customer.
> 2- Clear accountability should be established for all activities of the organization. Functional areas and administration and production process should be identified and defined and responsibilities assigned in such a way as to leave no question as to the owner. The importance of this consideration increases as the number of organizational units involved in a process increases. Clear functional accountability also helps minimize destructive turf battles as the organization grows.[19]

The first efforts for structuring the organization might need revision; however, companies can use that as a learning experience. As the organization starts going smoothly, the structure can be expanded and more Quality teams can be formed. Of course, these steps all assume that the associates are ready to fit in these efforts. Therefore, before getting them involved in any TQM effort, training that they will be needed throughout this journey should be provided [32].

Training and Education *(Implementation of TQM Tools)*

Ebel states "Everyone in the organization should be trained or qualified to perform their function in a proficient professional manner, receive periodic training to enhance their competence and performance, and experience cross-training to broaden their understanding of other aspects of the organization" [19]. Although it sounds very complicated, the training needed to undertake initial TQM efforts is not extensive; however, it is vital for its success as Hodgetts indicates. He suggests four steps that should be considered:

1- Carefully plan the initial phase of the training by starting slowly, getting everyone's support, and introducing tools and techniques that can be profitably used in just every phase of the TQM effort.
2- Teach the associates to collect and analyze data by choosing TQM tools that are easy to understand and can be used on the job to identify and solve quality-related problems.
3- Combine, modify, and adapt TQM tools so that they fit the specific needs of the organization, and the associates can effectively and profitably apply them to their own work problems.
4- Design the training strategy and program so that (1) the associates are supportive of the program; (2) the first phases of the training are fairly simple, while more sophisticated training is reserved for later; (3) the training is applications oriented, and all participants can take the information back to the job and use it; and (4) at the end of the training, there is some type of reward for all participants.[32]

Lascelles and Dale advocate that at the beginning, it is more beneficial to start with a limited number of tools and techniques. With this approach, employees will not feel overwhelmed, and the quality improvement process gets under way relatively quickly. Furthermore, Management should make sure that they themselves have a good grip on the techniques to be used, so that they can have a common understanding with people using those techniques [28].

Hodgetts suggests that there are five basic types of training that should be provided to the employees: problem-solving, brainstorming, Pareto charts and analysis, cause and effect diagrams and flowcharts. Since problem-solving covers problem identification and verification, it may be the most valuable one among the others. One of the best ways to reduce wasted efforts is to train employees in effective problem identification, so that they don't waste a lot of time "solving the wrong problem." Brainstorming can be similarly valuable, as it teaches participants to think outside the box. Pareto charts, cause-and-effect diagrams, and flowcharting help to develop analytical skills, and can enable people to bring clarity to difficult –to-solve problems.

A crucial question is whether these techniques are relevant to the business that the company is in and does it provide cost-effective answers and solutions. Therefore, these techniques and other tolls involving statistical analysis should be investigated and the ones that are applicable to the needs of the company should be executed [28], [32].

Establish a Feedback and Communication Structure

Effective feedback is the key to successful communication. Establishing a feedback structure is a way to keep management and employees informed and involved in the TQM effort. The feedback loop is the basic control device for organizations to know where they stand in terms of quality, customer and employee satisfaction [32].

Ebel indicates establishing an effective feedback structure provides each person or organization unit with information on the quality of their product and services such that they can take corrective actions. It also provides information for assessing the status of quality and progress toward goals within the organization [19].

Quirke advocates that "A foundation for creating a TQM culture is an effective management of internal communication." Internal communication can be used by champions of quality to highlight and remove typical barriers to the success of TQM programs. Effective communication mechanisms' objectives should be building up awareness to building a total commitment [Exhibit 8].

Hodgetts suggests that although the most common way to evaluate customer satisfaction is to ask customers to fill out questionnaires or other forms of feedback and then analyze the data, each organization should develop its own feedback mechanism depending on the overall structure and its needs. Examining customer feedback involves gathering the data, quantifying it and then comparing the results to past performance. This procedure provides a straightforward way of determining customer satisfaction trends.

In addition, Ebel provides examples of feedback channels, which may be used where appropriate:

- Periodic personal contact by a person perceived to be in authority and knowledgeable yet preferably independent of the production and delivery process,
- Customer concern resolution system,
- Problem resolution system,
- Field reports,
- Marketing performance reports [19].

Feedback from the employees will inform management how their moves are perceived by the associates. Moreover, it is important to keep associates informed and involved. Meetings, newsletters, information bulletins and employee suggestion systems are the most common approaches to keeping associates up-to-date.

Organizations carefully look into the data that they gather from their customers and employees, and brainstorm as to how the information can be analyzed and interpreted. With this approach, they will be able to establish a feedback structure that will satisfy their needs [32].

Develop an Effective Reward and Recognition System

One of the keys to maintaining enthusiasm in the organization while implementing TQM is to recognize and reward the efforts and successes of its employees. The rewards and recognition system is also very important in communicating a company's sincerity to its associates that the quality program is valued and worth doing. There are two simple guidelines to an effective reward and recognition system. The first one is to identify the recognition and reward program that supports the organization's TQM quality objectives and meets its own unique needs. Hodgetts indicates that it would be helpful to examine some of the possible forms and rewards while developing a system that meets the organization's own needs. Plaques, certificates, special luncheon or dinner, trip, saving bonds, gift certificates, cash, day off are some of the options that can be used to motivate employees.

The second one is to make sure that everyone has a chance to participate and qualify for rewards. Then the system should be communicated so that everyone in the organization knows what he or she has to do to qualify for rewards.

While establishing the recognition and reward system, organizations should be careful not to base their system on monetary or non-monetary rewards alone. There should be a right mix between them. It should be kept in mind as with all other steps, implementing the recognition and reward system takes a considerable amount of time; and organizations are likely to be continually modifying the system and making changes as they go along. It is also critical to monitor performance so that the management can judge how well the system is working [32].

Establishment of Continuous Improvement Notion

The final and the most powerful step to a successful quality program is Continuous Improvement. Although this is where gains are made, since this step requires long-term commitment and persistence establishing a continuous improvement environment, it is perhaps the most difficult part of TQM. [32]. Since the needs and expectations of customers are constantly changing, and competition is pushing the standards to higher levels, quality improvement programs should never have an end [27].

Hodgetts suggests four key points for establishing and maintaining a continuous improvement environment. The first one is to developing quantitative measures, so that it is possible to control the quality efforts and know status of the quality program. The second one is to continually collect data and chart them so that it is possible to know where the organization stands in terms of its quality efforts. It is also possible to find out where improvement can and should be made by collecting and evaluating the information. The third key point is to involve everyone in the process so that everybody recognizes the importance of continuous improvement efforts. The last key is a carefully crafted reward and recognition system, employees need to know that they are going to be continually rewarded for their efforts.

In addition, using benchmarking will allow organizations to set targets for a given period, and then raise them after these targets have been reached. By continually setting new and higher targets and continuing to reward and recognize the success of the program, organizations can improve their business [32].

KEY SUCCESS FACTORS OF TQM IN SMALL BUSINESSES

Management Commitment

Implementing total quality entails a commitment a system-wide change. As it is very important in large organizations, in small businesses implementation of TQM relies on the commitment of the owners or top executives. Their aggressiveness and positive attitude about change and willingness to improve drive the change in the organization [1], [3], [10], [12], [23], [31], [51], [52], [17]. It is very important for a company to have its employees hold a willing attitude towards improving quality, productivity and customer satisfaction. In order to do that, the employees need to know that the owner or the top manager believe everyone can make a "quality" difference [3].

Bonvillian studied two small businesses in order to better understand the evolution of quality-driven change. His findings were not unique, as he states "No other group influenced the successful implementation of quality-driven initiatives more than senior management" [13]. Because of the high visibility and proximity of the owners or the managers, commitment of management becomes more important in small businesses. Robert P. Freese, CEO of

Alphatronix, a small high-tech company in Research Triangle Park, N.C. says "The No.1 hurdle is to live and breathe the quality principle, if you live and breathe it," he continues, "and you're a small business owner or a CEO of a relatively small company, you have an advantage over big companies, because you don't have a huge bureaucracy in place. You go around and visit people, and they are going to pick up spur enthusiasm" [10]. In order for employees to see that the top executives are committed, these managers need to put their words into action. Spending time where day-to-day work is done is another way to demonstrate the commitment. While doing that, showing sincere interest in what these employees do and giving them positive feedback will encourage them [14].

Resource allocation can be considered as evidence of commitment of management [13], [14]. Having limited resources can create a problem for small businesses, as employees question management's commitment to total quality. Bonvillian expresses that resource allocation did cause frustration among employees when their ideas were killed by a lack of resources. Management should not presume that workers understand the limitations of the organization's resources. They should make sure that employees grasp the situation so that they do not question management's commitment when they face a lack of resources [13].

Leadership

Leadership is maybe the most studied, but least understood subject in the business field. Leading has been one of the most difficult tasks for organizations as they search for the illusive formula of quality-driven change [13]. However, strong and dedicated leadership is one of the prerequisites for a successful implementation of TQM. A transformational leadership is needed when changing the organization to a TQM culture as Evans and Lindsay suggest [20].

In most small organizations, managing the business and leading the people are one person's responsibility, the owner. So the owner/manager must champion the transformation to a TQM culture, in order to be successful in the implementation process. The leader in small businesses must plan, organize and control along with creating and continually promoting a strategic vision and quality values, inspiring people and being a role model. Leaders should not abandon their responsibilities as managers because employees need clear direction and guidance from those individuals who are at the top.

Leaders should create clear quality values, policies, and strategies as well as high expectations. Innovation, encouraging people to try new ideas and methods to improve product quality and customer satisfaction, pride in one's work, employee involvement and continuously improve the process, product and employees should be the values and policies that leaders must promote in order for them to become a part of the corporate culture [13], [27].

Customer Focus

In the past quality has been looked at from the inside out. With this approach, quality was either built into the product or service that conforms measurable attributes, or delivered by the state-of-the-art equipment or personnel. However, all the changes in consumer behavior have made its point, from now on a more appropriate way to approach quality is to look at it from outside in. This approach makes customer satisfaction the focal point of the whole process [15].

Understanding who the customers are and what the customers want is very important for accomplishing the TQM goals [59]. Building an awareness of the customers perceptions and expectations are critical to the success of the TQM implementation. Customers can be a vital source of information about the quality of the product of service for the company. In order to discover what the customers' perceptions are about the company, strong relationships must be established [3].

Salegna and Fazel advocate that unless the customer plays an active role in the organization's process of quality improvement, customer satisfaction can not be achieved and maintained. Main techniques used to achieve this are customer surveys, customer needs analysis, and quality function deployment [51].

Small businesses have an advantage over large businesses when it comes to customer satisfaction. As Barrier states "Small companies may enjoy an edge in achieving customer satisfaction, in particular, if only because it is often so much easier for the people in a small business to know their customer"[10].

Benchmarking

Generic definition of benchmarking is "The rating or comparing of a firm's product, and processes against another enterprise's better product, practices and processes" [43]. Its purpose is to determine who is doing the world class job in a particular area, thus showing what can be done in fields like customer satisfaction, quality, and process improvement [27]. Benchmarking has become the catchphrase for the 90's mostly because of growing interest in the MBNQA. The award application makes it clear that a company should know its competitors and the best-in-class organizations in their field. However, small companies think that benchmarking is "too expensive" or "time consuming" and that they cannot afford it. In reality, as Mickelwright states "small companies cannot afford not to benchmark" [43]. Struebing and Klaus add that small businesses, like large ones, could fall behind if they keep operating as they always have [55].

Because of the limited resources in a small company, there are fewer people entering the company with an extensive knowledge in specific area that can provide information. Therefore, they can fall behind in using late technology and new methods of management. Most small companies benchmark informally by compiling information from respected sources [43]. For example, in some industries, industry associations may provide benchmarking data all the businesses in the industry may use [27]. Unless this information is distributed to all the necessary people within the organization and combined with the existing data, it will not serve its purpose [43].

A company's level of performance is another critical issue when benchmarking. On one hand, Robana advocates while benchmarking the company should be aware of its performance level and should choose other companies accordingly [47]. On the other hand, Ehresman says that small companies should not limit themselves to small organizations when benchmarking. Small companies can challenge their own way of doing business by figuring out how the large organizations are being managed [55].

Customer benchmarking is very important for the small companies. Since most small companies are vendors of the large organizations, benchmarking their customers against each

other will provide industrial knowledge for the small companies and lead them into forward planning. Understanding the customer's strengths and weaknesses can be a guide in order to be prepared for that customer's further needs and stay one step ahead of its competitors [43].

Despite all the advantages of benchmarking caution needs to be taken. The results of the International Quality study by Ernst & Young and the American Quality Foundation suggest that benchmarking will not improve performance unless a company already has a comprehensive quality program [17], [27], [45].

Training and Education

Companies that have implemented TQM have discovered that implementing takes training, training and more training. Training refers to the whole learning experience, not only formal training in classroom [24].

In today's competitive environment and with rapid technology advancements, in order to maintain the market share, companies need to invest in their employees [18], [41]. A joint study by the American Society for Training and Development and the U.S. Department of Labor discovered that an astonishing 80 percent of all improvements in the nation's productivity could be attributed to employee education. On the other hand, machine capital contributed the remaining 20 percent. This study shows that training and education have significant roles in organizations' improvement processes [13]. As Henkoff states, "You can't afford not to train your workers. Any competitor can come in and use precisely the same machines, the same equipment. The only thing you have that's unique is the commitment and skills of your workforce" [29]. However, as Brown suggests "Choosing and delivering the right amount of training for the right employee at the right time is one of your company's biggest challenges" [14].

Employees need direction and guidance in order to direct themselves [18], [42]. However, according to a survey conducted by U.S. SBA, a quarter of the employees in large firms receives formal training where in small businesses only a fifth of the employees receive it. The survey revealed that the training opportunities are very limited in small businesses [18]. Henricks points out that one third of managers say their employees lack skills in algebra, blueprint reading, English and other areas that hurt job performance. However, fewer than 5 percent of the small businesses offer academic training to their employees. The reason is the cost and uncertainty of the investment that they made would return anything in reality [18], [21], [30]. Moreover, in small businesses the training that the employees receive is usually off the job because of the costlyness of on-site training.

Other than the cost, several more problems prevent small employers from believing in training. First, since it is very costly to conduct on-site training employees will have to be away from their job for the duration of the training. Furthermore, there is usually no one in the company that can cover for the employee who is away for the training. Secondly, considering that small firms usually don't have human resource departments, the owner/manager will have to spend time planning for the training activities. The owner/manager might not be educated or experienced enough to make the right decisions for this matter and damages can be costly. Another problem is that since employees in small firms have diverse responsibilities, one employee might need training in several areas. This will be more time consuming and costly for

the employer especially when the results are not immediate. Clawson and Franklin state that "Owners/managers of small firms are 'turned off' to the idea of employee training because they often cannot see immediate results when training has been completed" [18].

Because of the high cost, very few small companies can afford to hire big-name consultants to train them for TQM. They must be more inventive in seeking help with TQM. However, their motivation should be, as Galagan states, to seek out the avenue to TQM that best fits their companies' values and circumstances [24]. Despite all these problems that small businesses may face, if the training is done correctly these problems can be eliminated. The key is to analyze what the company's needs are and then the training should be planned according to those needs. With this approach, the company can avoid wasting money on training that will be of little or no benefit to the business [41]. Szabo states that by investing in their employees through training, small businesses can eliminate costly mistakes, reduce absenteeism and turnover, increase productivity and improve morale [56].

Even when the budget is lean, if the company has a strong belief in TQM, it will find that there are plenty of options, which will help while going through the implementation of TQM. As Galagan indicates, one of the options can be hiring small or midsize consulting firms, which can offer more attractive deals than their big-name counter parts. Another option is to buy off-the-shelf training programs that cost less than programs designed for specific customers. Forming partnerships with local educational institutions can be an alternative for training so that small companies can enjoy the expertise of big-name consultants at small consulting company prices [24].

In both small and large organizations, training and educating employees are very critical and necessary when implementing TQM [1], [12], [18]. Ebel states that employees do not have to be versed in complex quality tools and procedures. He says "The complicated tools are nice but you can do great work with just the basics" [19]. In addition to training employees, the leaders, and managers/owners also need to improve themselves [12], [14]. In fact, the biggest dilemma, as Galagan states is the desire of training everybody at once. This is because training has been touted as the answer to all the quality problems. He adds that "Actually, the critical first step is to train the managers and supervisors, so that when the rest of the staff comes out of training they won't get shut down for practicing their new skills" [24]. The owners of the small businesses are used to making all the decisions without consulting anyone. They might need to have some training on how to delegate authority, lead and empower employees [12].

Employee Involvement

Besides top management involvement and leadership, involving all the employees in every level of the organization is another requirement for the success of TQM. As mentioned before, quality is everybody's job that's why TQM puts great emphasis on the involvement of all employees in every practice relevant to their level in the organization. As Ryans suggest "Employees want responsibility, and expect to be held accountable for their contributions." He adds that the best thing that a manager or an owner can do for the employees and the company is to help and empower them in this pursuit [50].

Haksever suggests "Empowerment entails giving employees the authority to make and implement decisions and change the environment that influences their work [27]. Getting

employees involved in shaping the company's future, and shaping employees to fill meaningful roles in the future of the company make them feel that they are not just working for the company to make profits but they belong to the future of it [50]. Organizations should realize that true empowerment can only be achieved when they provide the tools and resources that enable individuals to exercise control over their own fate. Employees need clear direction and guidance that would help them to understand their decision-making boundaries [13].

Employee involvement approach focuses on moving decision-making process to the lowest levels in the organization. If the employees can make the decision of stopping a production line, or give a discount to a customer without consulting their managers--then empowerment has taken place [25]. Sonfield advocates that since small businesses have fewer managers and employees, adopting a participative approach to decision making should be easier in small companies than the large ones [54].

Quality circles, suggestion systems, focus groups, teams, brain storming and informal gatherings are ways of involving employees [50]. It is critical that whatever employee involvement programs a company chooses to follow, it should reinforce the corporate identity and the employees' need to belong. It must be based on the company's own needs and overall strategy [32], [50]. It is also important to make sure employees understand that no improvement is too small and these small improvements can make major change over time [33].

"Very small and small businesses," says Haksever " Have a great potential for success in this area, if their owner/manager believe in employee involvement and the value of employees as intelligent human beings" [27]. However, Barrier advocates that employee empowerment is the least understood part of TQM. Since the managers think it will mean that they won't have all the power, many managers resist empowering their subordinates [10].

Despite the fact that employee involvement is one of the most important issues in TQM, in the small business literature there wasn't much written specifically on employee involvement. However, Shea and Gobeli found that the employee involvement approach was not new and took many forms in small businesses. The ten organizations that they have conducted interviews mentioned using teams. These teams used brainstorming as a tool to get everybody involved. Besides its advantages, several owners expressed their concerns that since employees had become a part of the family it had become more difficult to make hard business decisions [53].

Continuos Improvement And Measurement

Gray and Seaman advocates that there is overwhelming evidence in the literature which suggests that small companies typically unaware of the benefits of statistical quality control, and mostly rely on product-oriented inspection. This may indicate that small firms have concerns for their products' quality [26]. Instead of focusing on products, organizations should focus on the process and spend time understanding the process and essential variables [10]. Continuous improvement means that the goal of a company, regardless of the level that it had already reached, should be set to improve quality constantly. In a continuous improvement manner companies don't set a performance improvement goal and rest when they get there [31]. Statistically, the goal of the process of continuous improvement is a reduction of process variability, thereby achieving higher quality at a lower cost [42].

Measuring is one of the important elements of TQM, without measuring it is hard to realize if there is any improvement or not. Sometimes measurements can bring the solution with them. The problem here is to decide what to measure and how to measure. In addition, measurements sometimes disclose things about a business that nobody would have questioned before. As Marlow began to use Pareto analysis, they found out that a 90-day probationary period was contributing to turnover by encouraging supervisors to make marginal hires [10].

In order to operate efficiently and satisfy their customers companies' need to learn to measure work processes objectively, through statistical measurement techniques and other TQM tools. With these tools and techniques they can pinpoint the problems, causes and eliminate them [31]. According to Wallace Co. Inc., one of the most critical elements of the implementing TQM is training on the technical side of quality. In their implementation process, Statistical Process Control training became a top priority at all levels of the operation [23].

BENEFITS OF IMPLEMENTING TQM

Although small firms are often slow to move into quality management, once they do, they usually find that this management style meets their needs better than it meets the needs of large companies [11].

Shea and Gobeli state that improved customer satisfaction is the most declared benefit of TQM implementation. Prevention strategies and an improved internal process are the primary influences for improved customer satisfaction [53].

A higher level of employee satisfaction is another benefit that comes with the implementation of TQM. Improved processes result in less conflict, therefore working in a TQM environment is more fun for the employees. Another factor is the increased employee responsibility for solving problems or suggesting new ideas. As they learn more about the company and the process their quality of decisions improve and they became more aware of the implications of their actions [53].

Most of the time, in the long term, increasing quality of the process and products result in healthy financial rewards. Globe Metallurgical Inc.'s, the first small company to win a Baldrige award, investments have produced 40 to 1 return [45]. Implementing a TQM that involved a big investment in training paid off for Grand Rapids Spring & Wire, with 160 employees in Grand Rapids, Mich., as the company's president Zawacki believes. In the past five years, on –time delivery has gone from 60% to over 95%. Inventory has gone down 30% and the company's sales doubled [24].

Wallace Co. Inc. benefited the most in the people side of the TQM. The company's CEO now has become the coach, and the associates become closer to each other. They really care about the company and love working there. The company's bottom line has been remarkably impacted by the quality. Sales increased 69% from 1987 to 1990, which reached $90 million. The company's market share has gone up remarkably from 10% in 1987 to 18% in 1990. Other than these, their service levels and inventory turns increased immensely [23].

1991 Baldrige award winner, Selectron Corp., a San Jose, CA manufacturer, cut its production time for a computer disk drive by 80%, to two days. In the process, the company also reduced defects from 100 parts per million to 2. Actually the benefits of implementing TQM extend beyond cost savings in the companies that reduced cycle time and defects. These companies can be more responsive to their customers [45].

Another example is Ensoniq Corporation, musical instruments manufacturer, who has employed Deming philosophy had experienced 50-60% decrease in their product returns. The company's estimates demonstrate a 3% to 4% increase in market share. Other than external indicators, the company also improved its productivity by 33%. Employee complaints dropped dramatically and employee turnover has become lower that 2.5 % per year. However, the company believes that they have much yet to accomplish and considers quality as a never-ending story. Schuler and Harris state "Their progress has required persistent hardwork; they have created an organization–wide set of attitudes, knowledge, practices and experiences" [52].

After one year of implementing TQM, the effects have become quite evident in Tudor Handle Corp., Queens, N.Y. The company's sales increased by 12%; customer returns had decreased from 8% to 1.6%, productivity had increased by 35.7%. In addition, it has been reported that there has been a substantial decrease of losses due to inspection, scrap and rework, and gross profit had increased from 215 to 32.9% [57].

Ames Rubber Corp., Hamburg, N.J., winner of the 1993 Malcolm Baldrige Award in the small business category, had produced some dramatic results in their TQM efforts. The company reduced defective parts per million from over 30,000 to fewer than 25. Employee ideas have saved the company more than $3 million. The president and CEO of Ames Rubber Corp., Joel Marvil states "When you add total quality and the resulting increase reliability and performance, you open up a whole new world of possibilities"[4].

CONCLUSION

Global competition has changed the way America performs business. Quality has become a prerequisite in the survival of organizations both small and large regardless of their size. TQM has been one of the most effective approaches for improving customer satisfaction, employee morale, increasing productivity and as well as driving force for the success and survival of the companies.

Quality efforts started with larger companies. However, since the competitiveness of large companies depends mostly on small businesses, small businesses have also seen a dramatic change in the market place: quality was not a luxury but a must, as competition increased and consumers demanded higher quality at a lower cost. Unless small businesses make the shift to quality approach, they will find starting, competing, and surviving increasingly difficult in today's market place.

This paper has studied the role that quality plays in small businesses' life, and reviewed TQM and TQM principles from a small business perspective. Moreover, advantages and disadvantages that small businesses might have when implementing TQM have been pointed out. Most of the disadvantages are the results of their lack of resources and managerial expertise. However, despite of these drawbacks that the small businesses have, with appropriate training, education and management commitment there is no reason why small businesses cannot

implement a quality procedure like TQM and increase the quality of their products and therefore their customer satisfaction.

On one side, having a small work force seems to be an obstacle for small businesses. However, on the other side, it leads to high employee involvement, which can speed the quality transformation process. Small businesses can use the same tools and quality processes and get the effective results like improved performance, happier customers and happier employees. Many organizations, like Small Business Association, have free resource center where small business owners can educate themselves and also get help. Another option is to buy a relatively inexpensive software application, which might assist in the implementation processes.

The most important issue in both implementing and maintaining TQM efforts is the continued involvement of top management. Top management has to believe in quality efforts and be patient in reaping its rewards. Quality is not a one-time effort it's a process, which evolves continually and requires a life long commitment. After all, it is just a matter of having the courage to get started.

REFERENCES

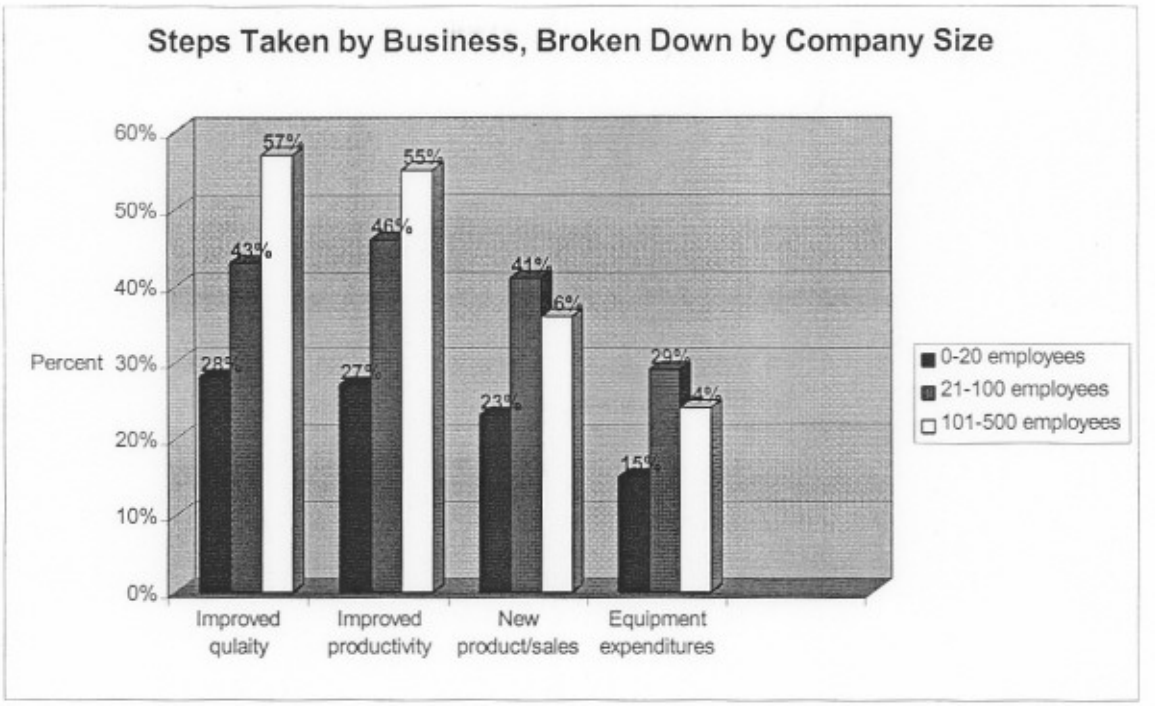
[1] Ahire, S. L. and Golhar D.Y., "Quality Management in Large vs. Small Firms", *Journal of Small Business Management,* Vol. 34, No. 2, April 1996, pp. 1-14
[2] Altany, D., "Cinderella With a Drawl", *Industry Week,* Vol. 241, Iss. 1, January 6, 1992, pp. 49-51
[3] Andreichuk, B., "Getting Objective About Quality", *Small Business Reports,* Vol. 17, Iss. 3, March 1992, pp. 28-39
[4] Anonymous, "Baldrige Winner Shares Information On Its Total Quality Program", *Industrial Engineering,* Vol. 26, Iss. 7, July 1994, pp. 9-10
[5] Anonymous, "Small Business Size Standards", http://www.sba.gov/regulations/siccodes/aboutrule.html
[6] Anonymous, "The Fact About Small Business, 1997", http://wwwsba.gov/ADVO/stats/fact1.html
[7] Anonymous, Profile OF typical US Small Business Revealed, http://wwwdnb.com/newsview/0217news4.htm
[8] Anonymous, http://www.quality.nist.gov/docs/97_crit/elig.htm
[9] Axland, S., "Small Wonders", *Quality Progress,* Vol. 28, Iss. 11, November 1992, pp. 29-34
[10]Barrier, M., "Small Firms Put Quality First", *Nation's Business*, Vol. 80, Iss. 5, May 1992, pp. 22-30
[11]Barrier, M., "Where Quality is a Language", *Nation's Business,* Vol. 81, Iss. 1, January 1993, pp. 57-59
[12]Bemowski, K., "Small in Size But Not in Stature", *Quality Progress,* Vol. 25, Iss. 11, November 1992, pp. 23-27
[13]Bonvillian, G., "Quality-Driven Change in the 1990s", *IEEE Solutions,* Vol. 28, Iss. 4, April 1996, pp. 32-39
[14]Brown, M., "Why TQM Fails and What To Do About It", *Small Business Report,* Vol. 19, Iss. 7, July 1994, pp. 58-60
[15]Brown, S. and Falk, C.F., " Small Business and the New Quality Standard", http://wwwsbanet.uca.edu/docs/proceedings/92sbi069.txt
[16]Brown, S., Davig, W. and Tabibzadeh, K., "Cost vs. Quality: What Do Small Manufacturers Think", http://wwwsbanet.uca.edu/docs/proceedings/92swi109.txt
[17]Caudron, S., "Keys To Starting a TQM Program", http://www.workforceonline.com/mem…earch/general_management/2456.html
[18]Clawson, K. J. and Franklin, G. M., "Employee Training: It Doesn't Have To Be a Nightmare For Small Employers", http://wwwsbanet.uca.edu/docs/proceedings/95swi108.txt
[19]Ebel, Kenneth E., " Achieving Excellence in Business: A Practical Guide to the Total Quality Transformation Process", ASQC Quality Press, New York, Marcel, 1991
[20]Evans, J. R., and Lindsay, W. M., The Management And Control Of Quality, Third Edition, West Publishing Company, New York, 1996
[21]Fairfiel-Sonn, J., W., "A Strategic Process Model For Small Business Training And Development", *Journal Of Small Business Management,* Vol. 25, Iss. 1, April 1983, pp. 11-18
[22]Festervand, T. A. and Haufler, G. W., " Extending TQM To Small Manufacturing Companies: The Batesville Experience", http://wwwsbanet.uca.edu/docs/proceedings/93sbi235.txt
[23]Forbes, C., "And The Winner Is", *Industrial Distribution,* Vol. 80, Iss. 3, February 1991, pp. 20-23

[24]Galagan, P. A., "How To Get Your TQM Training On Track", *Nation's Business,* Vol. 80, Iss. 10, October 1992, pp. 24-26
[25]Gandz, J., "The Employee Empowerment Era", Business Quarterly, Vol. 55, Iss. 2, Autumn 1990, pp. 74-79
[26]Gray, V. and Seaman, S., "Quality: What's a Small Firm To Do?", *Baylor Business Review,* Vol. 18, Iss. 3, Fall 1990, pp. 25-27
[27]Haksever, C., " Total Quality Management In The Small Business Environment", *Business Horizons,* Vol. 39, No. 2, April 1996, pp. 33-42
[28]Hand M. and Plowman B., "Quality Management Handbook", Charter Institute of Management Accounts, 1992
[29]Henkoff, R., "The Labor Secretary Speaks Out on Training and the Two-Tier Work Force", *Fortune,* Vol. 127, Iss. 5, March 1993, pp. 11
[30]Henricks, M., "It's Not Just Academic", *Small Business Reports,* Vol. 19, No. 5, May 1994, pp. 23-31
[31]Henricks, M., "Quality Makes a Difference", *Small Business Reports,* Vol. 17, Iss. 12, December 1992, pp. 29-38
[32]Hodgetts, R., M., "Implementing TQM in Small & Medium-Sized Organizations", American Management Association, NY, 1995
[33]Idstein, J. R., "Small Company TQM", *Management Accounting,* Vol. 75, Iss. 3, September 1993, 39-40
[34]Ivancevich, J., M., Lorenzi, P. and Skinner, S., J., "Management Quality and Competitiveness", Richard D. Irwin Inc., 1994
[35]Johnson, D. E., "Total Customer Delight: Returning Thrill To Total Quality Management", http://wwwsbanet.uca.edu/docs/proceedings/94sbi305.txt
[36]Juran, J.M., "Quality Control Handbook", Mc Grawhill, New York, 1988
[37]Kaldenberg, D. O. and Gobeli, D.H., "Total Quality Management and Business Outcomes: Evidence From Dental Practices", *Journal Of Small Business Management,* Vol. 33, Iss. 1, Jan 1995, pp. 21-33
[38]Kathryn Daut, http://www.pica.army.mil/ardec/tqm/primer/primer.html
[39]Kinni, T., "Lofty Goals: Superstructuring With Quality Standards and Awards", *Industry Week,* Vol. 244, Iss. 16, September 1995, pp. 63-66
[40]Lawrence R., J. and Dunn P., "Small Business Management: Do Professional Management Principles Apply?", http://wwwsbanet.uca.edu/docs/proceedings/95sbi119.txt
[41]Mangelsdorf, M. "Ground-Zero Training: A Comprehensive Guide to Establishing Employee Training Programs in Small Companies", http://www.inc.com/incmagazine/archives/02930821.html
[42]Masters R. "Fourteen Points for Quality and Leadership in Managing Successful Firms", http://wwwsbanet.uca.edu/docs/proceedings/92sbi011.txt
[43]Micklewright, M., "Competitive Benchmarking: Large Gains For Small Companies", *Quality Progress,* Vol. 26, Iss. 6, ,June 1993, pp. 67-68
[44]Perisco, John Jr., "The TQM Transformation: A Model for Organizational Change", White Plains, New York, 1992
[45]Port, O., Kelly, K. Forest S.A., "Quality: Small and Midsize Companies Seize the Challenge- Not A Moment Too Soon", *Business Week,* Vol. 95, Iss. 32, November 30, 1992, pp. 66-75
[46]Rasheed, H. S., "Total Quality Management Implementation: Challenges of a Defense Contractor", http://wwwsbanet.uca.edu/docs/proceedings/94sbi319.txt

[47]Robana, A., "How Some U.S. Firms Develop a Quality Program Within Their Management Practices", http://wwwsbanet.uca.edu/docs/proceedings/94sbi345.txt
[48]Ross, J. E. and Klatt, L. A., "Quality: The Competitive Edge", *Management Decision,* Vol. 24, Iss. 5, pp. 12-16
[49]Ross, J., E., "Total Quality Management: Text, Cases and Readings", St. Lucie Press, 1993
[50]Ryans, C., "Managing The Small Business", Prentice Hall, New Jersey, 1989
[51]Salegna, G. and Fazel, F., "An Integrative Framework for Developing and Evaluating a TQM Implementation Plan", *QMJ 95,* Vol. 3, no. 1, pp. 73- 84
[52]Schuler, R. S. and Harris, D. L., "Deming Quality Improvement: Implications for Human Resource Management As Illustrated In A Small Company", *Deming Quality Improvement,* Vol. 14, Iss. 3, 1991, pp. 191-207
[53]Shea, J and Gobeli, D., "TQM: The Experiences of Ten Small Businesses", *Business Horizons,* Vol. 38, No. 1, Jan-Feb 1995, pp. 71-78
[54]Sonfield, M., C., "Can Japanese Management Techniques Be Applied To American Small Business?", *Journal Of Small Business Management,* Vol. 22, Iss. 3, July 1984, pp. 18-23
[55]Struebing, L. and Klaus, L., A., "Small Business Thinking Big", *Quality Progress,* Vol. 30, Iss. 2, Feb 1997, pp. 23-27
[56]Szabo, J., "Honing Workers' Basic Skills", *Nation's Business,* Vol. 82, Iss. 5, May 1994, pp. 69-70
[57]Tagliapietra, M., "Implementation of TQM in a Small Manufacturer", http://www.lagccc.cunny.edu/cqc/moreno
[58]Weaver, C., N., 'TQM: A Step-By-Step Guide to Implementation", ASQC Quality Press, 1991
[59]Wernick, S., "The Path To TQS is Small Company", *Quality,* Vol. 30, No. 5, May 1991, pp. 14-17

EXHIBITS

Exhibit 1: Percentage of Small Businesses Improving Quality



Source: Bemowski, K., "Small in Size But Not in Stature", *Quality Progress,* Vol. 25, Iss. 11, November 1992, pp. 23-27

Exhibit 2: Quality Management Principles Summary

Management Vision and Commitment

Process must begin with topmost management.
Problems often must be solved by changing or renewing the process or system.
Quality is a way of life.

Barrier Elimination

Rampant involvement, including suppliers and customers, is essential.
Yield authority to the lowest possible level to resolve problems.
Change must be the norm, not the exception.

Communication

Communication and information dissemination are vital.
Inform the end-user of the information as quickly as possible.
It is more important to be clear than correct.

Continuous evaluation ad Measurement

Identify customer requirements.
Constantly use feedback.
Self assess and reflect continuously.

Continuous Improvement

Quantify and measure.
Measure the cost of quality
Continuously monitor vital measurements of a product.
Reduce variation.

Customer/Vendor Involvement

Customer must be king.
Vendors are part of the solution, not the problem.
Customer requirements, desires, hopes, and fears must be continuously monitored.

Empowerment

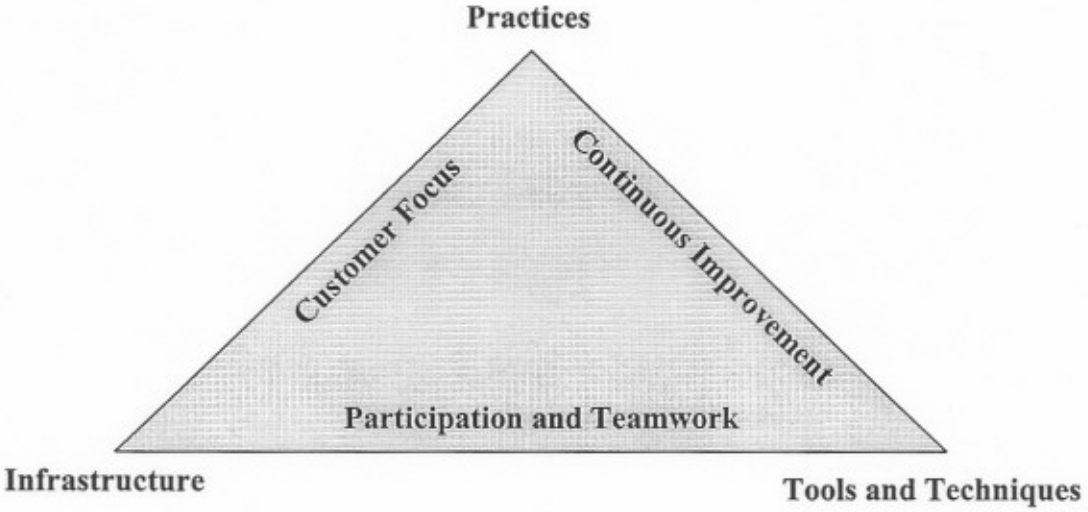
Management style must be actively participative.
Employees must be actively involved.
Authority and autonomy must be commensurate with duties.

Training

Emphasize that long-term success is survival.
Quality is conformance to customer requirements.
Enhance skills to measure quality and identify problems.
Training must be at all levels.

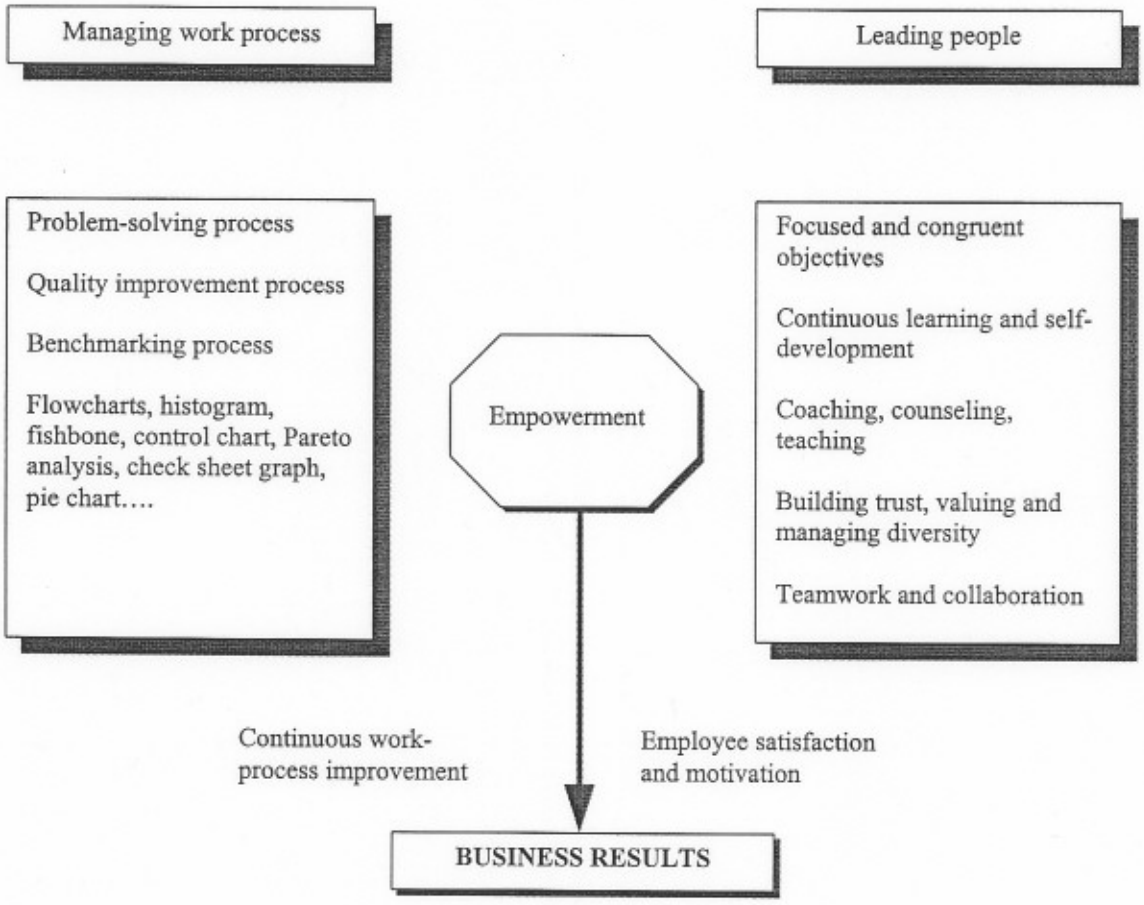
Source: Brocka and Brocka, "Quality Management", Irwin, 1992, p 12

Exhibit 3: The Scope of Total Quality Management



Source: Evans, J. R., and Lindsay, W. M., The Management And Control of Quality, Third Edition, West Publishing Company, New York, 1996

Exhibit 4: Quality Management Leadership Model



Source: Ivancevich, J., M., Lorenzi, P. and Skinner, S., J., "Management Quality and Competitiveness", Richard D. Irwin Inc., 1994, p.407

Exhibit 6: TQM Implementation Design Process

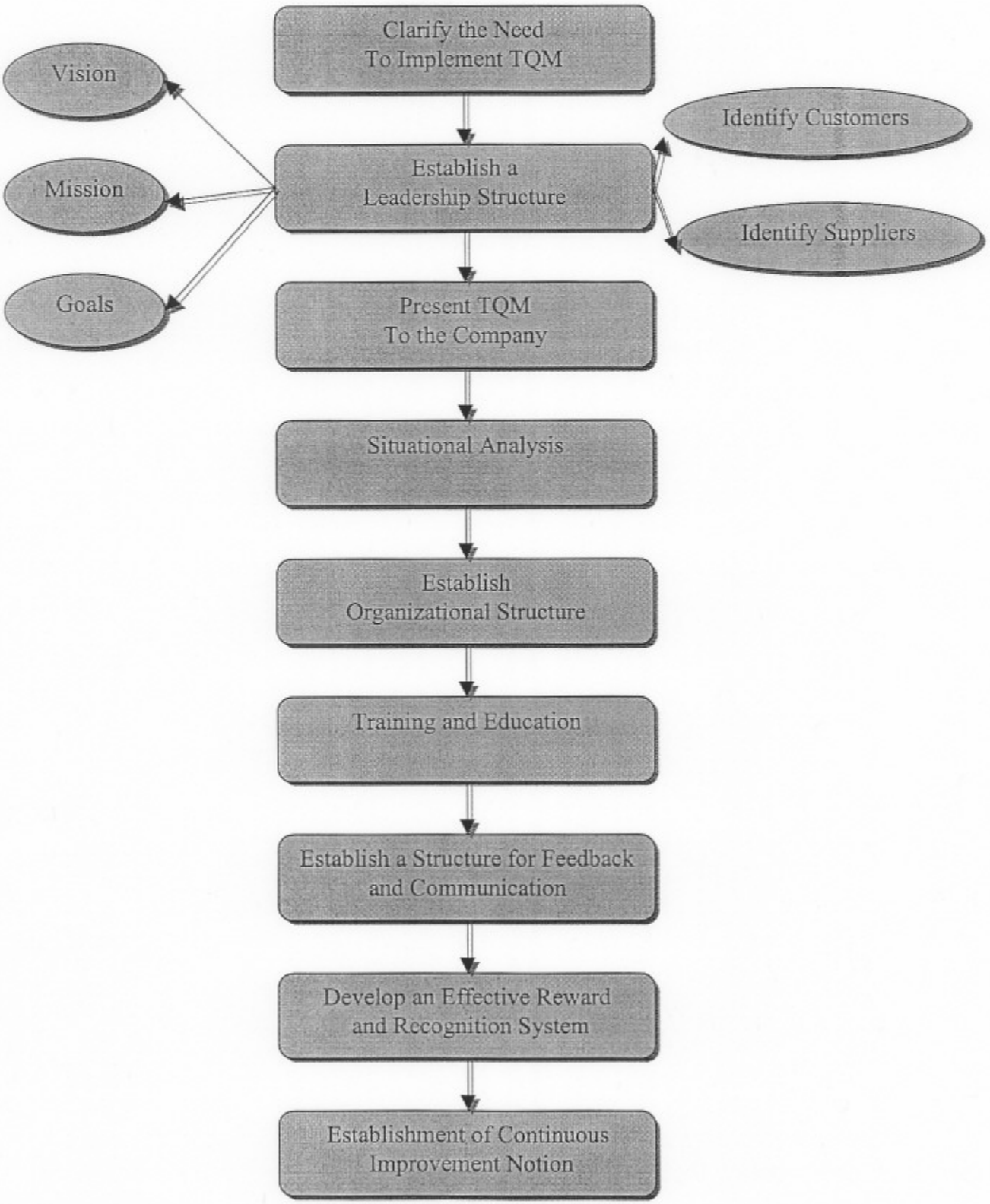
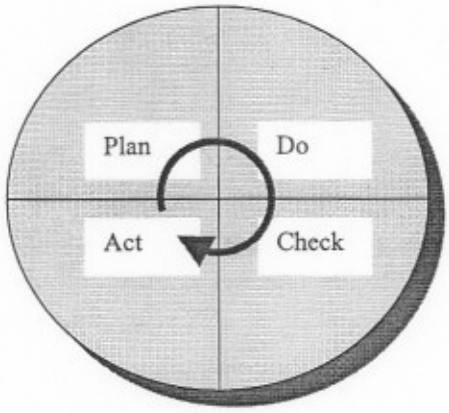


Exhibit 5: The PDCA Cycle



Source: Ivancevich, J., M., Lorenzi, P. and Skinner, S., J., "Management Quality and Competitiveness", Richard D. Irwin Inc., 1994, p.189

Exhibit 7: The Cost of Poor Quality

Cost of Appraisal: These are costs associated with internal testing, monitoring, policing, inspection, supervision, and reporting.

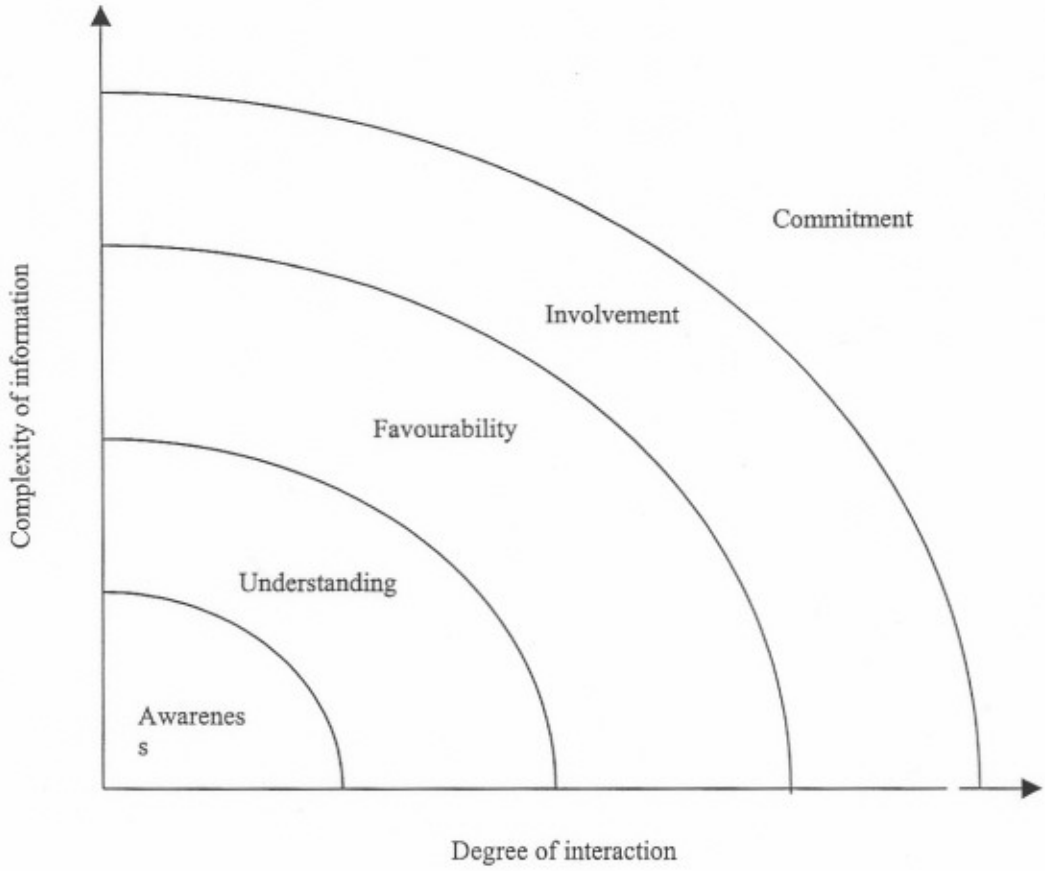
Cost of Mistakes: These are costs with defects produced during the manufacturing processes or in the preparation of the service to be delivered. These mistakes are mixed/repaired/rejected before delivery and unseen by the external customer. In the eyes of the external customer, the product or service is defect free.

Cost of Failure: These are costs associated with the failure of a product or service after it has been received by the external customer. Direct costs are for repair or replacement.

Cost of Lost Business: These are costs associated with not meeting external customers' expectations and their going elsewhere for the product or service.

Cost of Prevention: These costs are necessary to ensure that work is correctly performed and consistently conforms to customers' expectations ever time. Employee skill training is included.

Exhibit 8: Objectives for communication



Source: Hand M. and Plowman B., "Quality Management Handbook", Charter Institute of Management Accounts, 1992, p 255

APPENDIX I

SEVEN OLD TOOLS

Flow Charts: Flow charts are used to provide a visual description of the steps in a process or work activitety. The sequence of events that make up the process are shown. Generally, flowe charts begin with inputs, show what takes place to transform these inputs, and end with outputs. Flow charts are especially helpful in visualizing and understanding how things are currently being done and how they can be done differently to improve the process [Exhibit AI-1]

Run Charts: Run charts are used to plot measures taken over specific time intervals such as a day, week, or month. The run chart can be used to determine how something is changing over time and whether problems are taking place at certain periods of time. Exhibit AI-2 shows that number of defective units produced goes up as the day progress.

Control Charts: Control charts show the results of statistical process control measures for a sample, batch, or some other unit. These charts can be used to study variation in a process and to analyze the variation over time [Exhibit AI-3]. The use of these charts helps to identify when the process goes out of control. A specified level of variation (between upper and lower control limits) may be acceptable, but deviation beyond this level is unacceptable.

Fishbone Diagrams (Cause and Effect Diagrams): [Exhibit AI-4] Problems are defined as effects for the purpose of these diagrams. Events that contribute to the problem are called causes. Fishbone diagrams can be used to see how differernt causes occur and lead to a problem. Once the causes are identified, corrective measures can be implemented.

Pareto Charts: Pareto charts are used to display the number of problems or defects in a product over time. Pareto charts are very simple tools, displaying the resultls as bars of varying length [Exhibit AI-5]. Since not all of the problems can be tackled at once, the main purpose of using these charts is to prioritizing the actions.

Histograms: Histograms show the frequency of each particular measurement in a group measurements. It is a way of arranging and displaying data so that variation can be easily seen [Exhibit AI-6].

Scatter Diagrams: Scatter diagrams show the relationship between two chracteristics or events. Exhibit AI-7 shows the relationship between strength and diameter for samples of wires. By measuring these two variables and plotting the results, we can observe how one variable changes as the other changes. In this case strength increases with diameter.

Source: Ivancevich, J., M., Lorenzi, P. and Skinner, S., J., "Management Quality and Competitiveness", Richard D. Irwin Inc., 1994

Hand M. and Plowman B., "Quality Management Handbook", Charter Institute of Management Accounts, 1992

Exhibit AI-1: Flow Chart

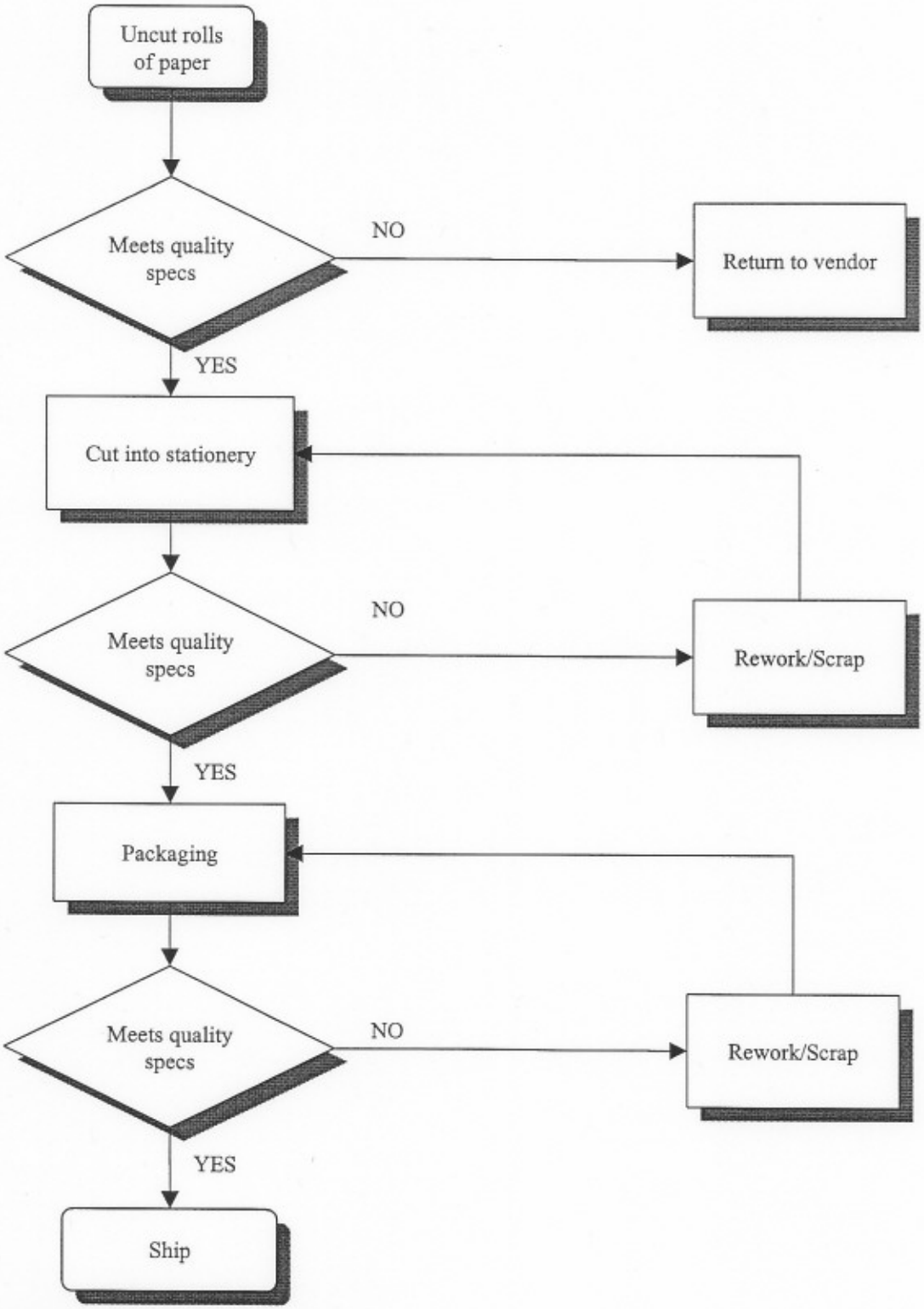


Exhibit App. I-2: Run Chart

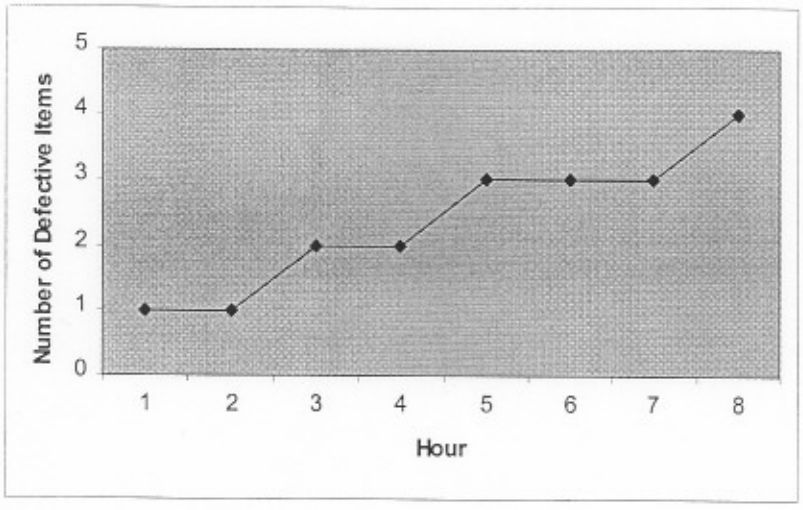


Exhibit App. I-3: Control Chart

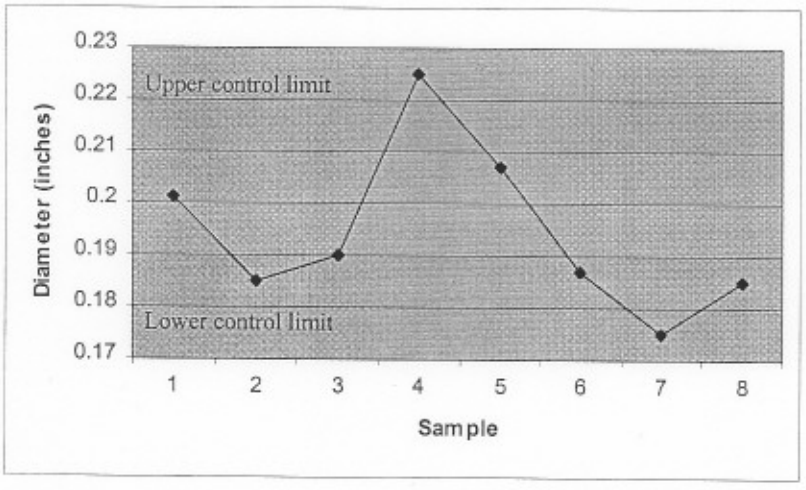


Exhibit App. I-4: Fishbone Diagram

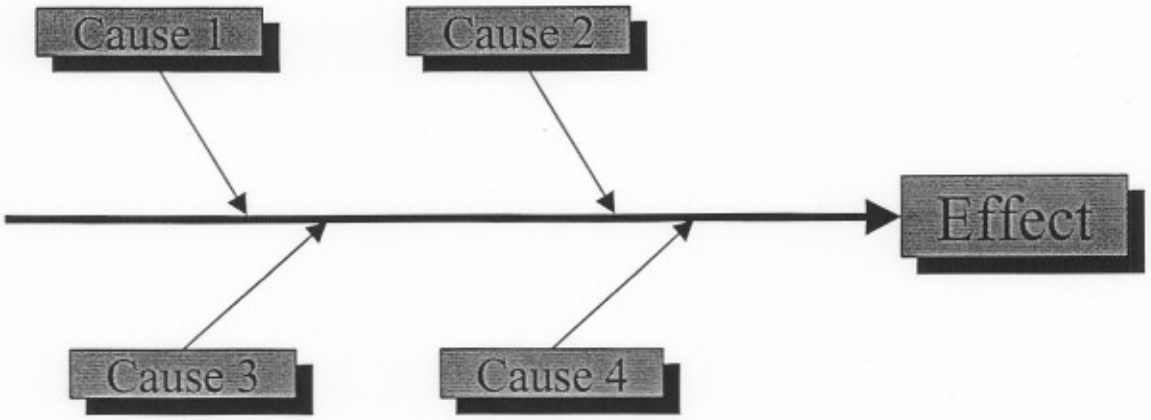


Exhibit App. I-5: Pareto Chart

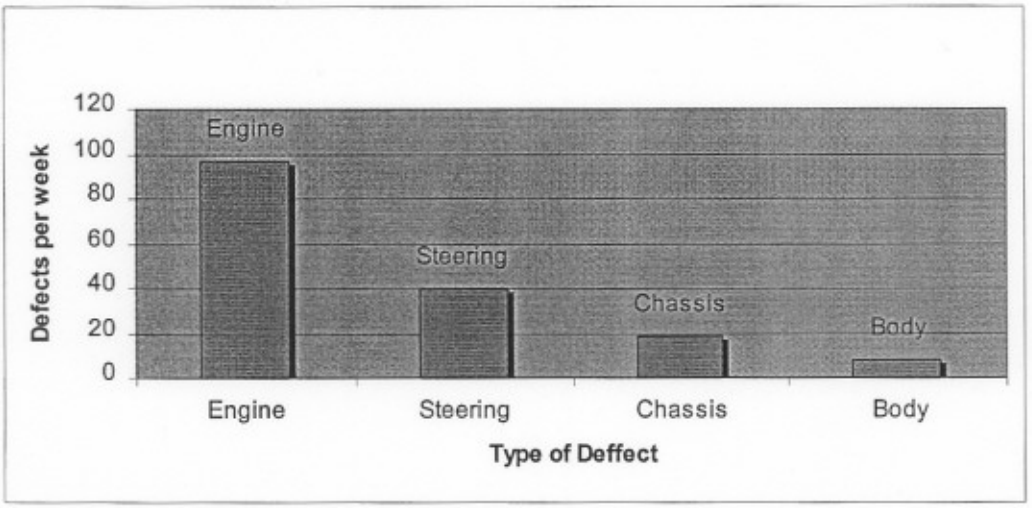


Exhibit App. I-6: Histogram

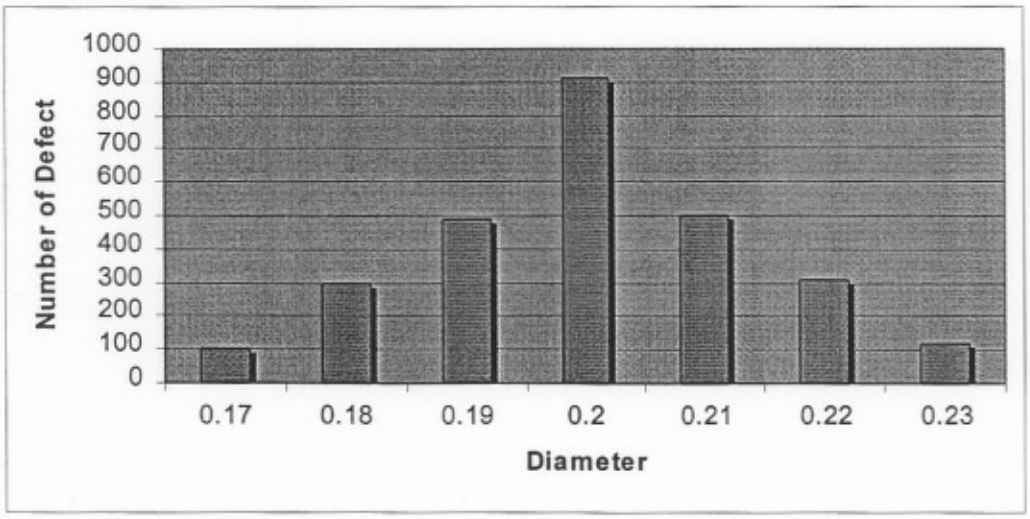
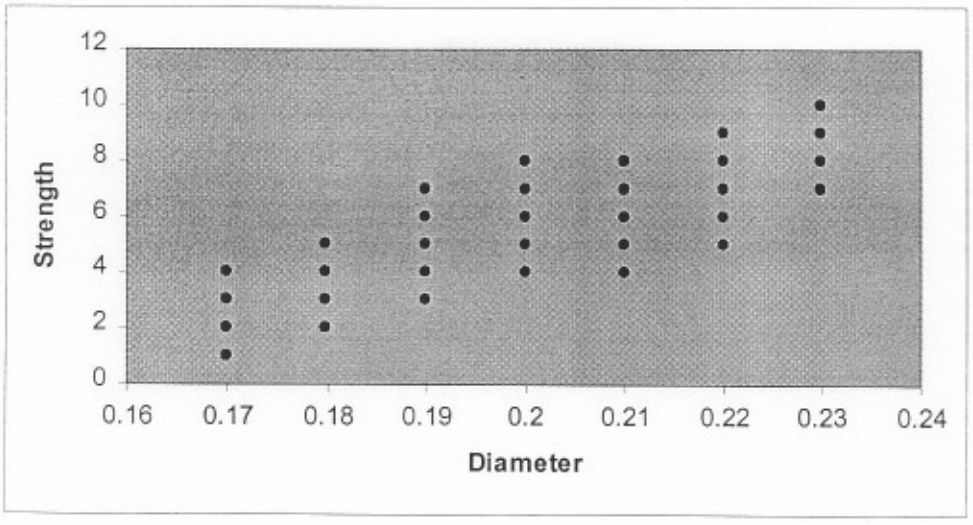


Exhibit App. I-7: Scatter Diagram



APPENDIX II

SEVEN NEW TOOLS

Relations Diagrams: Relations diagrams are a more deteiled type of cause-and-effect analysis, and used when the causes have complex interrelationships. It is a team based problem-solving technique [Exhibit AII-1]. The problem is identified by using some other tools that are discussed in Appendix I then brainstorming is is used to find out the potential causes. Each cause is recorded on a separate card and then the cards are arranged to build up the diagram, working outwords from center. Arrows are used to indicate those items that are related and cause and effect relationships.

Affinity Diagram: Affinity diagrams are used to display ideas and information in a visual way, which helps to analyse and clarify the issues. First the subject for clarification or problem is defined, then ideas about the subject are collected on separate cards. These are arranged and grouped so that similar ideas are next to each other. The cards are shuffled until all of the ideas are arranged into subsets of the original subject [Exhibit AII-2]. The subsets and the ideas can be used as a basis for action.

Tree Diagrams: These diagrams are used to systematically map out the activities that must be accomplished to reach a desired goal, step by step [Exhibit AII-3]. The objective is written and the diagram is bulit up by asking the question "How?" and identifying the primary means. This tool can be used for project planning and for identifying steps along the way to achieve desired results.

Matrix Diagrams: Matrix diagrams are used to evaluate for relationships between different charecteristics and to establish their relative importance. One set of ideas listed along the vertical axis of the matrix and the other set is listed along the horizontal axis [Exhibit AII-4].

Matrix Data Analysis: When using large matrix diagrams, in order to see results in a more visual manner a technique is required. Matrix data analysis is the tool that converts symblos to numbers. Then large arrays are evaluated and displayed by a computer.

Process Design Program Chart (PDPC): This tool is used for process optimization and error prevention. It uses tree diagram and evaluates the proposed process. Then this tool is used to anticipate possible problems and make plans to prevent them.

Arrow Diagrams: Arrow diagrams are used for planning and scheduling tasks. The tasks necessary to complete a job are listed and the probable time required for each task is estimated.

Source: Hand M. and Plowman B., "Quality Management Handbook", Charter Institute of Management Accounts, 1992

Exhibit App. II-1: Relations Diagram

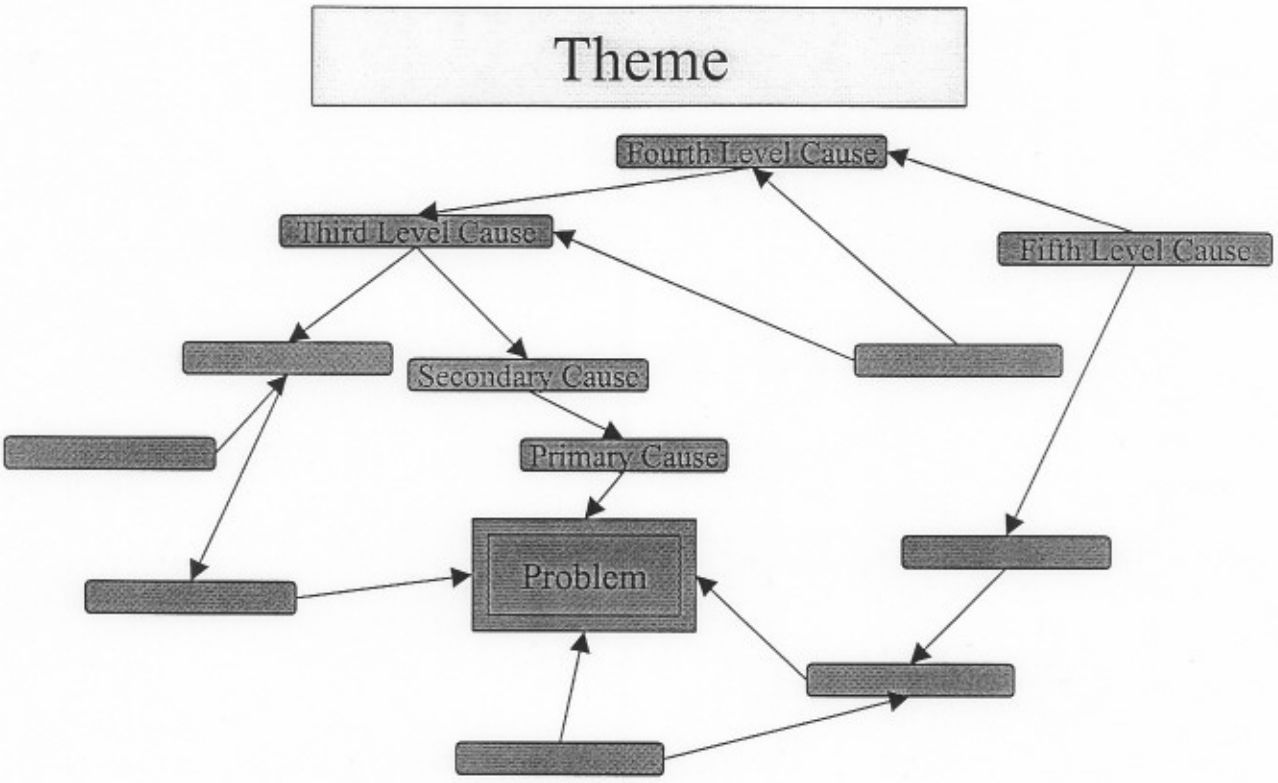


Exhibit App. II-2: Affinity Diagram

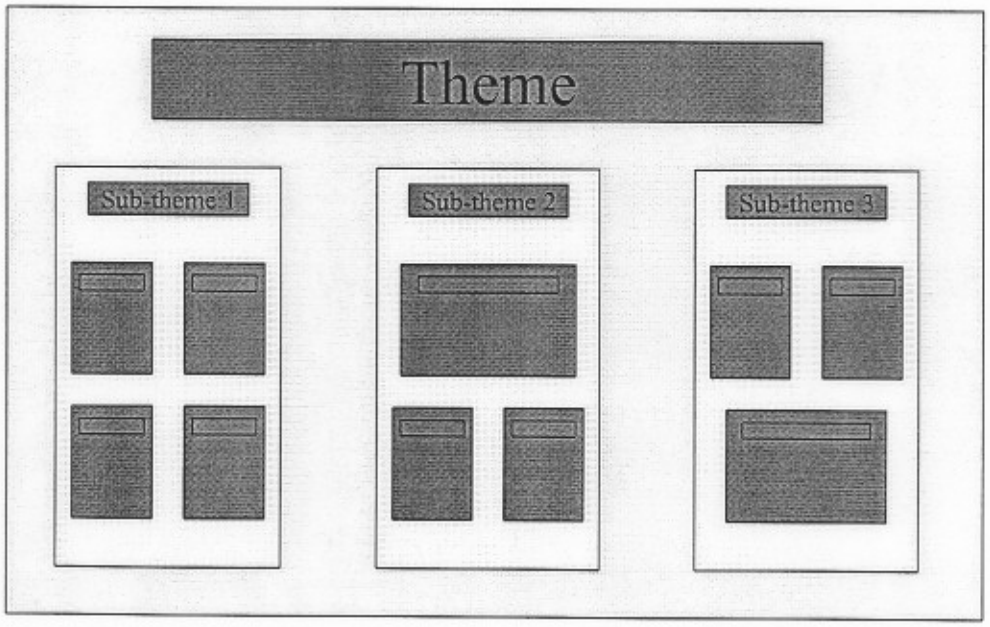


Exhibit App. II-3: Tree Diagram

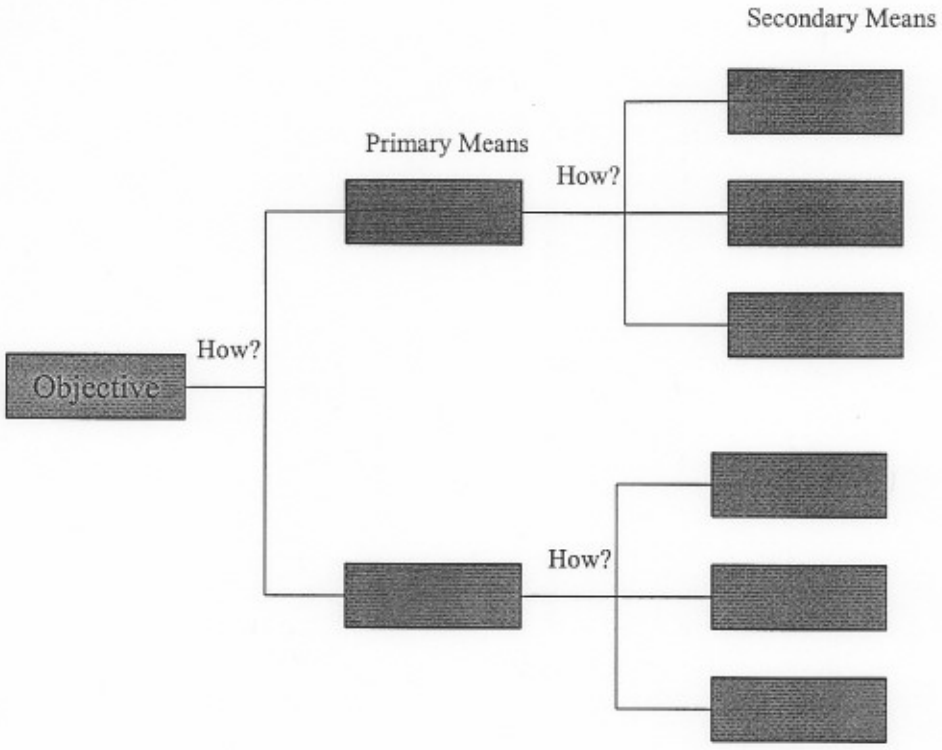


Exhibit App. II-4: Matrix Diagram

		A				
		A1	A2	A3	A4	
B	B1			○	△	
	B2	◎	◎			
	B3		△	△		
	B4		◎	○		

◎ Strong Relationship
○ Some Relationship
△ Possible Relationship

ARTICLES