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FACTORS ASSOCIATED WITH THE TOTAL QUALITY MANAGEMENT EDUCATIONAL NEEDS OF EMPLOYEES IN SELECTED KOREAN COMPANIES

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of The Ohio State University

by

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1995

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To my father, Jung-Yoon Kim

and

my family
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CHAPTER I

INTRODUCTION

Today, quality improvement has become a key issue to the world economy. Because of the increasing competitiveness in global and national markets, the ability of companies to produce high-quality products and services is necessary. Thus, companies have focused on quality as a vehicle for achieving higher levels of performance and have established a continuous quality improvement process. Quality improvement of products and services can be started by focusing on the customer's requirements because the goal of quality improvement is to meet those requirements. Achieving high levels of quality that satisfy the requirements of customers has become an increasingly important element for success in a competitive environment. As a result, focus on the customers and ensuring their satisfaction are critical goals for companies.

Today, Total Quality Management (TQM) has been implemented in many companies as they have responded to competitive pressure. The movement to pursue TQM as an management approach has been adopted by many organizations with equally good results, and an effort has been launched to encourage its adoption. For example, in the United States, many organizations have adopted TQM as their vision for change, such as Motorola, IBM, Federal Express, and Xerox. Pegels (1995) noted that TQM has become popular because it attempts to improve on service quality, productivity, and company competitiveness by improving communications within organizations and with
TQM is a pervasive activity in many organizations. This significantly increased use of TQM philosophy shows that TQM is a most significant shift for quality improvement and it presents radical new challenges to traditional management.

According to a recent study by the U.S. General Accounting Office (GAO, 1991), companies who had implemented TQM had shown bottom line increases in quality, productivity, level of process control, supplier quality, and customer satisfaction. In addition, there were noticeable decreases in the number of defects, amount of machine downtime, and dependence on inspection. Gains in employee attitudinal and organizational culture were observed as well. Improvements in employee satisfaction, morale, attendance, turnover, and employee/management relations were observed in these TQM organizations. Increases in quality of worklife, interdepartmental cooperation and organizational commitment were observed in other studies (Atkenson, 1989; Braunstein, 1989; Rohan, 1989). Employees felt more recognized and empowered for their efforts and enjoyed having more autonomy, authority, responsibility and a deeper sense of pride in their work (Melosh, 1987; Braunstein, 1989; Porter, 1991).

Workers indicated that Statistical Process Control (SPC) and process improvement made people's lives easier and their jobs less confusing. As they exposed and removed the problems from work processes that were personally frustrating to employees, quality was improved. In the process improvement methodology, 85 percent of the blame for problems was in the process itself, not in the workers. As a result, employees felt more validated as management shifted the fault off them and on to faulty processes (Deming, 1986).

Schmidt and Finnigan (1993) compared traditional management approaches with TQM approaches. First, in the past, the organizational structure was hierarchical and had
rigid lines of authority and responsibility. In TQM, the organizational structure becomes flatter, more flexible, and less hierarchical. Second, the traditional form of management focused on maintaining the status quo. On the other hand, the focus of a TQM organization shifted to continuous improvement in systems and processes. Third, workers in traditional management perceive supervisors as bosses, but workers in a TQM organization perceived supervisors as coaches and facilitators. The manager was seen as a leader. Fourth, in the past, supervisor-subordinate relationships were characterized by dependency, fear, and control. However, with TQM, the relationship between supervisors and subordinates focused on interdependency, trust, and mutual commitments. Fifth, the focus of employee efforts was on individual efforts; workers view themselves as competitors. In contrast, with TQM, an organization emphasized team efforts instead of individual efforts and workers see themselves as teammates. Sixth, traditional management perceived labor and training as unnecessary costs but TQM perceives labor as an asset and training as an investment. Finally, the traditional management determines what quality is and whether it is being provided. The TQM organization asks customers to define quality and develops measures to determine if customers' requirements are met. This comparison between traditional management and TQM approaches shows that TQM is a new way of thinking about organizations and how people should relate and work in them.

Carr (1990) further enumerated differences between traditional management and TQM. Traditional management tolerates errors and waste. Traditional management focuses on individualism and measures their individual performance and rewards or punishes them accordingly. Furthermore, traditional management depends on automation to improve quality and productivity. On the other hand, TQM focuses on improving the
process that makes products and services to the point that they are defect-free and yield no waste. In a TQM structure, instead of relying on a hierarchy of managers to coordinate things, teams of managers and employees work together. TQM places more value on small but regular gains made by daily attention to enhancing how work is done for continuous improvement.

According to Ishikawa (1985), the phenomenal Japanese success is traceable to a management system originally taught by Edward Deming and Joseph Juran. By the late 1970's, their system transformed Japan's post-second-world-war economic collapse into global leadership by providing quality goods and services at low cost with high efficiency. Workers in Japan were vitally involved in this transformation, empowered by their management to make recommendations and changes in a work process that they controlled. Simultaneously, they experienced high job satisfaction, morale and motivation. By focusing on what the customer defined as quality and by eliminating non-value-added steps and making other improvements to the work process, these Japanese organizations were able to improve the quality of their products and reduce the cost to manufacture them at the same time. The Japanese labeled this process Total Quality Control (TQC). Critical to the success of TQC was the concept that quality should be built into the process. This differed from the traditional belief that defects could be inspected out at the end of the line before the customers received the product.

A review of the current literature (Juran, 1980; Deming, 1982; Ishikawa, 1985; Feigenbaum, 1989; Pegels, 1995) identified some of the important TQM features. First, corporate attention has focused on the importance of knowing who your customers are and what their expectations are, and then pulling out all the stops to ensure that the customers' expectations are fulfilled or exceeded. Second, employees were empowered
for the purpose of problem solving or just getting the work out. Third, training helped in the implementation process. Fourth, management led the way in disseminating TQM values throughout the organization. Fifth, management nurtured a flexible and responsive corporate culture. Finally, formal partnerships established with suppliers improved product or service quality.

In the implementation of TQM, issues have existed at the organizational culture, leadership style of top management and levels of support for implementation of TQM, employee participation level, training quality, and reward and recognition systems (Bounds, 1988; Sashkin & Kiser, 1993). Jablonski (1992) established six principles in order to implement TQM successfully: (1) customer focus, (2) a focus on process as well as results, (3) prevention verses inspection, (4) mobilize the expertise of the workforce, (5) fact-based decision making, and (6) feedback. These factors influence the effectiveness of the program.

Kelso viewed TQM as a comprehensive system that focuses on the "process" rather than the end result. TQM requires a total commitment to fulfill the needs of the customer, and it is also a team approach, where leaders serve as coaches rather than judges. TQM injects quality into every step of a process and stresses continuous improvement (Varian, 1990). Thus, TQM is a strategic, integrated management system for achieving customer satisfaction. TQM is to continuously improve all processes in the organization and involves all managers and employees. Moreover, TQM provides a more people-oriented dimension to a process useful to managers and others involved in interactive management. In order to assist in implementing a people-focused process that assures product and process quality, people involvement must be aimed at fostering
real teamwork to encourage continual improvement in every person's area of responsibility. Everyone needs to feel like they are really part of the total corporate team.

The use of TQM has been shown, when implemented correctly, to substantially improve several measures of organizational performance and increase employee job satisfaction. However, despite the number of organizations which have attempted TQM implementation, approximately 70 percent have met with limited success, resulting in negative employee perceptions, an initial lack of buy-in, and reduced employee commitment.

The quote from a GAO report and other studies indicated that 70 percent have not shown definitive productivity improvement. The reasons for lack of success have, in part, been due to consultants or internal quality specialists who do not truly understand the quality process or implementation (Pinder, 1984; Dumas, 1987; Whitley, 1991). A number of other reasons have been suggested in these studies for TQM failure. A partial list of reasons are:

* Leadership not willing to role model TQM activities with action, not just talk.
* Employees not receptive to changing their behavior.
* Reward systems that do not reward quality objectives.
* Organization expecting short term results, discontinuing TQM when results were not forthcoming.
* No follow-through on the TQM strategic plan that integrates the TQM effort with strategic goals and objectives.
* Cross-functional teams unable to work together, lack of communication, interpersonal and team leadership skills.
* Lack of a strong training methodology.
* Lack of employee initiative to participate and be responsible for quality improvement without additional management pressure.

* Organizational culture and resulting underlying values, beliefs, and management practice.

* Negligible integration of other stockholders, such as unions, vendors, and customers.

These reasons have purportedly contributed to ineffective TQM programs. They reinforce how important it is to plan in advance and build into the infrastructure of the TQM change process enough time, resources, knowledge, and momentum to sustain the effort.

TQM has been a comprehensive, customer-focused system that many organizations have adopted to improve the quality of their products and services. The movement to pursue TQM has been adopted by Korean companies. Korean companies have also been faced with a major transformation in business philosophy and management practice with a focus on quality orientation because of financial cuts, changing requirements, and competing world markets. Moreover, in the face of rapidly changing markets and technologies, organizations have to make periodic adjustments in their mode of operation to survive. Therefore, Korean industries are eagerly adopting quality management practices to compete with other industrial countries that have adopted more creative management practices. In relation to this effort, Korean companies recognized TQM concepts as an important and prominent approach to management.

In response to the pressures of a changing world environment and the need to change, Korean companies also need to establish educational programs to improve
quality and productivity. In turn, many companies are faced with a set of educational needs. Korean companies have recognized that TQM is a comprehensive approach requiring lengthy and extensive education and training programs within the organization. However, the specific focus and content of the educational needs will vary for each organization, depending on its background, understanding and TQM implementation plans. Therefore, as part of TQM implementation efforts, each organization should conduct an assessment of its educational needs in relation to existing skills and knowledge of the employee.

In order to successfully implement TQM, education and training are investments that have to be made, because world class quality products can not come from a poorly trained workforce with inadequate equipment, who lack proper input and the opportunity to assist in improvement. Instead of looking at training as an expense, training must be considered an investment in the future, just as many of the other investments that are made in equipment and other processes. In addition, the essence of TQM is involving and empowering the entire work force to improve the quality of goods and services to satisfy the customer. Thus, all employees, in continuously improving the work processes of the organization, have to be involved. In order to involve all employees in the TQM movement, an employees' educational needs assessment should be conducted. In general, educational needs of each employee or an organization vary depending on its own background, understanding and TQM implementation plans. As a result, in order for TQM to be effectively carried out, it is necessary to assess employees' educational needs about TQM principles.
Statement of the Problem

In the past, most companies have focused on substantive outputs and tangible outcomes. Increased productivity was best achieved by cutting the time in work-flow tasks. To improve quality, organizations had to accept higher costs; to minimize cost per unit; thus, they set long production runs (Hodgetts, Lee, and Luthans, 1994, July). At the same time, management had focused on incremental, non-risk endeavors. However, in recent years, TQM has become a catchword for a large number of organizational activities ranging from zero defects in manufacturing plants to on-time delivery and customer satisfaction in service organizations (Lee, 1994). In other words, business has needed to develop the process of continuous quality improvement for survival in a competitive world economy. In order for companies to improve continuous quality, they are continually looking for ways to improve their educational programs.

Quality has become one of the major factors shaping a rapidly changing competitive environment. Thus, all employees have been expected to be actively involved in quality improvement activities from the moment the quality initiative was launched. However, even though employees expressed a greater educational need for improving quality, they are not sufficiently informed about TQM principles offered by the company. As a result, employees need an educational program that accommodates their existing levels of knowledge and experience and enables them to acquire the knowledge needed for implementing TQM. In the TQM implementation process, employee involvement has been important to its success. Employees are perceived as having good ideas about how to improve quality and as wanting to do a good job. In TQM educational programs, they are asked to contribute their ideas and are often given the responsibility for monitoring quality.
The TQM approach is increasingly used by organizations to improve their product or service quality. And TQM has become popular because it promises to provide company competitiveness by improving communications within organizations and with customers. In addition, employees have a continuing desire and need for inservice education to perform better.

Educational needs of employees may vary with their personal background and understanding of TQM. In addition, TQM educational needs may also vary with the type of business. In common, major theorists such as Deming, Juran, Fiegenbaum, Crosby, Ishikawa have pointed out several factors contributing to the continual improvement of organizational performance. In other words, the critical components of the TQM implementation are openness of the corporate culture of the organization, customer focus, top management leadership and support, and employee involvement. Thus, this study will explain the factors related to the TQM educational needs of employees under those four domains--organizational culture change, top management leadership and support, employee involvement, and customer satisfaction.

In conclusion, in order for TQM to start, a necessary initial step is to assess employees' educational needs about TQM because undoubtedly needs assessment is essential to the development of educational programs. By assessing the educational needs of employees, an organization begins the process necessary to provide them with the knowledge and skills needed to accomplish the TQM approach. Furthermore, educational needs assessment can make programmers to use ranked order of priority as an index of educational program's effectiveness. According to Borich (1980, p. 39), "discrepancies ranked in descending order of priority provide the framework for deciding
what parts of the program to modify or revise." Therefore, assessing educational needs is recognized as a fundamental first step in the development of TQM.

**Purpose of the Study**

TQM is a way of managing at all levels, top management to front-line, to achieve customer satisfaction by involving all employees in continuously improving the work processes of the organization. TQM principles are not new in Korea, however, the theory of the phenomenon is still developing. At first, Quality Control (QC) was introduced from Japan. Today, the concept of QC is changing to Total Quality Management (TQM). In a recent move to increase competitiveness with other countries, many companies in Korea adopted TQM as a solution. However, some companies failed to implement TQM. Although several reasons have been reported to exist, the most critical reason for the failure to adopt TQM has been that employees do not have a clear understanding of TQM principles. In other words, all employees are expected to be actively involved in the TQM program, as a quality improvement activity, but they do not have adequate knowledge of TQM. Therefore, this study will focus on determining and analyzing what is the best way to get employees involved in adopting TQM approaches by assessing educational needs. At the same time, in order for TQM approaches to be implemented, this study will explain how were employees understand TQM principles and how important employees perceive TQM knowledge. Finally, this study will explain how selected business characteristics influence TQM implementation. Therefore, the primary purpose of this study was to describe characteristics of employees and businesses, to measure the TQM educational needs of selected employees and businesses
in Korea, and to determine the relationship between selected variables and TQM educational needs.

**Research Objectives**

The following set of research objectives were formulated for the study.

1. To describe demographic characteristics of employees according to gender, educational background, age, current job position, number of years working in the company, number of training programs participated, number of TQM training program participated, familiarity with the TQM principles, and type of organizational department.

2. To describe selected characteristics of the businesses according to type of business, number of employees in the department, number of employees in the company, and number of years TQM implementation, and the location of the company.

3. To identify the relative importance of TQM as perceived by employees.

4. To identify the relative knowledge of TQM as perceived by employees.

5. To determine the TQM educational needs of employees.

6. To determine the relationship between perceived importance and knowledge.

7. To determine the relationships among selected demographic characteristics of the employees and their educational needs in TQM.

8. To determine the best set of variables to predict TQM educational needs.
Research Hypotheses

The following hypotheses were established to fulfill the research purpose.

A. Relationships between personal variables and TQM educational needs
   1. There will be a positive relationship between gender, when males are coded one and females are two, and TQM educational needs.
   2. There will be a positive relationship between age and TQM educational needs.
   3. There will be a negative relationship between educational background and TQM educational needs.
   4. There will be a positive relationship between current job position and TQM educational needs.
   5. There will be a negative relationship between number of years working in the company and TQM educational needs.
   6. There will be a negative relationship between an index of training program participation and TQM educational needs.
   7. There will be a negative relationship between index of participation in TQM training and TQM educational needs.
   8. There will be a negative relationship between participants perceived familiarity with the principles of TQM and TQM educational needs.
   9. There will be a relationship between the type of organizational department and TQM educational needs.
B. Relationships between business variables and TQM educational needs

1. There will be a relationship between type of business and TQM educational needs.

2. There will be a positive relationship between number of employees of the department and TQM educational needs.

3. There will be a positive relationship between number of employees of the company (size of company) and TQM educational needs.

4. There will be a negative relationship between number of years of TQM implementation in the business and TQM educational needs.

5. There will be a relationship between location of the organization and TQM educational needs.

The Definition of the Terms

Total Quality Management:

TQM is a strategic, integrated management system for achieving customer satisfaction. It involves all managers and employees. Therefore, TQM focuses on achieving customer satisfaction, seeks full involvement of the entire workforce, and seeks continuous improvement by establishing a new participative organizational culture.
Educational Needs:

According to Borich (1980), educational needs is a discrepancy between an educational goal and trainee performance in relation to the goal. Therefore, training needs is to identify the two polar positions of what is and what should be (p.39). This study employed the formula that served as a basis for the Borich model.

\[ \text{Dis.} = (\text{Im} - \text{Kn}) (\text{M I}_m) \]  

Where: \( \text{Im} \) = the perceived importance of the item to the employees.

\( \text{Kn} \) = the perceived amount of knowledge possessed by an individual.

\( \text{M I}_m \) = the perceived average importance of the competency as rated by the respondents.

\( \text{Dis} \) = the discrepancy score (educational needs).

Each item was analyzed with respect to its perceived importance to the employee and the perceived knowledge of the item by the employee. As a result, high importance and high knowledge would constitute a desired state. However, if high importance existed with low knowledge, then this made a discrepancy. This discrepancy is the basis of the Borich Formula. A high level of knowledge and low importance would produce a negative score for need.

Importance:

Respondents' perception of importance among each competency of TQM principles to employees' job function.
Knowledge:

Without the right skills, employees can not participate in the business and do most jobs effectively. In this study, knowledge means respondents' judgment of their ability and information about TQM principles in order to improve quality of products and service.

Personal Variables:

Features of a particular person. In this study, personal variables were gender, age, educational background, current job position, number of years working in the company, number of training programs participated, number of TQM training program participated, familiarity with the TQM principles, and type of organizational department.

Gender:

Self-reported state of being male or female.

Age:

Self-reported years an employee has lived.

Educational Background:

Self-reported years of formal education successfully completed. This characteristic was considered in categories of high school graduate, two year college graduate, bachelors degree, masters degree, and Ph. D.
Current job position:

Self-reported particular rank of being employed. In this study, job positions were classified with line employee, assistant manager, manager, assistant director, director, and chief executive officer.

Number of years working in a company:

Self-reported years employee had been working in a company.

Number of TQM training participation:

Number of training programs that the employee participated in multiplied by number of hours.

Perceived familiarity with the principles of TQM:

Self-reported degree of familiarity with TQM principles.

Type of organizational department:

A particular group of people with special business functions which is different from those outside the group.

Firm Size:

Firm size is used throughout the study to mean the total number of workers employed by a firm in a specific location. If a firm is a branch of a multiunit or multi-location firm, size reflects only the total number of workers in the location which was surveyed and excludes workers in other locations.
Limitations of the Study

This proposed research is relational in nature. Thus, a relational study can not establish cause and effect relationships between variables (Miller, 1986). This proposed research will look for only explaining and predicting relationships between personal and business characteristics and TQM educational needs of employees.

The scope of the population surveyed is limited to large-sized companies which have adopting TQM in Korea. In other words, this study did not include the vast numbers of smaller companies that constitute a large and growing part of the Korean economy. Therefore, the results of the findings can be generalized to companies that have over three hundreds of employees.
CHAPTER II

REVIEW OF THE LITERATURE

The purpose of this review has been to summarize the literature to identify the principles of Total Quality Management (TQM), and to describe educational needs of employees in Korea companies. Therefore, the review of related literature is presented in two parts. Part one focuses on TQM history and TQM principles -- organizational culture, top management leadership and support, employee involvement and teamwork, and customer satisfaction. Part two illuminates the identification of needs assessment and employees' characteristics and businesses' characteristics about TQM educational needs.

The Emergence of TQM (A Historical Perspective)

The need to change traditional management philosophies and management practices has suggested that current business practices are outdated and are no longer relevant in today's business environment. In order to consider the distinctions between classical management theory and total quality management, it was helpful to examine the origins and evolution of management theory. The concepts of total quality management in itself create cultural change by introducing new practices and new ways of thinking. In institutions where years of tradition have played an important role, large scale organizational change lies with the attitudes of its leadership and their commitment to change.
The roots of quality, in modern times, emerging as an important attribute of successful organizations came from Frederic Taylor (1919). Scientific management, mostly guided by Taylor, emphasized the value of hard work, economic rationality, individualism, and held the view that each person had a role to play in society. His emphasis was on making management a science rather than the individualistic approach based on experience that it had been (Kast and Rosenzweig, 1985).

Scientific management centered on designing and managing individual jobs. Taylor held that human performance could be defined and controlled through work standards and rules. He advocated the use of the time-and-motion studies to break down jobs into simple, separated steps to be performed over and over again without deviation. Thus, scientific management adopted the attitudes of its time; that is, treated the organization like a machine. Workers should fit the requirements of the machine-defined job. Managers should plan, organize, direct, coordinate, and control. All thinking should be done by the managers and all producing by the workers. The thrust was strict subordination, rules, and regulations (Brelin, Davenport, Jennings, and Murphy, 1994). Thus, scientific management required that management plan, organize, and control task performance. In addition, the approach was initially based on the notion that efficient organizations assure quality through inspection.

However, according to Lawrence and Lorsch (1986), scientific management overlooked the contributions of the behavioral sciences by failing to incorporate them in its doctrine in any systematic manner. Thus, a new approach was needed for the processes of management. The behavioral sciences introduced the human dimension. The human relations approach sprang up during the 1930's, with an emphasis on upward communication, listening, and participative management.
With the rise of the human relations movement, the pendulum started to swing away from caring about the omnipotent machine and toward caring about people. The human relations movement focused on the relationship between productivity and satisfied workers in cohesive work groups. The theory advocated organizing workers into self-regulating groups. Managers were told to foster positive work relationships and treat workers well (Brelin, Davenport, Jennings, and Murphy, 1994). Thus, more recent approaches have included quality-oriented, people-focused initiatives, such as self-directed work teams, quality of work life, and job enrichment, to name a few. However, to be most effective, these approaches must be integrated with and support a quality improvement process that is focused on process improvements to meet the strategic goals of the organization.

During the 1920's and 1930's Walter Shewhart, a statistician, led a quality revolution by pioneering the use of statistics to control manufacturing quality (Bowles & Hammond, 1991; Gitlow, 1990; Garvin, 1988). TQM started to take form when Shewhart pioneered what came to be known as statistical quality control (SQC) at AT&T Bell Laboratories. As originally conceived, SQC was intended to apply statistical techniques to examine variations in manufacturing processes (Brelin, Davenport, Jennings, and Murphy, 1994). During the 1940's and 1950's, statistical quality control was established and gradually recognized as a discipline (Gitlow, 1990). Shewhart created the Plan-Do-Check-Act (PDCA) cycle: Plan -- find out where process improvements were needed; Do -- make the needed changes to the process; Check -- measure improvements; and, finally, Act -- institutionalize these changes to the larger organizational system. Furthermore, Shewhart's studies on statistical sampling and measuring process variation have also contributed to today's quality improvement efforts.
This collection of techniques, which was labeled Statistical Process Control (SPC), helped statisticians and engineers to control business processes through the use of precise measurement (Gabor, 1990).

One of the most frequently identified pioneers in the field would be Edwards Deming who is a mathematician and physician by training. He learned the Shewhart SPC techniques while employed at AT&T under Shewhart in the 1920's and 1930's. During W.W.II, Deming helped the American industrial war machine improve its efficiency using SPC. Initially sent to Japan in 1946 to help conduct a census, he was introduced to leading Japanese engineers and corporate presidents. The Union of Japanese Scientists and Engineers asked Deming to help its members increase productivity. In an eight day-long lecture services, Deming introduced SQC to Japan. Eventually, Deming broadened his view from the purely statistical pursuit of quality to a list of 14 points, or quality objectives, that constitute the philosophical underpinnings of TQM as it is known today. In his view, managers were the key to quality (Brelin, Davenport, Jennings, and Murphy, 1994). He convinced them of the necessity to improve quality of the products and services in the country.

Deming's principles and philosophy of quality improvement for management are presented in fourteen points (1982):

1. Create constancy of purpose toward improvement of product and service.
2. Adopt the new philosophy.
3. Cease dependence on inspection to achieve quality.
4. Move toward a single supplier built on a longer term relationship of loyalty and trust.
5. Improve constantly and thus decrease costs.
6. Institute training on-the-job.
7. Institute leadership.
8. Drive out fear, so that everyone may work effectively for the company.
10. Eliminate slogans and targets for the work force asking for zero defects and new levels of productivity.
11. Eliminate work standards and Management By Objectives (MBO).
12. Remove barriers that rob the worker of the right to pride of workmanship.
13. Institute a vigorous program of education and self-improvement; and
14. Put everybody in the company to work to accomplish the transformation.

Of his 14 points, several (2, 6, 7, 8, 9, 10, 11, 12, 13, 14) made inference to changing organizational culture. Deming stressed the need for a continuing emphasis on quality improvement and pointed out that quality should be the primary purpose. Profit is a consequence and a by-product of a management approach focused on quality.

Deming (1982) noted that quality can not be achieved by inspection because it must be built-in from the start. He also insisted that price is a relatively minor factor compared with the supplier's interest in and willingness to meet the customer's needs. In other words, suppliers' choice should be based mostly on the quality of the materials they supply and on their willingness to work to improve that quality in the context of a long-term relationship.

Juran, who is a statistician, worked at AT&T Bell labs in the 1930's and began consulting with Japanese companies after W.W.II. According to Oberle (1990), Juran's approach to quality was different from Deming's. Deming was more the visionary who had lofty ideas, and was a good orator, whereas Juran was noted for his pragmatic
approach to perfecting process improvement methodologies and techniques, spelled out in his *Quality Control Handbook* (Juran, 1980). Juran defined quality as "fitness for use as defined by the customer." Quality was associated with what the customer (internal or external) expected. In the 1940's, Juran pointed out that the technical aspects of quality control had been well covered, but companies did not know how to manage for quality. He identified some of the problems as organization, communication, and coordination of functions, in other words, the human element (Brelin, Davenport, Jennings, and Murphy, 1994).

In 1956, Feigenbaum originated the Total Quality Control (TQC) concept which broaden the scope of quality function to all organizations or all systems. In order to successfully achieve the quality control activities, all individuals across all departments in an organization should get involved in the process and cooperate with one another (Garvin, 1988). He saw quality improvement as an organizational-wide effort, including marketing, engineering, purchasing, manufacturing, manufacturing supervision and shop operations, inspection, shipping, and service (Feigenbaum, 1989). In other words, TQC should cover the entire product cycle from concept through customer service.

Kaoru Ishikawa, an engineer with the Japanese Union of Scientists and Engineers (JUSE), was familiar with statistical methods through his contacts with this team of American engineers. Ishikawa, a leader in the Japan quality effort, credited Juran with helping the Japanese understand that quality is everyone's concern, from managers to clerks. Ishikawa (1985) recognized that the key to quality improvement was more than statistics, more than motivating workers, or turning quality into a management science. He provided the basic components of a quality paradigm. First, continuous improvements are the responsibility of every worker. Second, use statistical tools to find
and eliminate the cause of problems in business processes. Third, process improvement could be accomplished with specific changes to the process improvement methodology. Fourth, identify the internal and external customer's needs and meet or exceed them. Finally, empower and motivate the workers so they will contribute their best efforts.

Furthermore, Ishikawa developed seven tools that are now widely used. The tools are: pareto charts, cause and effect diagrams, stratification, the check sheet, histogram, scatter diagram and Schewart's control charts. He observed that, if these tools were used correctly, 95 percent of all the problems in a company could be solved. The tools were simple enough that the average factory worker could teach other factory workers how to use them effectively. According to Bowles and Hammond (1991), Ishikawa was the first to extract the benefits of each quality theorist and made the concept of quality an organizational responsibility involving the effects of each employee and driven by customer requirements.

The concept of zero defects emerged around 1961-62 and was promoted by Philip B. Crosby. Zero defects focused on management expectations and the human relations side of quality improvement (Gagne, 1992). Crosby (1979) focused on four quality absolutes: 1) quality is conformance to requirements as defined by the customer; 2) quality is based on prevention rather than inspection; 3) the performance standard is zero defects; and, 4) the measurement of quality is defined as the price of non-conformance. In addition, he emphasized motivation and educating senior management about quality. Thus, he taught management how to manage people and become role models for quality, and how to empower workers to fully contribute to the process.

In conclusion, because numerous studies showed that quality-oriented organizations do much better in market share and profits, and customer surveys indicated
that nine of ten customers in 1990 place a first value on quality, TQM was considered as the means to organizational survival (Seymour, 1992; Gitlow, 1990; Feigenbaum, 1989). Today, TQM principles has been based on a number of contributions from theorists.

**The Definitions of TQM**

The literature agreed that the definitions of TQM are varied depending on the different perspectives of the authors. Among the various definitions of TQM, total means that everyone in the organization is involved in the quality effort. Management means that top leadership must drive the improvement process. Thus, TQM emphasizes that top management must personally lead and provide resources for a system-wide quality focus, involving the personal energy of every employee. Moreover, TQM places value on employees as thinking, caring, contributing human beings and advocates their total involvement in all processes.

Carr (1990) defined TQM as a philosophy of involving everyone in an organization in controlling and continuously improving how work is done in order to meet customer expectations of quality. Joseph (1992) stated TQM is a cooperative form of doing business that relies on the talents and capabilities of both labor and management to continuously improve quality and productivity by using teams. Warren and Jerome (1993) observed TQM as a cooperative form of operating an organization in a way that relies on the talents of both labor and management to continuously improve quality and productivity by using teams and facts in decision making.

According to Sashkin and Kiser (1993), TQM means that the organizational culture is defined by and supports the constant attainment of customer satisfaction through an integrated system of tools, techniques and training. Ross (1993) defined TQM
as the application of quality principles for the integration of all functions and processes of the organization. The ultimate goal is customer satisfaction. The way to achieve it is through continuous improvement. Omachonu and Ross (1994) stated that TQM means thinking about quality in terms of all functions of the enterprise and is a start-to-finish process that integrates interrelated functions at all levels. A systems approach is used that considers every interaction between the various elements of the organization. TQM involves the continuous improvement of organizational processes, resulting in high quality products and service. TQM seeks to improve product quality and increase customer satisfaction by restructuring traditional management practices. Hodgetts, Lee, and Luthans (1994) defined TQM as an organizational strategy with accompanying techniques that result in the delivery of high-quality products and/or services to customers.

In conclusion, TQM is a customer-focused and management-led approach that involves an entire organization in continuously improving all work processes. In the TQM context, the customer seems to be a specific person or group with specific needs. Further, quality is the responsibility of the every employee and top management must initiate and continuously drive the TQM process in an open organizational culture.

Organizational Culture

Today's environment demands a new form of organization. The emerging organizational form is characterized by ongoing change, temporary designs, learning, reduced emphasis on hierarchy, greater emphasis on lateral relations, multi-stakeholder decision making, and human resource practices that emphasize involvement (Mohrman, Mohrman, Ledford, Cummings and Lawler, 1989). Conversely, traditional structures
encourage competition among units, departments, and divisions. Moreover, every message traditionally was sent up through many layers of a hierarchy to reach a decision. These structures make it difficult to work together to achieve quality. As a result, in order to improve quality, organizational structure is achieved through a changed corporate culture.

Organizational culture is one of the most important of Deming's points in motivating or demotivating employees. Schein (1985) defined an organizational culture as the norms, beliefs and values which define and explain how people adapt to change, achieve goals and coordinate their work efforts. Similarly, according to Ralph, Mary and Roy (1986), culture is the shared beliefs and values that provide the members of an organization with rules of behavior or accepted norms for conducting operations. It is the philosophies, ideologies, values, assumptions, beliefs, expectations, attitudes, and norms that knit an organization together and are shared by employees. Jablonski (1992) defined an organizational culture as the set of values, beliefs, and behaviors that form its core identity. He added that open corporate cultures share the following characteristics: widespread information-sharing, fewer barriers among departments and workers, a spirit of innovation, and a high level of employee satisfaction. As a result, the culture of an organization reflects the prevailing norms, values, beliefs, and assumptions that determine how workers relate to one another and to their jobs.

With the changing business environment and opening global markets, businesses are under pressure to look for more effective and efficient organizations. Change is easier if the organization has a climate or culture that is generally supportive of change. Successful change requires that an effective communication system be present in which concerns and expectations flow easily up and down the organization. However, in many
organizations, employees are afraid of speaking up, point out problems, or ask questions. High quality can not be attained unless managers operate in a culture of openness in which no one is afraid of telling the truth, pointing out a problem, or trying to learn to do a better job. Thus, in order to successfully respond to change, organizations have to offer an open environment to facilitate communicate among employees.

The successful change process includes having the necessary motivation to change, using an effective change method, and then reinforcing or providing rewards for the change after it occurs, so that it stabilizes and endures. The motivation to change requires that two elements be present. First, the change advantages must be perceived to outweigh the change disadvantages; and, two, the people must believe that they have the capability of changing (Tosi, Rizzo, and Carroll, 1986). Sashkin & Kiser (1993) pointed out that a TQM organization is consistently staying in touch with the customers' changing needs and is adapting to any changes in those needs as the customers wishes.

Several barriers need to be eliminated in order for organizations to effectively and efficiently respond to change. First of all, in order to improve quality, numerical quotas are eliminated. In many organizations, the goal is to meet or exceed a quota at any cost and regardless of quality. When there is conflict between quality and quantity in production, the quantity objective is reinforced in many organizations. Deming (1982) noted that quotas are a fortress against improvement of quality and productivity.

Lawrence and Lorsch (1986) emphasized the integration of the organization to improve communication among departments. They stated that integration is defined as the quality of the collaboration that exists among departments that are required to achieve unity of effort by the demand of the environment. Effective integration means that conflicts must be resolved to the approximate satisfaction of all parties and to the general
good of the corporation. Similarly, McLaurin and Bell (1991), who focused on the need for cultural change as a necessity for the success of TQM, concluded that the reason TQM is so difficult to implement is due to the lack of communication skills necessary to achieve the cultural change needed for TQM.

According to the recent research of Sashkin and Kiser (1993), in order for TQM to be implemented effectively, workers who are responsible for certain work, must have the control and authority to make decisions to improve processes. Furthermore, people in an organization must support one another's efforts, not compete with one another because TQM organizations value and reinforce the idea of team work and team effort over individual goals. Therefore, they found eight cultural elements which define the necessary values and beliefs to implement TQM effectively. First, quality information must be used for improvement, not to judge or control people. Second, authority must be equal to responsibility. Third, there must be rewards for results. Fourth, cooperation, not competition, must be the basic for working together. Fifth, employees must have secure jobs. Sixth, there must be a climate of fairness. Seventh, compensation should be equitable. Finally, employees should have an ownership stake.

In the organizational culture that define and support TQM, attitudes toward measurement and its purpose must change. Sashkin and Kiser (1992) believed that performance measurement should be used to improve the quality of products and services. Employees should not be judged and labeled "good," "average," or "poor" on the basis of some supposed measure of their performance. Performance appraisal systems must be radically redesigned for TQM. In a TQM context, employees should be rewarded for exceptional achievements by means of gain sharing or profit sharing. In other words, in TQM organizations most of the work is done by employees working
together in teams or as self-managing groups. Thus, TQM requires that team achievements be recognized and rewarded. Moreover, managers are still responsible for helping to discover when an employee is not able to accomplish the job properly and correcting that situation. This involves coaching the employee, providing formal training opportunities, or placing the person in a job position to which his or her abilities are matched. As a result, the traditional approach of tying reward (or punishment) to performance appraisal -- an annual meeting and rating on a set of general dimensions or specific -- must be changed. Specifically, the annual rating or merit system also has been eliminated. Deming (1982) said these are counter productive and unfair. The performance appraisals, bonuses and other reward systems create an environment of competition, not collaboration which is essential for quality improvements. Generally, people want to do a good job, not a poor one. They need help in overcoming real barriers such as poor quality of work materials, equipment, and inadequate job training. Therefore, the company offers opportunities for an employee to personally become more knowledgeable and derive more pleasure from the work experience.

Organizational culture is complex and the beliefs and values that make up a culture and support and reinforce one another are often interrelated. Identifying and creating a culture that supports and motivates employees to contribute to TQM goals is difficult, but necessary for effective implementation. If the culture emphasizes quantity, power, inspection, blame, win-lose competition, and conformity; the culture itself is an obstacle to quality. The culture sought through TQM emphasizes a commitment to excellence, mutual respect among employees and managers, encouragement of risk-taking and change, a commitment to customers, and continuous improvement.
For some companies with a history of excessive hierarchy, rigidity, and a relative lack of trust between front-line employees and management, changing the culture presents a difficult challenge. However, according to Jablonski (1992), companies agreed that open, responsive culture is the key to a firm's future competitiveness. In this sense, developing an open and more responsive culture is a key to future competitiveness or survival. Moreover, changing an organization's culture takes time. According to Berry (1990), TQM takes years to create a new culture that places a premium on excellence; to build structures that will sustain and manage change; and to provide training to support the efforts. However, when this transformation has occurred, the results are frequently startling.

In conclusion, in relation to definitions of culture, changing organizational culture is a difficult process in that the existing norms, beliefs, and values are deeply rooted in the company's core identity. However, if employees see a culture where they are given responsibility, rewarded for quality, see more cooperation, feel they have job security, and live in a climate of fairness, trust, and respect for each other, then they are more likely to give their full efforts to TQM implementation.

**Employee Involvement and Team Work**

Many companies change their organization and management systems to be more participative by involving employees in problem solving, decision making, and the financial success of the business. People are an asset and are more important than the equipment, materials, machinery, and processes in any company. A 1989 GAO study found that over 80 percent of all companies had implemented some form of employee involvement (Lansing, 1989). According to a study by Lawler, Ledford, & Mohrman
(1989), many organizations were trying to practice some form of employee involvement, however they often practiced it in only part of the organization, and in many cases they made only limited changes.

Lawler (1989) stressed that employee involvement was an overall approach to managing. The involvement approach was based on the idea that organizations should be designed from top to bottom, so that employees are able to participate in the business of the organization. He also pointed out that basic to employee involvement is the sharing of information about the business. In general, without business information, each employee has been limited to simply performing prescribed tasks and filling roles in a relatively automatic way, and they are prevented from participating in the overall business direction and results. The typical employee in a company who does not have access to information may not understand how well the business is doing and is likely to have little sense of what the company must do to be competitive (Lawler, Ledford, & Mohrman, 1992).

Reichers (1985) indicated that employee participation and involvement is not new to TQM and has been verified over the last 40 years as an effective means to increase productivity, employee ownership, pride in work, job satisfaction, mutual understanding, common perceptions and increased understanding of the goals and purposes of any implementation. Lippitt (1985) stated involvement by individuals from a variety of functions in activities such as initial decision timing on implementation, planning and goal setting, evaluations and problem solving can contribute to increased TQM success.

In the late 1970's, attempts were made to improve quality and employee involvement in the process. A few American companies attempted to import concepts from the Japanese quality methodology in the form of Quality Circles. Quality Circles
have been defined as a small group of employees doing similar or related work who meet regularly to identify, analyze, and solve product quality and production problems and to improve general operations (Omachonu and Ross, 1994). Workers, thus, often met informally before or after business hours to talk about quality problems encountered during the day. These circles when attempted in the U.S. met with limited success, in part due to managers failing to authorize the team members to improve quality (Sashkin & Kiser, 1993). In addition to Quality Circles, American organizations have also used Statistical Process Control training (SPC) to improve their work process (Deming, 1983).

TQM recognizes that all parts of an organization are linked, and each part of the organization has a role to play in the organization's quality process. Thus, employee involvement must be aimed at fostering real teamwork to encourage continual improvement in every person's area of responsibility. Teams improve productivity as a result of greater motivation as a team, reduced overlap and improved communication in a functionally based classical structure.

According to Dyer, team building means the commitment of everyone involved. For successful teamwork, a group of people must have common job goals, goals they can be reached better by working together than by working individually. These people must be mutually dependent on each other's experience, abilities, and commitment to work. Positive results of teamwork included clarity of team missions, increased team commitment, higher levels of trust and supportiveness among team members, and more collaborative problem solving (INFO-LINE, January 1987). In other words, teamwork encourages an integrative systems approach to achievement of common objectives. Thus, employees should work together to help and assist one another to achieve mutual objectives, instead of competing to see who can do the job best.
Sashkin and Kiser (1992) pointed out that one TQM belief is that quality and
decision among employees who must work together and coordinate their efforts if the organization is to
succeed. As long as employees have different ideas, different viewpoints, and different
needs, conflict will occur between and among individuals and both within and between
teams. However, problems are not due to conflicts but to how conflicts are dealt with.

According to Quick (1992), successful teams recognize that conflict is natural,
resolved through openness, and a group issue. Conflict involves a search for alternatives.
Thus, when conflicts are recognized and employees are willing to work together to
resolve them, they can often lead to new ideas and more productive outcomes.

Depending on the particular needs of the work, team building can focus: (1)
on team goals and priorities, (2) on job responsibilities of each team member and how
they relate to the responsibilities of other members, (3) on each member's strengths, (4)
on team procedures for communicating, decision making, and problem solving, (5) on
dynamics between team members, and how well members work together, and (6) on
organizational forces that affect the team (INFO-LINE, January 1987).

Specifically, the characteristics of productive teamwork are:

(1) Team members are working toward common goals that everyone knows,
understands, and accepts.
(2) Members know what their individual responsibilities and priorities are and
how they related to those of other members. There is no duplication of
effort.
(3) Work atmosphere is informal, comfortable, and tension-free, though dynamic.
(4) Team morale and team productivity are high.
(5) Team leader takes pride in the team's work record.
(6) Leader shows interest in each team member's achievement and regularly
provides feedback on performance.
(7) Members take pride in their achievements and accept feedback on
performance.
(8) Members have a great amount of confidence and trust in one another.
(9) Members are cooperative rather than competitive.
(10) Members encourage one another to achieve at high levels, but do so without setting unrealistic expectations.
(11) Policies that govern team interaction are fair, consistently applied, and subject to change.
(12) Work discussions are numerous and always pertinent to the tasks of the team.
(13) Communication lines are open. During discussions, all members feel free to express their ideas and opinions no matter how unusual or extreme.
(14) Members feel comfortable asking questions about things they do not understand.
(15) Criticism is delivered frequently, frankly, and constructively.
(16) The team is comfortable with conflict.
(17) Most decisions for the team stem from general agreement among members.
(18) Members always know how the team is progressing toward its goals. The team frequently evaluates how well it is operating, openly discussing problems until finding a solution.
(19) Members are eager to try new, creative work approaches (INFO-LINE, January 1987, p.2)

The problem of passive compliance or psychological withdrawal is a prevalent experience for many in the workforce. Workers sometimes give minimal effort and are not challenged by their jobs (Hackman & Lodham, 1981). However, the idea of involving employees in the planning phase should help in the initial "buy-in" process and, during difficult times, employees will be more committed to the goals they helped to create.

Employees are more likely to participate in TQM efforts if the rewards for doing so are valued by them, are obtainable and are linked to successful performance. Basing rewards on organizational performance is one way to ensure that employees are involved in and contribute to the performance of the organization (Lawler, 1990). The rewards program is a major factor in reinforcing many of the behaviors (Rohan, 1989). When there are problems in the implementation process, employees will be more likely to be motivated to overcome them if reward and recognition programs reinforce this behavior.
Thus, organizations should encourage employee involvement through reward systems such as financial or non-financial awards, or intrinsic rewards. Financial awards may include stock options, bonuses, or cash awards (Porter, 1991). Non-financial awards would include time off from work, a shortened work week, banquets, and parties. Employees may also be rewarded by the organization's purchasing of new equipment that will make their jobs easier or more efficient (Rohan, 1989).

In order to support the TQM implementation strategy, flexible compensation systems are necessary because employees may perceive the system as a reflection of the company's commitment to quality. In other words, in order to participate in the business, employees at all levels need rewards that are relevant to business performance. According to Masternak (1991), gain sharing, profit sharing, and stock ownership are among the systems designed to create a financial incentive for employees to be involved in performance improvements. Gain sharing is one of the most rapidly growing compensation and involvement systems in U. S. industry. It is a system of management in which an organization seeks higher levels of performance through the involvement and participation of its people. Employees share financially in the gain when performance improves. Profit sharing, employee stock ownership, and gain sharing are approaches that link employees more closely to the success of the business and reward them for it. These systems are reward approaches supportive of employee involvement (Lawler, 1990; Blinder, 1990). Profit sharing and employee stock ownership are the most widely used and the most likely to be available to most or all employees. Gain sharing is the approach that historically has been most closely identified with employee involvement, since it stresses involvement as key to the success of the financial bonus system (Lawler, Ledford, & Mohrman, 1992). The gain sharing approach is a team effort in which
employees are eligible for bonuses at regular intervals on an operational basis. Gain sharing reinforces TQM, partially because it contains common components, such as involvement and commitment.

The awards would be team-based because of the team nature of most process improvement methodologies. Individual incentive plans are usually not particularly supportive of employee involvement. Individual incentives can interfere with teamwork and problem solving. Team incentives are supportive of employee involvement activities, such as work teams and problem solving groups (Lawler, Ledford, & Mohrman, 1992).

A number of personnel policies and practices can support employee involvement. First, employee security is suggested as a necessary or at least desirable practice by proponents of gain sharing and employee involvement approaches (Rosow and Zager, 1984). Second, flextime is another practice that is participative in its own right, since it allows individuals to make important decisions about a part of their work situation (Lawler and others, 1992). Third, cross-training enables individuals to learn about different parts of the organization and about how their total work unit operates (Lawler, 1990). Finally, realistic job previews are often implemented as a way to ensure that job applicants understand in advance the kind of work culture they are entering (Premack & Wanous, 1985).

Team members learn that good teamwork is dependent on understanding the social roles that are typically played in groups and they identify the particular role makeup of their own group. On the other hand, although these improvement teams found problems and improved some processes, those attempting to implement the recommendation for changes met with resistance from supervisors or upper management
Therefore, if workers are given the authority, responsibility, tools, and skills they need to improve work processes, then they will be much more likely to invest their time and energies in achieving quality.

**Top Management Leadership and Support**

Top management efforts to plan for TQM implementation are critical for success. The TQM approach emphasizes the major role that managers have in achieving quality and productivity improvement for an organization. Without the leadership and support of top management, the quality efforts cannot be achieved. In other words, the top management has to be actively involved and committed to the effort and systematically manage TQM adoption. Thus, the top leaders are familiar with the basics of TQM and decide to adopt TQM concepts.

Deming (1986) stressed that the responsibility for quality processes and outcomes rests with management. According to Deming, senior management builds and achieves a strategic quality plan and commits the energies and resources needed to sustain the effort over the three to seven years required to see positive results (Deming, 1986; Tigner, 1989; Rohan, 1989). Furthermore, Deming (1988) pointed out that TQM must be led by top management, and it must have a commitment from all members of the organization. A company's senior management team plays a critical role in providing leadership to all quality improvement efforts. In other words, the senior leadership team organizes and directs the quality improvement process and initiates company wide quality improvement efforts. Thus, top management must lead by having total quality strategies and goals, and take actions that support the quality initiatives.
According to Brelin and others (1993), without both leadership and management, business excellence does not happen. Juran (1982) indicated that one of the basic steps to quality progress is upper management leadership. The concept of leadership is the central principle of quality improvement and the TQM approach emphasizes the major role that managers have in achieving quality and productivity improvement for an organization. Jablonski (1992) defined top management commitment as a commitment of corporate resources, including the executive's own time to the improvement process.

If managers understand the business processes well enough, when the organization needs to change, everyone will be working on the right processes. In times of transition, management skills help to direct that change. Leadership skills lead the way forward, identity what change the organization needs, and show where it is headed (Brelin and others, 1993). In order for top management to achieve change effectively, Chaffee (1993) suggested that the characteristics of quality improvement-oriented leaders should include the following: (1) inquire, (2) listen and respond, (3) use data, (4) focus on process, (5) cooperate, (6) expand the market, (7) invest in human capital, and (8) satisfy the customer.

Deming (1980) stressed the aim of leadership should be to help people, machines and gadgets do a better job. Being a leader is different from being a supervisor. Supervisors tell workers what to do and then watch to make sure they do it. They administer rewards and discipline as needed to ensure that employees comply with orders. In contrast, leaders assume that workers want to do the best job they can. At lower organizational levels, this means assisting workers by coaching and by arranging for training when needed. For top management, leadership means designing the system on the basis of total quality, applying a strategic vision to build a TQM culture, and
constantly modeling behavior that exemplifies the values that support such a culture. In this sense, Jablonski (1992) agreed that effective leaders inspire others to create and manage change, to take responsibility and listen in ways which initiate a sustainable quality process.

A United States GAO study on management practices indicated a company's senior management team plays a critical role in providing leadership to all quality improvement efforts. The successful companies studied revealed that the senior leadership team organized and directed the quality improvement process and initiated company wide improvement efforts. The study listed four leadership behaviors of top management: (1) management led the way in disseminating TQM values throughout the organization, (2) management nurtured a flexible and responsive corporate culture, (3) management developed corporate attention focusing on meeting customer quality requirements and (4) management systems supported fact-based decision-making (GAO, 1991). Similarly, a study of Darling (1992) showed four key leadership strategies by top management: (1) managers create a clear quality focus to gain attention from employees, (2) managers talk openly and sensitively with followers so that the employees of the organization can understand the meaning of their quality message, (3) the managers make themselves known and make their position clear in order to establish trust from individuals of the organization, and (4) the managers spend time with subordinates and express concern with issues relating to people in order to build confidence for both themselves and their followers.

Bennis (1989) agreed that people in charge have, in the past, imposed change rather than inspired it. Positive change requires trust, clarity, and participation. To effect change, leaders must gain the peoples' trust, express their vision clearly so that everyone
understands and concurs, and persuade the people to participate. He also stated that empowerment is the collective effect of leadership. Schmidt and Finnigan (1993) described that to be a good coach is to view workers as members of their team and provide each team member with the training, resources, and other support needed to do the job. Moreover, a good manager works to keep up the morale of the team through information, encouragement, and recognition of work well done.

According to Thor (1993), TQM programs will fail if the leaders fail to lead. If leadership in the organization understand not just what to do, but how to do it more effectively, they will waste less time, money and energy implementing TQM. Waterman (1990) suggested that employees, under proper leadership, will participate in meaningful tasks with the intention of changing their organization from one of non-quality to one of high quality. Similarly, if people are properly prepared for change and believe they have the skills to make it happen, they will participate with motivation and enthusiasm (Brelin and others, 1993). Therefore, top management needs to create an open environment and needs to provide the necessary skill development activities to realize the business objectives of the organization.

In a TQM organization, the relationship of management with employees goes from controlling workers to supporting them. Moreover, management also helps employees to work together effectively, by coordinating and cooperating. In this sense, Kiesche (1990) suggested that top management can role model TQC by letting employees know they are working on improving their own management processes. The worker then sees visible results. They can take the form of listening and acting on employee complaints or changing or removing barriers which make employees' jobs more difficult.
According to Porter (1991), management must help employees by providing resources, rewards, recognition, and time to implement TQM. The role of top management is on providing employees with the tools they need, a safe environment in which to learn, and practice to gain confidence in making improvements. If management style is somewhat punitive or disrespectful with a lack of trust between subordinate and supervisor, productive work is highly unlikely (Atkenson, 1980). In this context, management and supervisors need to undergo training in management methods that are supportive and empower employees to contribute their best efforts.

In conclusion, top management must commit time and effort to the TQM implementation. Moreover, the top management must make a formal commitment to the adoption of TQM and effectively communicate with the entire organization. Top management also has the power and influence, as the power broker, to insure the success of TQM. The successful use of the TQM model will be directly affected by the ability of managers to adopt the concepts associated with TQM. Management can become involved in the process by initiating frequent communication with department members, by taking part in training activities, and by actively evaluating and monitoring the implementation as it progresses. Specifically, Lippitt (1985) pointed out that top management may communicate through written reports, newsletters, bulletins, informal meetings or by attendance at TQM activities where workers are present. Direct communication by top management has been lacking in most companies, but can be a very effective way for employees to visibly see top management support.

When leadership changes their own personal behavior and company policies to be more supportive, both with words and action, then employees are more likely to embrace TQM. Employees can become complacent and suspicious of change. In other words, if
management shifts its emphasis from control to support and provides a safe environment for workers to learn TQM, then employees must more fully participate in the process. This shift to supporting employees' needs and concerns should produce a dramatic positive influence on "buy-in" as many employees today feel somewhat alienated toward management. In this sense, with TQM implementation, management shows a less controlling, more supportive style, and employees will be more likely to feel valued and stay motivated to endure the TQM implementation, even when difficulties appear along the way. In other words, if top management dedicates the time, resources, and personal commitment to TQM implementation, employees will be more willing to participate in TQM.

Based on the literature presented, the following leadership behaviors should be considered by top management:

1. Top management provides a clear mission statement that focuses on quality.
2. Top management encourages open communication among individuals and departments.
3. Top management coaches and supports employees.
4. Top management takes the time to attend meeting on the subject of quality.
5. Top management takes responsibility for quality.
6. Top management encourages quality improvement with proper incentive.
7. Top management focuses quality effort on customer satisfaction, not on cutting cost.
8. Top management works with employees to decide what the company should be.
9. Top management encourages innovation and new ideas for change.
10. Top management gets involved in addressing quality issues with employees.
11. Top management empowers subordinates to take charge of their work.

In conclusion, the success of the TQM implementation will be strongly impacted by the ability of the top management team to adopt the concepts and principles associated with TQM. Management has to provide processes that are designed to bring about improvement. According to Deming (1982), it is not enough that top management commit themselves for life to quality and productivity. Top management must know exactly what it is that they are committed to -- that is, what they must do. These obligations can not be delegated. Support is not enough; action is required. Furthermore, management should develop and maintain a good strategic plan, foster team work, have good communication skills, show a supportive management style, set clear goals, and empower employees. Therefore, the importance of such executive commitment to the ultimate success of TQM cannot be overemphasized.

Customer Satisfaction

In the past, some companies have emphasized outcome-oriented methods such as productivity and cost reduction rather than customer satisfaction. However, in moving toward achieving TQM, companies acknowledge the existence of many customers that the company may have overlooked in the past. This includes the customer outside an organization, who places orders with us (Jablonski, 1992). There is nothing wrong with a focus on cash flow and short-term profits, but long term profit and market share require a base of satisfied customers that are retained by a focus on satisfaction (Omachonu & Ross, 1994). The TQM philosophy emphasizes flexibility, lateral communication, group
effectiveness, and responsibility for an entire process that has the ultimate outcome of
customer satisfaction. A TQM organization begins with the voice of the customer. The
primary rule of TQM is to know the customer. According to Omachonu & Ross (1994),
all the Baldrige Award criteria examines the company's relationships with customers and
its knowledge of customer requirements and of the key quality factors that drive
marketplace competition.

Customers are those people who consume a product or service, and customers can
be internal or external (VICA, 1993). Customer satisfaction for both external and internal
customers is a concept that is often misunderstood. There is a lot of confusion about who
is the internal customer and external customer. External customer satisfaction is easy to
understand. External customers are those people who receive a product or service
(VICA, 1993). For example, if a person "A" has his car repaired by a mechanic, he is the
mechanic's external customer. It is satisfying the users of the output of the process or the
company's external customers who buy the products or services. Internal customer
satisfaction is a more difficult concept.

Internal customers are the employees within the organization to whom work is
delivered down the process chain toward the completed product or service (Juran, 1986;
Crosby, 1979). Internal customers are important in a TQM program. These are the
people, the activities, and the functions. For example, manufacturing is the customer of
design, and several departments may be customers of data processing (Omachonu and
Ross, 1994). An internal customer is the next person in the process, the person who
uses the output of your work. For example, the mechanic is an internal customer to the
automobile parts salesperson. According to Schmidt and Finnigan (1993), internal
customers provide their internal suppliers with information about what they require to do
their job most effectively. However, Omachonu (1994) pointed out that most companies do not devote the same attention to the internal customer that they give to the internal processes of shipping, inventory, JIT (Job In the Training), manufacturing, etc. As a result, most of the time everyone is switching back and forth between being a customer and being a supplier. The next person in line is really every person's customer.

Customer focus and satisfaction include the company's relationships with customers and its knowledge of customer requirements and the key quality factors that drive marketplace competition (National Institute of Standards and Technology, 1993). Many authors agreed that quality is the satisfaction of customers, external and internal, and quality commitment is to achieve customer satisfaction by understanding and to meet their evolving requirements, through the application TQM. Omachonu & Ross (1994) defined customer satisfaction as the result of a three-part system: (1) company processes (operations), (2) company employees who deliver the product, and (3) service that is consistent with customer expectations. The overlap of the three-parts represent the extent to which customer satisfaction is achieved. Thus, the effectiveness of the three-part system is a function of how well these three factors are integrated. Ross (1993) described two major actions to achieve customer satisfaction: (1) determination of customer requirements and expectations, and (2) organizing to deliver these requirements and expectations.

Otherwise, some companies tend to define quality in terms of customer satisfaction or some other non-specific term and then relax after shipment is made, overlooking the competitive success that accompanies after-the-sale service, spare parts, or distribution (Cohen & Lee, 1990). According to Sashkin and Kiser (1992), a concern for what clients and customers want and need must pervade the organization and drive the
quality management process. It means that customer satisfaction is much more than slogans and the motivational approach commonly associated with improving customer service. Furthermore, they pointed out that a quality-focused organization is consistently staying in touch with the customers' changing needs and is adapting to any changes in those needs as the customer wishes (Sashkin & Kiser, 1993). However, most companies lack the processes that ensure efficient flow of information on customer demands and related information throughout the organization (Burrows, 1990).

In a TQM organization, every individual and every department are expected to identify its customers and determine those customers' needs. Ross (1993) pointed out that the first step in reorienting an organization toward its customer is to have all employees understand that the work they do is a series of processes, the goal of each process being the satisfaction of the customer whether this customer is internal or external. If service to internal customers is unsatisfactory, then it is unlikely that the expectations of external customers will be met. In other word, unless positive internal customer relationships exist, employees will not understand the importance of how their jobs affect others in the chain of service.

The obvious way to determine what makes customers satisfied is simply to ask them. Before, or concurrently with, a customer survey, an audit of the company's TQM infrastructure needs to be made (Omachonu & Ross, 1994). Feedback from the customer can take place informally, through conversation, or formally, via surveys or questionnaire (Jablonski, 1992). A customer feedback system is an organized and deliberate way of finding out what the customers think about the product. Martin (1989) suggested that customer feedback systems can provide answers: (1) to what extent are customers satisfied? (2) what do they really think? (3) what do they like about the service? (4)
According to Ross (1993), the purpose of a customer survey is to determine: (1) what product and service attributes the customer considers to be important, and in what priority, and (2) organizational performance in each of these areas. Customer response should be documented to be used to direct future action for process improvement. As a result, a customer survey provides important information. The customer survey provides a useful rationale to determine exactly what customers expect from the organization.

Martin (1989) indicated that a customer feedback system consists of an organized and systematic way of making it easy for customers to share information with the organization. Specifically, he suggested ten ways to open up customer access to the organization.

1. Get out and talk person-to-person with the customers. Spend some time with them. Get to know them.
2. Organize focus groups. Invite selected customers to come in and discuss what they like and dislike in an open forum.
3. Ask customers to respond to a customer survey, over the phone, through the mail, or in person.
4. Have suggestions boxes and feedback forms available in strategic places — where the customers are.
5. Find out where the problems lie and fix them. Tell the customers to fix them.
6. Initiate a customer newsletter or other communication device to broadcast how much the organization wants their input and just how the organization is responding to it.
7. Move customer-service communication and complaint handling from a low position in the organization to one with clout.
8. Respond rapidly to all customer complaints and requests.
9. Provide customer help and encouragement in processing refunds, exchanges, and complaints.
10. Measure and evaluate managers' performance on the ability to access customer feedback. (p.67)
In order to meet the standards determined from customers' needs; first, needs and desires of customers must be identified. Second, one must determine whether those needs and desires are being satisfied by the products or service of the organization. Finally, all quality improvement efforts must center on meeting needs of customers and fulfilling their desires.

In conclusion, customers are the people who receive the output, the product or service produced or performed. Suppliers are the people or group who produce or deliver the output. Customer requirements are what the customer needs, wants, and expects of the output. According to Gilbert (1993), if employees meet directly with their customers, then they can learn of their customers' needs, identify with the processes that contribute to getting quality to the customer, and learn how to determine better ways of doing their work to not only satisfy the customer but also to foster long-term customer loyalty. Moreover, one of the critical components of an organizational culture, whose goal is improved quality, is the placement of the needs and concerns of the customer as the central focus. TQM places value on each employee trying to deliver the best quality product or part of a product to their internal customers who must later use or build on the product or service.

**Summary**

Through the 1980's and 1990's, there has been a continuous explosion in the interest and implementation of quality programs in US organization (Dumas, 1987). The GAO report on TQM implementation (1991) found that out of 150 large firms in the US, 111 reported that they had TQM programs in place.
Patti and Salitore (1987) cited three main reasons why a TQM system was not effective. First, a change in the organizational culture was lacking and top and middle management were not supportive of the efforts of quality. The idea of sharing power with subordinates and employees determining decisions made on the line was new to most supervisors and for the most part they reacted negatively. Second, members were unprepared and untrained in group dynamics skills. Such essentials as working as a team were impeded by personality and factional differences. Third, quality members were not rewarded financially for improvements made and often were not given enough time off to meet.

TQM requires from three to seven years to implement, making it necessary for top management to strategically plan for the changes required for full support (Tigner, 1989; Rohan, 1989). The effort will be more successful if employees have a clear understanding of the mission, vision and TQM implementation plan as it effects them (Tichy, 1983; Camp, et al, 1986). Effective change will be brought about through comprehensive and integrated planning including both short-term and long-term goals (Roehm, et al, 1991).

A clearly articulated plan is important. Simply stated, a clear plan provides employees with purpose and provides a framework to guide strategic decisions so that each department may coordinate implementing TQM (Dumas, 1987). The plan guides employees throughout the improvement process in strategies for pursuing "customer focused" quality improvement and in specifying goals and objectives.

Different individuals in each department are likely to have departmental and personal goals and values which may conflict in the new TQM plan. However, the strategic TQM plan should be congruent with the organization's overall mission and
vision (Camp, et al, 1986). Careful attention must be paid to resolve differences so that organizational members can fully support TQM (Reichers, 1985). One successful way to reduce resistance to new TQM plans for implementation is to involve employees at all levels in the planning process (Beer, et al, 1990). When employees co-determine with top management the TQM mission, vision and goals for implementation, mutual understanding and opportunities for resolving interdepartmental conflicts are recognized and addressed.

Finally, for a TQM strategic plan to be effective, the organization must require that each department be involved and have its own specific plan for implementation coordination. Organizational management dedicates increased financial and other resources to take care of the employee so they feel valued as an internal customer.

**The Concept of Needs**

Most authors have agreed that educational needs assessment is an important step in carrying out educational programs. All kinds of educational programs are developed to meet needs of individuals. Furthermore, when developing educational programs in business, priorities are set based on needs of employees. Thus, the effective educational program starts with identifying the needs and interests of the individual employee.

Atwood and Ellis (1971) asserted that the most important function of any adult education program is to meet the "real" educational needs of individuals, groups, institutions, and communities and their societies. They also defined a real need as "an objective deficiency of an individual, group, institution, or community in relation to the environment" (p.212). Atchambault (1957) defined a genuine need as "an objective deficiency in the relation of the individual to his [sic] environment" (p.41). These two
definitions have the same interpretation even though they are using different terms. Using the Atchambault's definition, Atwood and Ellis (1971) identified the essential characteristics of "real" educational needs. They stated that such needs must deal with a carefully established deficiency which clearly detracts from well-being and that the deficiency must be susceptible to correction by a learning experience.

Boyle and Jahns (1970) defined need as a key indicator of behavior in that it creates a state of disequilibrium. A need is a condition that exists between what is and what should be, or between what is and what is more desirable. Thus, a need represents an imbalance, a lack of adjustment or a gap between a present situation or state of being and a new or changed set of conditions. Further, Boyle (1981) pointed out that if people do not believe they need to change, or perceive no inconsistency between themselves at present and the desired state proposed, then change is difficult. When people recognize and accept that a need exists, they will try to fulfill that need.

Similarly, Monette (1977) indicated "the term need as a deficient state that initiates a motive on the part of an individual or a non-observable or inferred biopsychological state rather similar to a drive" (p.117). In addition, he explained two senses of need: (1) as used interchangeably with "want" or "desire" and (2) is often called a "felt need." In this sense, the term need is used interchangeably with the term interest. On the other hand, the term need may refer to some lack in the individual, a gap in knowledge, attitude or skill measured according to some objective criterion. This concept is often called "real need" (p.121).

According to Scissons (1982), various definitions of need can be summarized into four categories: (1) basic human needs, (2) felt or expressed needs, (3) normative needs, and (4) comparative needs. "Basic needs refers to basic gratification seeking
behavior, felt or expressed needs to self-defined wants, normative needs to differences between the present state of affairs and some criterion, and comparative needs to differences between individuals or groups" (p.20).

Griffith (1978) provided the definition of a need as "the lack of something which, according to the best information available, is necessary for self-actualization of individuals for the improvement of the quality of life in the community" (p.387). Borich (1980) defined training needs as "a discrepancy between an educational goal and trainee performance in relation to the goal. The process of identifying training needs can be conceptualized as a discrepancy analysis that identifies the two polar positions of what is and what should be" (p.39). Thus, the training program design criteria can be identified by the discrepancy between what is as the measured behaviors, skills, and competencies of the trainee and what should be as the goals of the training program (p.39). Witkin (1984) concluded, "The term need is properly used only as a noun with the denotation of a discrepancy or gap between some desired or acceptable condition or state of affairs and the actual or observed or perceived condition or state of affairs" (p.6). Thus, needs should be arrived at systematically by identifying the difference (discrepancy) between current conditions or outcomes and desired conditions or outcomes.

The Identification of Needs Assessment

Needs assessment is a difficult process surrounded by fuzzy thinking as a basis for developing educational activities (Knox, 1969), the important first step in program development (Atwood and Ellis, 1971), and the bridge between recognizing a need and deciding what to do about it (Datta, 1978). According to Cocheu (1993), the ultimate objective of any training is to give the right people the right knowledge and skills at the
right times to help them do "the right things right." Thus, in general, authors agreed that needs assessment is usually the first step to give the right knowledge and skill in comprehensive programs and can be used effectively to improve program decision making.

According to Witkin (1977), a needs assessment may be thought of as a process for ranking goals for importance and setting priorities in them for program development and attainment. Specifically, he (1975) stated that needs assessment is a systematic or formal procedure for determining:

1. A desired state of affairs -- that is, a set of educational goals or other statements about "what ought to be" in the area(s) to be assessed.
2. The present conditions that exist in that area.
3. The kinds and degrees of discrepancy that exist between (1) and (2).
4. The reasons or causes for the discrepancies.
5. Which discrepancy (need) areas should be given the highest priorities for action. (p.10)

Witkin (1975) pointed out needs assessments have influenced organizations to undertake improved curricular planning, evaluation, and accountability. In other words, needs assessment establishes direction and focus of basic curricular programs, sets priorities for future development, and gives the basis for allocating resources. Secondly, needs assessment uses some of the same tools as evaluation -- test data, performance reports, behavioral indicators, and observations. On the other hand, evaluation data during and at the end of a program may profitably be used to assess areas of discrepancy which should be addressed.

Pennington (1980) stated, "Needs assessment is a term that has been used to describe a process with at least three purposes, including analyzing clientele, identifying topics, and specifying areas of need" (p.3). Caffarella (1982) defined a needs assessment
as a systematic procedure used to identify educational needs (p.6). He pointed out that the main purpose of a needs assessment is to identify the major educational needs of the clientele as those problems are perceived by the extension staff, volunteer leaders, and the clients themselves (p.6).

According to Geroy (1988), a needs assessment may be used in three situations. The first situation is a currently perceived performance problem as a "now" situation. What is desired now does not exist, and a determination must be made of what solutions can be implemented to resolve the difference. The second situation is a process of planned change about to occur and a determination of what needs to be done to bring about this planned change. This second situation is also a "now" situation but, unlike the first situation, it is not reaction based. It is proactive in nature. The third situation is a process of change planned as part of a long-term strategy. This is a future situation. The needs assessment process is a proactive one which focuses on future performance needs and the identification of what preparation must be made to insure successful implementation.

Needs assessment involves a determination of what goals and objectives a new program should try to achieve or how well an existing program is achieving its pre-specified goals and objectives. Needs assessment usually involves the following stages: (1) determining needs, (2) assessing the relative importance of those needs, (3) evaluating the degree to which established programs can address those identified needs, and (4) deciding whether new programs should be initiated or established programs modified to address such identified needs (Russel, 1987).

Assessing employees' educational needs is a vital step in the process of implementing TQM programs. Educational needs assessment is both cost-effective and
essential for employee education programs which are very expensive to conduct. Needs assessment also provide a rational basis for decisions and increase the likelihood that programs will be successful. Individual's needs can not be fixed over time in relation to preferences or environments change. Thus, needs assessment should be more than a one-time event. Furthermore, in a well-designed program, educational needs should be assessed before, during, and after training.

According to Witkin (1975), the advantages of needs assessment are:

1. The areas of greatest strength and weakness in the educational program will be discovered, thus, laying the basis for more rational curricular planning.
2. Discrepancies of various kinds among the perceptions of different groups as to how well the organization is performing its job will be revealed.
3. Unexpected or hidden needs and causes of ongoing or unsolved problems may emerge.
4. The assessment, if addressed to future and long-range needs as well as current ones, will provide for renewal in the organization.
5. Needs assessment should give direction for placing priorities on allocating scarce resources.
6. When done successively over two or three years, the assessment will show trends related to increasing, declining, or changing populations.
7. For better performance, a good needs assessment will find the causes of difficulties and set priorities for correction action.
8. Needs assessment will give information for planning in special areas, such as education of the handicapped, health and guidance services, career and vocational education, needs of minority language and cultural groups, and multicultural education for all.
9. There is a better chance of reaching consensus on the areas of greatest needs and on proposals to meet the needs of supportive groups (p.13-14).

Needs assessments are carried out in response to several situations involving organizational or individual performance. However, Geroy (1988) noted that the causes of the performance problem which are identified as a result of the needs assessment can be placed into four broad categories: (1) lack of skills and knowledge, (2) environmental, (3) attitude/motivation, and (4) aptitude.
Atwood and Ellis (1971) stated educational needs are, "a need that can be satisfied by means of a learning experience. A need is considered to be a lack, deprivation, or deficiency that guides planning from an educational standpoint" (p. 212). Knowles (1970) stated, "Educational needs are the things people 'ought' to learn for their own good, for the good of the organization, and for the good of the community" (p. 123). Archambault (1957) used the term "genuine need" and noted that educational needs cannot be discovered through the investigation of common tendencies or wishes. Instead, educational needs should be a belief about what ought to be in light of what exists and what appears to be possible.

According to Borich (1980), needs assessment can be employed in conducting follow-up studies of educational programs since it produces more data and more understandable data. In other words, employees can assess what is sufficient or insufficient and what is more important or less important in their job competence. Borich's (1980, p. 41) needs assessment model was "essentially a self-evaluative procedure which relies on teachers' judgments about their own performances. The assumption underlying the needs model is that the performer (employee) can best judge his or her own performance and, when explicitly asked to do so, can make an objective judgment." The process of assessing educational needs can be conceptualized as a discrepancy analysis that identifies the two polar positions of what is and what should be. What is was defined as the measured skills and competencies of the employee and what should be as the goals of the educational program. The discrepancy between the two polars can be used as an index of the educational program's effectiveness. Thus, educational programmers can apply this model by measuring behaviors of respondents as
"what is" while regarding "what should be" as the goals of the program. This study employed the Borich formula for the computation of the discrepancy scores.

\[
\text{Dis.} = (\text{Im} - \text{Kn}) (\text{M}_{\text{Im}})
\]

Where: \(\text{Im}\) = the perceived importance of the item to the employees.

\(\text{Kn}\) = the perceived amount of knowledge possessed by an individual.

\(\text{M}_{\text{Im}}\) = the perceived average importance of the competency as rated by the respondents.

\(\text{Dis}\) = the discrepancy score (educational needs).

Each item was analyzed with respect to its perceived importance to the employee and the perceived knowledge of the item by the employee. As a result, high importance and high knowledge would constitute a desired state. However, if high importance existed with low knowledge, then this made a discrepancy. A high level of knowledge and low importance would produce a negative score for need. In conclusion, a needs assessment model developed by Borich (1980) was well designed to analyze and interpret data before the instrument was developed, since the data was weighted and ranked in order of priority of the educational needs of the employee.

**Characteristics of Employees**

Various studies looking to identify the educational needs of specific groups with specific characteristics have been conducted. All of these studies agreed that specific groups of people have needs and interests that should be identified to help in developing effective educational programs to meet those needs.
Pennington (1980) pointed out that analyzing characteristics and expectations of the clientele to provide data for program and policy decision is common. The characteristics compared typically include age, sex, education, marital status, occupation, recent participation in a formal educational activity, and other variables correlated with participation in educational activities. In this study, the personal characteristics were selected on the basis of their potential impact on the participation of employees in TQM educational programs. Therefore, important personal characteristics considered in this study were: gender, age, level of education, the current job position, number of years working in the company, number of training programs participated, number of TQM training program participated, familiarity with the TQM principles, and type of organizational department.

**Gender**

There are growing numbers of women pursuing careers in traditionally male occupational areas. The significant gender differences has existed in the world of work. Various researchers have focused on male - female differences in job outcome preferences with mixed results (Bartol and Manhardt, 1979). Brenner and Greenhaus (1983) reported sex differences using the Manhardt scale. According to the research by Schuler (1975), males placed relatively more importance than did females on the opportunity to make more money and to influence important decisions, whereas female gave more importance than males to the opportunity to work with pleasant employees. According to Brenner and Tomkiewicz (1982), males have been found to value long-range objectives, high income, risk taking, and supervising others. On the other hand, females have been found to value intrinsic job characteristics, intellectual stimulation and
skill utilization, self actualization and security, convenience aspects of the job, comfortable working conditions, and interpersonal relationships.

Hurgensen (1978) also found some differences between males and females. Females tended to score higher on achievement, activity, company policies and practices, co-workers, independence, social services, and working conditions. Males tended to produce higher score on advancement, authority, compensation, creativity, recognition, responsibility, security, social status, and supervision-human relationships. For this study, it is hypothesized that a positive relationship between gender and TQM educational needs when male are coded one and female are two.

Age

In general, as people get older, changes come harder and harder. According to Cross and Zusman (1977), interest, as well as participation, begins to diminish in the early thirties and drops sharply after age 55. He also found that older people lack interest in further learning since they see no possibility of reaping their investment.

However, Loscocco and Kalleberg (1988) found that there was greater work commitment among older Japanese men, American men, and American women, compared to younger counterparts. In the United States, Cherrington (1980) indicated that younger people did not place as much importance on hard work as did older people. According to Hale (1990), older individuals continue to have successful experiences in both training programs and the work force. Moreover, older employees have the necessary intelligence, learning ability, and motivation to participate in job training programs. On the other hand, for this study, aging people in business has a positive relationship with a current job position. In other words, as people get older then job
positions are higher. Therefore, older people in the company have higher educational needs than younger employees have. For this study, it is hypothesized that a positive relationship exists between age and TQM educational needs.

**Educational level**

In general, level of education attainment was found in the literature to be a positively related characteristic to the rate of participation of the adult learner. Kaufman (1980) noted that advanced-degree women might well be expected to value different characteristics than lesser educated women. Educational level affects job values and preferences more than gender. Cross (1977) viewed that the more education people have, the more interested they become in further education. In other words, "the perceived value of education to an individual increases as the person participates or gets involved in education " (Uko, 1985). However, for this study, it is hypothesized that a negative relationship exists between educational attainment and TQM educational needs since the more TQM educational principles employees have, the less interested they become for further education.

**The Job Position:**

Executive management includes those top-level managers who make up the top two layers of management within the corporation. Executive management begins with the Chief Executive Officers (CEO), and/or President. The second layer includes Directors or Vice Presidents. This second layer of executive management maintains responsibility over functional areas within the organization. The executive management is routinely consulted first on important issues confronting the organization (Jablonski,
1992). According to Omachonu and Ross (1994), the role of top management in TQM implementation is critical. Many of the most successful companies launched their programs by creating a quality council or steering committee whose members comprise the top management team.

According to Carothers (1986), the role of middle managers has traditionally been an integrative one. They are the drivers of quality and the information funnel for change, both vertically and horizontally, between top management and front-line employees. They implement the strategy devised by top management by linking unit goals to strategic objectives. They develop personnel, make continuous improvement possible, and accept responsibility for performance deficiencies.

Front-line supervision has been called the missing link in TQM. At Federal Express, for example, the communication effort has been focused on the front-line supervisors because most employees report directly to them. The company realized that the real purveyors of quality are the employees, and a basic quality concept is candid, open, two way communication (Fishman & Kavanaugh, 1989).

Management represents people who supervise the workforce and insure the completion of short-term organizational responsibilities. First-line supervisors are included here, as the lowest echelon of management (Jablonski, 1992). Management and supervisors are trained not only in SPC (Statistical Process Control) and group dynamics, but are also trained in change management and the "how-to" of empowering and supporting employees for involvement in process improvement. In fact, middle management and supervisors have been targeted in a number of organizations who were not successful with TQM implementation as partly responsible for the failure (Dumas, et al, 1987). The training for upper and middle management has been deemed a critical
element in sending a positive message that management is interested in, and supports the employees' needs and problems during the implementation process.

If TQM implementations are to be successful, a deeper understanding of how employees perceive the program must be accomplished. Employees should understand and implement TQM appropriately for success to be achieved. Employees' positive self-perceptions of their skills, knowledge and abilities after training will have a positive impact on their actual success in implementation (Dumas, et al, 1987; Tigner, 1989; Atkenson, 1989; Braunstein, 1989). According to Peters and Waterman (1984), what is critical to the success of an organization is the perception of rank and file employees as the root source of quality and productivity. Organizations must respect individuals and see them as a source of "creative ideas" not just a "pair of hands." In addition, in order to fulfill organizational goals successfully, there is a blending of one's life goals with the company's goals such that the success of the organization represents the success of the individual. Fulfilling the need of employees would help to achieve this goal.

In conclusion, in implementing TQM, top management has higher educational needs than workers have because top managers have more pressure to commit quality activities. Moreover, they take responsibility to supervise employees and are consulted first on important issues confronting the organization. Based on this findings, it is hypothesized that a positive relationship exists between a current job position and TQM educational needs.

TQM Training Programs

Training itself is a complex issue and not as simple as some organizations or consultants would portray (Atkenson, 1989). Although there is some fairly consistent
information given on some of the topics taught in training, the how in implementing is neglected. Some organizations spend valuable resources on slogans, banners and campaigns which are often received by the workforce as temporary, "flavor of the mouth" fads which will have little long-lasting impact (Porter, 1991). What is needed is hands-on training that involves contact with customers. This helps the employees understand customers' needs and expectations.

Training is a critical part of any TQM effort. Success depends on well thought out, and implemented training that addresses short and long term needs of employees as they move through the TQM process improvement phase. Training should be just-in-time, have built-in opportunity for application and enable employees to gain in their skills, knowledge, and abilities, for successfully making process improvements (Goldstein, 1988).

In the TQM training program, Deming (1982) does not limit training to the use of statistical quality control or other tools for improving quality. In other words, employees are taught in more detail about the SPC process improvement methodology, group dynamics and team building skills which enable process improvement team members to work together more efficiently. Training is critical to help teams focus on improving processes in a constructive team member (Kiesch, 1990).

Brown, Hitchcock, and Willard (1994) described the earliest training objective by Deming, Crosby, and Juran that it was teach employees to think differently about quality and to effectively manage their organization in a new environment. However, today's training is based on philosophy, but it is the philosophies and concepts of the organization that are taught. Quality concept courses are not intended to teach specific skills or to change employee behavior on the job.
Because of increased interaction with the customer, the behavior, skills, abilities, and knowledge of employees about customer expectation or wants become critical parts. This means that an ill-trained employee will not be able to deal effectively with the customer. Thus, many workers never get adequate training in doing the jobs for which they are responsible. Training for TQM must be customized depending on the unique needs of each organization and their dependence or allegiance to one or several TQM gurus (Dumas, et al, 1987). In addition, training programs must constantly be updated to ensure that employees are benefiting from the training (Tigner, 1989).

As a result, for many employees, the training courses in TQM are the first time they have learned about how their lives could be made easier through TQM. Through training, employees can see management's actual, visible commitment, employee empowerment, and involvement of the entire workforce in the quality process. If the quality training covers the right subjects, is planned just-in-time with ongoing management support, and has good application of training back at the job, employees will be more likely to choose to "buy-in" and continue their efforts during difficulties in the implementation. Therefore, for this study, the more training programs employees participated, the less interested in TQM training programs since they have already more knowledge about TQM principles. Furthermore, employees who are more familiar with TQM principles than the less employees are have less TQM educational needs.

Based on these findings, the following hypotheses were developed:

* A negative relationship exists between number of training programs participated and TQM educational needs.

* A negative relationship exists between number of TQM training programs participated and TQM educational needs.
* A negative relationship exists between familiarity with the principles of TQM and TQM educational needs.

The Type of Organizational Department

Every organization has a purpose that can only be understood by looking at its relationship with other activities and the environment. Today's workers need an environment conducive to the high performance needed to compete in today's world-market. In order to produce a quality product in a proper environment a process must be in effect throughout an organization, that recognizes the need for quality control, future planning, continuous improvement, and systems improvement.

Marketing departments in service organizations usually have numerous ways of contact with the customer through surveys, focus groups, and phone calls in order to constantly update current service and anticipate further customer requests.

Characteristics of Business

Characteristics that are expected to have relationships with TQM educational needs were type of business, number of employees in the department, number of employees in the company, length of TQM implementation, and the company location.

Type of Business

Recent estimates showed that 70 percent of all U.S. business in the 1990's engage in service rather than manufacturing related activities. In other words, service industries are playing an increasingly important role in the nation's economy. This trend will continue.
The most comprehensive definition of customer service is given by Schwartz (1992):

"Customer service sometimes called field service or product service, consists of the support we provide customers before, during, and after the sale --- especially after the sale. It is another component of a "bundling" of products and service. The quality of customer service influences customer satisfaction well beyond the degree of satisfaction with the physical product. Customers repeat their purchases of a given product where customer service is of high quality (p.38)."

Employees believed that quality concept does not apply to service organization. According to Brown, Hichcock, and Willard (1994), in the 1980s, most of the training programs on the market designed by and for individuals with backgrounds in big manufacturing companies. Service employees viewed manufacturing organization achieved quality through prevention of errors rather than detection. However, Deming emphasized the applicability of TQM in service industries. A common definition of customer service is the provision by a seller or producer of: delivery, installation, maintenance, and information, as well as advice, or solution to problems or resolutions of complaints. In the light of the service industry context, TQM itself is reaching strongly into the service area and grappling with measurement and feedback issues. TQM organizations in the service industry must analyze expectations and values and evaluate service quality characteristics of processes and outcomes (Hyde, 1993). Service companies have tremendous resources committed to understanding what the customer thinks and needs to improve the service because customer service is more intangible than a product. In conclusion, service companies have to find ways to quantify customer expectations, analyze mistakes, and make changes quickly to the customer service process so that quality is enhanced.
On the other hand, in manufacturing, the employees who are working at floor may never talk to or see the customer and may know little about the customer's expectations. If the customer is to be satisfied in service industries, the degree of customer interaction necessitates focusing on specific employee behavior and monitoring customer quality expectations. In the past, quality was measured against the factory standards established by management rather than by customer feedback and emphasis was on high volume and consistency to factory standards. Therefore, Omachonu and Ross (1994) insisted that manufacturers are careful to measure material yield, waste scrap, rework, returns, and other costs of poor quality processes. Service companies also have these costs, which are reflected in the cost of customers who will not come back because of poor service. Moreover, recently, the trend that focus has been on improving quality and customer satisfaction is spreading from manufacturing to service industries.

**Number of Employees**

According to the study of Shaffer and Gyan (1989), larger firms were more concerned than smaller firms about the need to train current employees. Thus, the larger firms were more frequently engaged in their own formal training programs. Truesdell (1994) indicated that small businesses did stop implementing TQM when they faced obstacles than in larger businesses. The larger businesses set up a bureaucracy to administer the program which had a life of its own and tended to perpetuate the systems and procedures which make TQM a permanent part of the culture. On the other hand, small businesses made the mistake of approaching it as a program with a specific life and, once a planned set of events has occurred, they became consumed with other pressing
needs and the program was forgotten. Therefore, a positive relationship between number of employees of the department or company and TQM educational needs were developed.

The Length of TQM Implementation

Sufficient time, money, personnel, and materials all play a vital role in equipping employees to obtain, understand and implement TQM successfully. However, many organizations, in attempting to implement TQM, delivered limited training or training that does not apply, hands-on, back on the job. Some organizations mistakenly plan the training so that all employees are trained at one time, regardless of the time delay between the classroom and actual application (Dumas, et al, 1987; Porter, 1991). Truesdell (1994) stressed that periodic renewal of TQM implementation could help to energize a process and could keep the process in the forefront of everyone's mind. However, most Korean companies believed that the most successful companies were able to produce more goods and services faster and cheaper than any other companies. Therefore, for this study, a negative relationship between number of years of TQM implementation and TQM educational needs of employees was hypothesized.
CHAPTER III

METHODOLOGY

Data were collected with the use of a questionnaire designed to test the hypotheses enumerated in Chapter I. The questionnaire was developed by the researcher to measure TQM educational needs of employees on (1) organizational culture, (2) top management leadership and support, (3) employees' involvement and teamwork, and (4) customer satisfaction. This chapter describes the procedures for carrying out the research which include: (1) research design, (2) population and subject selection, (3) instrument development, (4) data collection, and (5) data analysis.

Research Design

The purpose of this research was to identify the factors associated with the TQM educational needs of employees in selected Korean companies. In this study, an ex post facto research design was used to test hypotheses. Kerlinger (1973) defined ex post facto research as a "systematic empirical inquiry in which the scientist does not have direct control of independent variables because their manifestations have already occurred or because they are inherently not manipulable (p.379)." Ex post facto research is "to explain the variability in the dependent variable in terms of independent variables hypothesized to be factors that explain and/or predict the dependent variables" (Miller,
1992, p.58). TQM concepts, in this study, were naturally occurring within the companies.

The dependent variable in the study was the educational needs on TQM, and the independent variables included personal demographic variables (gender, educational background, age, current job position, number of years working in the company, number of training programs participated, number of TQM training programs participated, and familiarity with TQM principles) and business variables (number of employees, type of business, number of TQM implementation, and location of the firm). Each of these factors were tested to identify its relationship with TQM educational needs of employees. The anticipated relationships between the independent variables and the dependent variable can be classified as in Figure 1.
**Independent variables**

<table>
<thead>
<tr>
<th>A. Personal Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
</tr>
<tr>
<td>Educational background</td>
</tr>
<tr>
<td>Age</td>
</tr>
<tr>
<td>Current job position</td>
</tr>
<tr>
<td>Number of years working in the company</td>
</tr>
<tr>
<td>Number of training programs participated</td>
</tr>
<tr>
<td>Number of TQM training programs participated</td>
</tr>
<tr>
<td>Familiarity with the TQM principles</td>
</tr>
<tr>
<td>Type of organizational department</td>
</tr>
</tbody>
</table>

**Dependent variable**

| TQM Educational Needs |

**B. Business Variables**

<table>
<thead>
<tr>
<th>Type of business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of employees in the department</td>
</tr>
<tr>
<td>Number of employees in the company</td>
</tr>
<tr>
<td>Number of years of TQM implementation</td>
</tr>
<tr>
<td>The location of a company</td>
</tr>
</tbody>
</table>

Figure 1. Variables Predictive of TQM Educational Needs
Population and Subject Selection

The data for this study were gathered from the employees who worked in Korean companies. The target population for this study was all employees who worked for Korean companies that had adopted TQM. The accessible population was every employees listed with the randomly selected company directories. According to Fraenkel and Wallen (1990), the accessible population is the population to whom a researcher is able to generalize. The total number of companies in Korea was counted using the directory of companies which came from the Korean Development Institute (KDI). From the total population of employees listed in the companies' directory, 644 subjects were randomly selected. The sample size of employees to be represented was determined by using Cochran's formula (1977, pp. 72-88):

\[ n_0 = \frac{t^2 s^2}{d^2} \]  

(3)

in which,

\[ n = \text{sample size} \]
\[ d = \text{acceptable margin of error for the mean being estimated (degree of precision).} \]
\[ t = \text{risk willing to take that actual margin error might exceeded acceptable margin of error (from the t distribution table).} \]
\[ s^2 = \text{estimate of variance in the population (s = standard deviation).} \]

For this study, take \( d = +.05; \ t = 1.960 \) (rounded to 2.0, .05 risk); \( s = .65. \)

\[ n_0 = \frac{1.96^2 \times .65^2}{.05^2} \]
\[
\begin{align*}
\text{Because } n_0 > 0.05, \text{ finite population correction formula was used:} \\
N \\
\text{n} = \frac{n_0}{1 + \frac{n_0}{N}} = \frac{64.4}{1 + \frac{64.4}{150000}} = 64.4
\end{align*}
\]

If a simple random sampling technique was used, the minimum sample size for this study was 64. The random sampling technique was recommended in order to ensure that every employee has an equal chance to be selected. Kerlinger (1964) pointed out that "a sample drawn at random is unbiased in the sense that no member of the population has any more chance of being selected than any other member (p. 119)."

However, the two-stage cluster sampling technique was used to select the subjects needed for the study. Cluster sampling can be used when it is difficult to identify a frame from which to select a random sample of individuals. Fraenkel and Wallen (1990) explained that cluster random sampling can be used when it is difficult or impossible to select a random sample of individuals. Thus, cluster random sampling has been known as the selection of groups, or clusters of subjects rather than individuals. Cluster random sampling is more effective with larger numbers of clusters. As a result, for this study, first the researcher randomly selected 14 companies from the lists of large-sized companies in Korea and then randomly selected 1 department from each company. Therefore, the selected 14 departments in the company become a cluster. All the employees in the selected 14 clusters were involved as subjects in this study.
**Instrument Development**

The instruments were developed to gather data to test the hypotheses mentioned in Chapter I of this study. The instruments in this study were developed to accomplish two major purposes: (1) to measure the dependent variable, TQM educational needs of employees, and (2) to gather information on the independent variables -- personal variables and business variables.

The study was designed to use the Borich Needs Assessment Model (1980). The instruments were derived from related literature, similar studies, and suggestions by experts about TQM. At first, the first part of the questionnaire was composed to 112 essential competencies under the four TQM domains -- organizational culture, employees involvement and team work, top management leadership and support, and customer satisfaction. The second part (personal variables and business variables) were developed by the related research which proved an association between variables and the TQM educational needs of the employees by considering the culture of Korean companies. Then, the researcher asked a panel of experts to evaluate the content of the questionnaires. The panel of experts reviewed and revised the competencies of the instrument and finalized the list of the competencies for the survey instrument.

During May 1995, selected employees who worked for Korean companies, which had adopted TQM, completed the survey instrument. Employees were requested to rate the importance and knowledge of each competency to determine the factors associated with TQM educational needs. Figure 2 illustrates the discrepancy analysis for a competency. Finally, a discrepancy analysis of the items in the four domains of TQM principles was conducted.
Perceived Importance Competency Knowledge Possessed

1 2 3 4 5 6 1. Creating an open atmosphere 1 2 3 4 5 6
1 2 3 4 5 6 2. 1 2 3 4 5 6
1 2 3 4 5 6 3. 1 2 3 4 5 6
1 2 3 4 5 6 4. 1 2 3 4 5 6

Discrepancy (Educational Needs) = 3 x (M Im)

Figure 2. Discrepancy Analysis of TQM Educational Needs of Employees

In the above figure, the respondent rated the perceived importance of the item as a 6 and the perceived knowledge of the item as a 3. Therefore, discrepancy scores (needs) of employees between the knowledge and amount of the importance is 3. The formula for the discrepancy scores is:

\[
\text{Dis.} = (\text{Im} - \text{Kn})
\]

Where: Im = the perceived importance of the item to the employees.

Kn = the perceived amount of knowledge possessed by an individual regarding the particular competency.

Dis. = the discrepancy score.

This study employed the Borich formula for the computation of the discrepancy scores. Based on the Borich Model (1980), the rating scale enabled each competency to
yield a discrepancy score (educational needs). By these scores, the researcher was able to
determine factors related with the TQM educational needs of employees by considering
the perceived importance and perceived knowledge of the TQM competencies by
employees. As a result, highly rated importance items should be emphasized while lowly
rated importance competencies should be prioritized accordingly. According to the
Borich Model (1980), the formula for the computation of the discrepancy scores (need)
is:

\[
\text{Dis.} = (I_m - K_n) (M I_m) = \text{Educational Needs} 
\]

Where: 
\( I_m \) = the perceived importance of the item to the employees.
\( K_n \) = the perceived knowledge of the item by employees.
\( M I_m \) = the average perceived importance of the competency as rated by the
respondents.

According to the above formula, the multiplication of the discrepancy scores by
the average importance score yields the computed educational need for the items. The
competency with the greatest positive relative weight scores (needs) had the highest
priority for being offered in TQM educational programs for employees. In conclusion,
the determination of the educational needs for individual competencies help the
programmers develop educational programs on the basis of the perceived educational
needs as reported by employees.

A discrepancy analysis was conducted on the items in the four categories of TQM
competencies: (1) organizational culture change (Q 1 - Q 12), (2) employee involvement
and team work (Q13 - Q 24), (3) top management leadership and support (Q 25 - Q 36),
and (4) customer satisfaction (Q 37 - Q 49). Each competency item was analyzed to
determine its perceived importance to the employee and the perceived knowledge of the
competency by the employee. The survey instrument used a six-point rating system
with one being low and six being high. This scaling is a summated-rating scale often
called a Likert-type scale. Thus, employees were asked to rate themselves on the level of
importance and knowledge in TQM educational competencies. Descriptive information
describes each item and then means are calculated for each subject in each of the
aforementioned categories.

Reliability of the Instrument

Reliability is the accuracy or precision of a measuring instrument. Reliability is
synonymous with dependability, stability, and consistency (Kerlinger, 1964). Thus, the
reliability of the instrument was based on the extent to which the items on the
questionnaire interrelated or were internally consistent with each other. The reliability of
each of TQM four domains of the instrument and the overall instrument were analyzed by
using the Cronbach's Alpha to produce internal consistency coefficients. According to
Nunnally (1967, p. 211), "coefficient alpha provides a good estimate of reliability in most
situations, since the major source of measurement error is because of the sampling of the
content." Table 1 presented the Cronbach's alpha for the four domains of TQM.

In other words, the Cronbach's alpha measured the internal consistency of the
instrument, in order to ensure that each item was contributing to the determination of a
competency's importance and an assessment of the employees' knowledge of TQM
principles considered in this study.
Table 1
Cronbach's Alpha Coefficients for the instrument

<table>
<thead>
<tr>
<th>Domains of Competencies</th>
<th>Im</th>
<th>Kn</th>
<th>TQM EN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational Culture</td>
<td>.89</td>
<td>.89</td>
<td>.89</td>
</tr>
<tr>
<td>Employee Involvement and Team Work</td>
<td>.92</td>
<td>.92</td>
<td>.92</td>
</tr>
<tr>
<td>Top Management Leadership and Support</td>
<td>.89</td>
<td>.90</td>
<td>.89</td>
</tr>
<tr>
<td>Customer Satisfaction</td>
<td>.94</td>
<td>.94</td>
<td>.94</td>
</tr>
</tbody>
</table>

Im = Level of Importance
Kn = Amount of Knowledge
TQM EN = Total Quality Management Educational Needs

Validity of the Instrument

The validity of the instrument is the extent to which the instrument measures what it purported to measure (Oppenheim, 1966). Content validity is a type of validity, defined by Kerlinger (1964) as "the representativeness or sampling adequacy of the content of a measuring instrument" (p.443). Kerlinger pointed out that content validity can be achieved through judgment, in which the items are examined to determine their representativeness and their relevance to the purpose of the study. In order to ascertain the content validity of the instrument used in this study, the services of a panel of experts (Appendix B) was required. The panel of experts was responsible for assessing and validating the measuring instrument as being representative of the content.

In developing an instrument for this study, a list of statements from TQM principles, employee characteristics, and business characteristics were designed and developed to explain the relationships between factors associated with TQM educational...
needs of employees. Thus, this list was submitted to four experts to determine the content validity. The first draft of the instrument was hand delivered to each of four members of the panel and the purpose of the study and the procedure for evaluating each item on the instrument were explained to them. This procedure asked the four experts to amend, delete or add items on the instrument.

Measure of Dependent Variables

The dependent variable in this study was TQM educational needs of employees. Thus, the instrument that was developed to measure TQM educational needs of employees contained 49 statements. It included the four essential domains of TQM. The statements were developed from the related literature review. This study used a summated (Likert-type) scale for the measurement of the perceived TQM educational needs of employees. In conclusion, the summated rating scale for this study employed a six-point Likert-type scale to measure importance and knowledge that employees possess in TQM competencies. The six-point Likert-type scale used was:
Measure of Independent Variables

In the study, the main independent variables were classified into two categories: (1) personal variables and (2) business variables (Figure 1). Personal variables included gender, educational background, age, current job position, number of years working in the company, type of organizational department, familiarity with TQM principles, number of overall training program in which participated, and number of training programs on TQM in which they had participated. The instrument developed to gather information about the variables consisted of nine items.

Business variables included: type of business, number of employees in the department, size of company (number of employees in the company), number of years of
TQM implementation, and location of the company. The instrument developed to gather information about business factors consisted of one item for each of the five variables.

The first part of the questionnaire consisted of a list of essential competencies under four essential domains of TQM: (1) organizational culture change, (2) employee involvement and team work, (3) top management leadership and support, and (4) customer satisfaction. The competencies listed have been selected after reviewing studies conducted on TQM (Appendix A).

The second part of the questionnaire was comprised of questions pertaining to the personal characteristics of the employees, to test the first hypothesis through the ninth hypothesis (Appendix A). The third part of the questionnaire included questions related to business characteristics (Appendix A). This part was to test hypothesis 10 through 14. In selecting the appropriate personal characteristics and businesses characteristics for the purpose of this study, the researcher considered the nature, situation, and culture of the Korean employees and businesses.

Data Collection

Data collection, in Korea, was conducted by the researcher during May, 1995. The employees included in this study were contacted with the researcher-developed questionnaires. The researcher visited each of the randomly selected companies. The procedure was:

1. The researcher obtained the list of departments from the director of the selected company visited after discussing the importance, purpose and objectives of the study.
2. After getting the requested permission from the director to conduct the study, the researcher randomly selected departments in their company as a group.

3. In order to ascertain a uniform description of the importance, purpose and objectives of the study, the researcher met the employees as a group in each department and used a standard (Appendix A).

4. A questionnaire was distributed to each employee. The researcher then clarified the directions and terms used in the research questionnaires.

5. The data collection was conducted by the researcher by administering the questionnaires to the employees in a group setting in the office. Before the employees started to answer the questions in the questionnaires, the researcher explained to the employees that their responses would be confidential and that their name would not be revealed (Appendix A).

6. The completed questionnaires were collected when all employees had answered all questions on the questionnaires. All employees were asked to finish the questionnaire within 20 minutes.

7. In an attempt to increase the response rate in those companies where employees could not be present at the time of the visit, the researcher left one copy at the company for each absent employee with an envelope to mail to the researcher.

Data Analysis

The returned questionnaires were examined by the researcher to identify the possibility of incomplete information. Only the completed questionnaires with answers
were used for data analysis. The collected data were recorded on code sheets, and entered and analyzed using the updated SAS.

Descriptive statistics were used to organize and summarize the data collected on the variables. Descriptive data were analyzed in the form of frequencies, percentages, and measures of central tendency. In order to find the relationship between the personal and business variables and the perceived TQM educational needs of employees, the Pearson Product Moment Correlation Coefficients were calculated between interval and interval data pairs. The Point Biserial Coefficients were calculated between nominal and interval data pairs. Spearman Rank-Order Correlation Coefficient were calculated between interval and ordinal data pairs. Therefore, the relationships between selected characteristics of the respondents and their responses to questions were described by the appropriate correlation coefficients (Table 2).
Table 2. Correlation by Scale of Measurement Correlated with TQM Educational Needs (Interval Scale)

<table>
<thead>
<tr>
<th>Personal Variables</th>
<th>Scale of Measurement</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Nominal</td>
<td>$r_{pb}$</td>
</tr>
<tr>
<td>Age</td>
<td>Ordinal</td>
<td>$r_{5}$</td>
</tr>
<tr>
<td>Educational Background</td>
<td>Ordinal</td>
<td>$r_{5}$</td>
</tr>
<tr>
<td>Current Job Position</td>
<td>Ordinal</td>
<td>$r_{5}$</td>
</tr>
<tr>
<td>Number of Years Working</td>
<td>Interval</td>
<td>$r$</td>
</tr>
<tr>
<td>Number of Training Programs Participated</td>
<td>Interval</td>
<td>$r$</td>
</tr>
<tr>
<td>Number of TQM Training Programs participated</td>
<td>Interval</td>
<td>$r$</td>
</tr>
<tr>
<td>Familiarity with the TQM principles</td>
<td>Ordinal</td>
<td>$r_{5}$</td>
</tr>
<tr>
<td>Type of Organizational Department</td>
<td>Nominal</td>
<td>$r_{pb}$</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Business Variables</th>
<th>Scale of Measurement</th>
<th>Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Business</td>
<td>Nominal</td>
<td>$r_{pb}$</td>
</tr>
<tr>
<td>Number of Employees in the Department</td>
<td>Interval</td>
<td>$r$</td>
</tr>
<tr>
<td>Number of Employees in the Company (company size)</td>
<td>Interval</td>
<td>$r$</td>
</tr>
<tr>
<td>Number of Years of TQM Implementation</td>
<td>Interval</td>
<td>$r$</td>
</tr>
<tr>
<td>Location of the Company</td>
<td>Nominal</td>
<td>$r_{pb}$</td>
</tr>
</tbody>
</table>
For the purpose of meaningful interpretation of the relationships or associations investigated between personal variables and business variables and TQM educational needs of employees, the scale described by Davis (1971) was employed in this study (Table 3)

Table 3. Descriptive Terms Used to Describe Measures of Relationships

<table>
<thead>
<tr>
<th>Correlation Coefficient</th>
<th>Descriptive Terms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Perfect</td>
</tr>
<tr>
<td>.70 or higher</td>
<td>Very Strong Association</td>
</tr>
<tr>
<td>.50 to .69</td>
<td>Substantial Association</td>
</tr>
<tr>
<td>.30 to .49</td>
<td>Moderate Association</td>
</tr>
<tr>
<td>.10 to .29</td>
<td>Low Association</td>
</tr>
<tr>
<td>.01 to .09</td>
<td>Negligible Association</td>
</tr>
</tbody>
</table>
CHAPTER IV

FINDINGS AND CONCLUSIONS

The purpose of this study was to determine the TQM educational needs of selected Korean employees and businesses, to describe the characteristics of employees and businesses, and to determine the relationship among these selected variables and TQM educational needs.

This chapter describes the findings with respect to (1) population and sample, (2) instrumentation, (3) variables, (4) data collection, (5) descriptive data, and (6) data analysis. Research objectives are addressed and the results of hypotheses testing are shown.

Population and Sample

The target population of this study was all employees who worked for large-sized companies in Korea that had adopted TQM. Most companies are located around the Seoul and Kyung-In area. The accessible population was every employee listed in the directories of randomly selected companies.

Two-stage cluster sampling was used to select the subjects needed for the study. Cluster sampling can be effective when it is difficult or impossible to select a random sample of individuals. Cluster random sampling selects groups or clusters of subjects rather than individuals. In this study, the researcher first randomly selected 14
companies from a list of large-sized companies in Korea and then randomly selected 1 department from each company. Therefore, the 14 departments selected from the companies became the unit of analysis. All the employees in the selected 14 clusters were involved as subjects in this study.

This study used the same procedure fourteen times for data collection from employees who worked for Korean large-sized companies. The subjects were 644 employees who worked for large-sized Korean companies that had adopted TQM by 1995. Respondents to the questionnaire were 562. This response rate represented an 87.27% return. Of the 562 accepting sample, 391 who supplied complete data (60.71%) constituted the data sample. The reasons employees submitted incomplete questionnaires were that they did not understand TQM concepts, they had not had an opportunity to take a TQM educational program, they thought their job did not relate to TQM concepts, and they did not perceive that TQM had been implemented long enough to provide any information. Therefore, these results are generalizable to this self-selected data sample. A summary of the population response is provided in Table 4.

Table 4
Questionnaire Response Rate

<table>
<thead>
<tr>
<th>Activity</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepting Sample</td>
<td>562</td>
<td>87.3</td>
</tr>
<tr>
<td>Data Sample</td>
<td>391</td>
<td>60.7</td>
</tr>
<tr>
<td>Number of Non-Respondents</td>
<td>171</td>
<td>26.6</td>
</tr>
<tr>
<td>Total Number</td>
<td>644</td>
<td></td>
</tr>
</tbody>
</table>
Instrumentation

The instrument used in this study was a researcher-developed questionnaire designed to accomplish two major purposes: (1) to measure the dependent variable (TQM educational needs of employees), (2) to gather information on the independent variables - personal variables and business variables. Thus, the research instrument was comprised of two parts: the first part of the questionnaire ascertained the employees' perception of the importance and their level of knowledge of 49 professional competencies which were sub-divided into four domains: (1) organizational culture, (2) employee involvement and team work, (3) top management leadership and support, and (4) customer satisfaction. The second part contained questions associated with personal and business background.

This study employed the Borich formula for the computation of educational needs using discrepancy scores. In order to calculate the discrepancy scores (educational needs); first, the researcher calculated the discrepancy scores between the level of importance score of each competency as rated by each respondent and the level of knowledge score of each respondent; second, means of importance of 49 competencies by all respondents were computed, and then, finally, the discrepancy from the first step was multiplied by the mean score came from the second step. The products were the calculated TQM educational needs for the 49 competencies. This instrument used a summated Likert-type scale for the measurement of the perceived educational needs of employees who worked for large-sized companies in Korea.

The translation work of the instruments into Korean was completed in several steps: (1) the translation of the instruments into the Korean language by the researcher, (2) reviewing of the translations by Korean bilingual experts including one Ph. D student
in the OSU Department of English Literature, one Ph. D student in Linguistics, and one Professor in the College of Business, and (3) a final review of the instrument by a TQM expert in Korea in order to compare it to the English version.

The content validity of the instrument was established by a panel of experts (Appendix B). For the reliability of this instrument, a Cronbach's alpha was employed to determine the internal consistency of the items in the four domains of TQM competencies and the internal consistency of the overall instrument. Table 1 presented the Cronbach's alpha for the four domains of TQM and the overall competencies in TQM.

**Variables**

The study was designed to investigate the relationships among the following variables:

**Independent variables**

A. **Personal Variables**

Gender

Age

Educational background

Current job position

Number of years working in the company

Number of training programs participated

Number of TQM training programs participated

Familiarity with the TQM principles

Type of organizational department
B. **Business Variables**

Type of business
Number of employees in the department
Number of employees in the company
Number of years of TQM implementation
The location of the company

**Dependent Variable**

TQM educational needs

**Research Objectives**

The following set of research objectives were formulated for the study.

1. To describe demographic characteristics of employees according to gender, educational background, age, current job position, number of years working in the company, number of training programs participated, number of TQM training program participated, familiarity with the TQM principles, and type of organizational department.

2. To describe selected characteristics of the businesses according to type of business, number of employees in the department, number of employees in the company, and number of years TQM implementation, and the location of the company.

3. To identify the relative importance of TQM as perceived by employees.

4. To identify the relative knowledge of TQM as perceived by employees.
5. To determine the TQM educational needs of employees.

6. To determine the relationship between perceived importance and knowledge.

7. To determine the relationships among selected demographic characteristics of the employees and their educational needs in TQM.

8. To determine the best set of variables to predict TQM educational needs.

**Research Hypotheses**

The following research hypotheses were established to fulfill the research purpose.

A. Relationships between personal variables and TQM educational needs

1. There will be a positive relationship between gender, when males are coded one and females are two, and TQM educational needs.

2. There will be a positive relationship between age and TQM educational needs.

3. There will be a negative relationship between educational background and TQM educational needs.

4. There will be a positive relationship between current job position and TQM educational needs.

5. There will be a negative relationship between number of years working in the company and TQM educational needs.

6. There will be a negative relationship between an index of training program participation and TQM educational needs.
7. There will be a negative relationship between index of participation in TQM training and TQM educational needs.

8. There will be a negative relationship between participants perceived familiarity with the principles of TQM and TQM educational needs.

9. There will be a relationship between the type of organizational department and TQM educational needs.

B. Relationships between business variables and TQM educational needs

10. There will be a relationship between type of business and TQM educational needs.

11. There will be a positive relationship between number of employees of the department and TQM educational needs.

12. There will be a positive relationship between number of employees of the company (size of company) and TQM educational needs.

13. There will be a negative relationship between number of years of TQM implementation in the business and TQM educational needs.

14. There will be a relationship between location of the organization and TQM educational needs.
Data Collection

Data collection was conducted from May 18 to June 10, 1995. The researcher visited each of the randomly selected departments. Before the personal visit, a telephone call was made to request permission and to provide information about the purpose of the research. The researcher delivered the questionnaire to each department and gave oral directions for completion of each part. All employees were asked to complete the questionnaire within 20 minutes. The completed questionnaires were collected when employees had answered all questions or at the end of 20 minutes.

Descriptive Data

In order to address the first and second objectives in describing selected demographic characteristics, descriptive statistics were used. Frequencies, percentages, and measures of central tendency were used to describe the characteristics and background of the employees and businesses. Personal and business demographic information included: gender, age, educational background, current job position, number of years working in the company, number of general training programs participated, number of TQM training programs, familiarity with the TQM principles, type of organizational department, type of business, number of employees in the department, number of employees in the company, number of years of TQM implementation, and the location of the company.
Personal Characteristics

Gender

Table 5 reported the frequency distribution for gender. Of the 377 respondents, 89.7% (338) were male, and 10.3% (39) were female.

<table>
<thead>
<tr>
<th>Gender</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>338</td>
<td>89.7</td>
</tr>
<tr>
<td>Female</td>
<td>39</td>
<td>10.3</td>
</tr>
<tr>
<td>Total</td>
<td>377</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Missing Data = 14

Age

Table 6 provided data on the respondents by age. The average age of all respondents was 34 years (34.42). Most of the respondents (76.2%) were less than 35 years. The respondents over 41 of age were 8.9% (35).
Table 6

Number and Percentage of Respondent by Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 and below</td>
<td>163</td>
<td>41.7</td>
</tr>
<tr>
<td>31 - 35</td>
<td>135</td>
<td>34.5</td>
</tr>
<tr>
<td>36 - 40</td>
<td>58</td>
<td>14.8</td>
</tr>
<tr>
<td>41 - 45</td>
<td>18</td>
<td>4.6</td>
</tr>
<tr>
<td>46 - 50</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>51 and above</td>
<td>8</td>
<td>2.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>391</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Mean = 34.4  
SD = 1.13

**Educational Background**

Table 7 described the educational background of the respondents. Of the 382 employees who responded, the majority of the respondents (71.5%) possessed a college graduate degree with 13.1 percent (50) holding a masters or doctoral degree (post graduate).
Table 7

Frequency and Percentage by Level of Educational Attainment

<table>
<thead>
<tr>
<th>Level of Education</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School Graduate</td>
<td>59</td>
<td>15.4</td>
</tr>
<tr>
<td>College Graduate</td>
<td>273</td>
<td>71.5</td>
</tr>
<tr>
<td>Post Graduate</td>
<td>50</td>
<td>13.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>382</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Missing Data = 9

Current Job Position

Table 8 presented data of the current job position of respondents. The majority of the respondents (74.9%) were office employees and assistant managers. The findings revealed that only five respondents (1.3%) were line employees; and four respondents (1.0%) were chief executive officers.
Table 8
Frequency and Percentage of Respondents by Current Job Position

<table>
<thead>
<tr>
<th>Job Position</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chief Officer Executive</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Director</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>Assistant Director</td>
<td>10</td>
<td>2.6</td>
</tr>
<tr>
<td>Manager</td>
<td>70</td>
<td>17.9</td>
</tr>
<tr>
<td>Assistant Manager</td>
<td>113</td>
<td>29.0</td>
</tr>
<tr>
<td>Office Employee</td>
<td>179</td>
<td>45.9</td>
</tr>
<tr>
<td>Line Employee</td>
<td>5</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>390</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Missing Data = 1

Years of Working in the Company

Table 9 presented the distribution of respondents by years of working in the company and revealed that most of respondents (92%) had worked for their companies for 13 years or less. On the other hand, only one percent of respondents (4) had worked over 24 years.
Table 9

Frequency and Percentage of Respondents by Number of Years Working for the Company

<table>
<thead>
<tr>
<th>Number of Working Years in Company</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 3 Years</td>
<td>135</td>
<td>34.5</td>
</tr>
<tr>
<td>4 - 8 Years</td>
<td>173</td>
<td>44.2</td>
</tr>
<tr>
<td>9 - 13 Years</td>
<td>54</td>
<td>13.8</td>
</tr>
<tr>
<td>14 - 18 Years</td>
<td>18</td>
<td>4.6</td>
</tr>
<tr>
<td>19 - 23 Years</td>
<td>7</td>
<td>1.8</td>
</tr>
<tr>
<td>Over 24 Years</td>
<td>4</td>
<td>1.0</td>
</tr>
<tr>
<td>Total</td>
<td>391</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Number of Training Programs in Which Respondents Had Participated

Table 10 described the number of training programs in which respondents had participated. Training programs included a new employee training course, an experienced employee training course, a new manager course, a new director course, a leader course, a CEO development course, study of a language, and/or a business letter writing course. The majority (58.1%) of the respondents indicated that they had participated in training programs between 1 and 3 times. Only 3.5% (10) of the respondents had attended educational programs 13 times or more. Of the 391 respondents, 26.0% (102) had not participated in any educational programs.
Table 10
Frequency and Percentage of Respondents by Number of Training Programs Participated

<table>
<thead>
<tr>
<th>Number of Training Program Participated</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 3 Times</td>
<td>168</td>
<td>58.1</td>
</tr>
<tr>
<td>4 - 6 Times</td>
<td>75</td>
<td>26.0</td>
</tr>
<tr>
<td>7 - 9 Times</td>
<td>25</td>
<td>8.7</td>
</tr>
<tr>
<td>10 - 12 Times</td>
<td>11</td>
<td>3.8</td>
</tr>
<tr>
<td>13 and Above</td>
<td>10</td>
<td>3.5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>289</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Missing Data = 102

Number of TQM Training Programs in Which Respondents Had Participated

Table 11 presented the number of TQM training programs in which respondents had participated. Of the 391 subjects who responded to the questionnaire, only 86 (22%) of the respondents had participated in TQM training programs. Moreover, 37 of the 86 respondents (43%) had attended an TQM educational program only one time. On the other hand, 6 (7.0%) had participated over 4 times.

Familiarity with the Principles of TQM

As indicated in Table 12, the majority of the respondents (40.6%) reported that their familiarity with the principles of TQM was to a very small degree. Only 24 of the respondents (6.3%) considered their familiarity with TQM principles was of a high or very high degree.
Table 11
Frequency and Percentage of Respondents by Number of TQM Training Programs

<table>
<thead>
<tr>
<th>Number of TQM Training Programs</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>One Time</td>
<td>37</td>
<td>43.0</td>
</tr>
<tr>
<td>Two Times</td>
<td>25</td>
<td>29.1</td>
</tr>
<tr>
<td>Three Times</td>
<td>10</td>
<td>11.6</td>
</tr>
<tr>
<td>Four Times</td>
<td>8</td>
<td>9.3</td>
</tr>
<tr>
<td>Over 4</td>
<td>6</td>
<td>7.0</td>
</tr>
<tr>
<td>Total</td>
<td>86</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Missing Data = 305

Table 12
Frequency and Percentage of Respondents by Familiarity of TQM Principles

<table>
<thead>
<tr>
<th>Familiarity of TQM Principles</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>To a Very Small Degree</td>
<td>157</td>
<td>40.6</td>
</tr>
<tr>
<td>Not Very Much</td>
<td>127</td>
<td>32.8</td>
</tr>
<tr>
<td>Moderately</td>
<td>79</td>
<td>20.4</td>
</tr>
<tr>
<td>To a High Degree</td>
<td>18</td>
<td>4.7</td>
</tr>
<tr>
<td>To a Very High Degree</td>
<td>6</td>
<td>1.6</td>
</tr>
<tr>
<td>Total</td>
<td>387</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Missing Data = 4
**Type of Organizational Department**

Table 13 presented findings on the type of organizational department of the respondents. In Korea, most companies categorized organizational departments by jobs. In general, organizational departments included planning, purchase, trade and marketing, personnel, manufacture, finance, and research development. This table showed that 109 of the respondents (28.2%) worked in jobs categorized as trade and marketing.

<table>
<thead>
<tr>
<th>Organizational Department</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning</td>
<td>32</td>
<td>8.3</td>
</tr>
<tr>
<td>Purchase</td>
<td>27</td>
<td>7.0</td>
</tr>
<tr>
<td>Trade &amp; Marketing</td>
<td>109</td>
<td>28.2</td>
</tr>
<tr>
<td>Personnel</td>
<td>32</td>
<td>8.3</td>
</tr>
<tr>
<td>Manufacture</td>
<td>27</td>
<td>7.0</td>
</tr>
<tr>
<td>Research Development</td>
<td>68</td>
<td>17.6</td>
</tr>
<tr>
<td>Finance</td>
<td>24</td>
<td>6.2</td>
</tr>
<tr>
<td>Others</td>
<td>68</td>
<td>17.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>387</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Missing Data = 4
Business Characteristics

Type of Business

Table 14 reported the type of business of the respondents. Of the 389 respondents, 29.8 percent of the respondents (116) indicated that they worked in jobs categorized as a machine industry. On the other hand, 2.1 percentage (8) worked in a food industry and 1.5% (6) were in jobs categorized as a textile industry.

<table>
<thead>
<tr>
<th>Type of Business</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric Industry</td>
<td>72</td>
<td>18.5</td>
</tr>
<tr>
<td>Machine Industry</td>
<td>116</td>
<td>29.8</td>
</tr>
<tr>
<td>Petrochemical Industry</td>
<td>35</td>
<td>9.0</td>
</tr>
<tr>
<td>Food Industry</td>
<td>8</td>
<td>2.1</td>
</tr>
<tr>
<td>Construction</td>
<td>50</td>
<td>12.9</td>
</tr>
<tr>
<td>Textile Industry</td>
<td>6</td>
<td>1.5</td>
</tr>
<tr>
<td>Finance Business</td>
<td>66</td>
<td>17.0</td>
</tr>
<tr>
<td>Others</td>
<td>36</td>
<td>9.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>389</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Missing Data = 2
Length of Time of TQM Implementation

Table 15 presented data on length of time since TQM implementation and indicated that 84.1% of the companies had been implementing the TQM principles. About 15% of the companies had been implementing TQM principles for 10 years or more, and about 14% of the respondents indicated that their companies had been implementing TQM principles for one year or less.

Table 15

Frequency and Percent of Respondents by Number of Years of TQM Implementation

<table>
<thead>
<tr>
<th>Years of TQM Implementation</th>
<th>Frequency</th>
<th>Percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less Than 1 Year</td>
<td>53</td>
<td>13.6</td>
</tr>
<tr>
<td>1 - 2 Years</td>
<td>44</td>
<td>11.3</td>
</tr>
<tr>
<td>3 - 4 Years</td>
<td>65</td>
<td>16.7</td>
</tr>
<tr>
<td>5 - 6 Years</td>
<td>26</td>
<td>6.7</td>
</tr>
<tr>
<td>7 - 8 Years</td>
<td>48</td>
<td>12.3</td>
</tr>
<tr>
<td>9 - 10 Years</td>
<td>34</td>
<td>8.7</td>
</tr>
<tr>
<td>Over 10 Years</td>
<td>58</td>
<td>14.9</td>
</tr>
<tr>
<td>Has not Implemented TQM</td>
<td>62</td>
<td>15.9</td>
</tr>
<tr>
<td>Total</td>
<td>390</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Missing Data = 1
Location of the Company

Table 16 revealed that the vast majority of the companies (73.4%) of the respondents were located in Seoul. Seoul is the capital city of Korea. About 20% (78) of the respondents worked in Kyung-Gi area. Kyung-Gi is the province surrounding the capital and includes two large cities. Others respondents (6.1%) included the cities of Pusan and Kyung-Ju.

Table 16

Frequency and Percent of Respondents by Company Location

<table>
<thead>
<tr>
<th>Location</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seoul</td>
<td>279</td>
<td>73.4</td>
</tr>
<tr>
<td>Kyung-Gi Area</td>
<td>78</td>
<td>20.5</td>
</tr>
<tr>
<td>Others</td>
<td>23</td>
<td>6.1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>380</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Missing Data = 11
The Perceived Importance, Knowledge the Employees Possessed and Calculated TQM Educational Needs

The data were analyzed using SAS. The third, fourth, and fifth study objectives for determining the TQM educational needs of employees in this study were: to identify the relative importance of TQM as perceived by employees, to identify the relative knowledge of TQM as perceived by employees, and to determine the TQM educational needs of employees. These three objectives were accomplished through the computation of the perceived importance, perceived knowledge and the TQM educational needs.

Table 17 through Table 20 presented mean scores and standard deviations of the 49 TQM competencies under four domains -- organizational culture change, employee involvement and team work, top management leadership and support, and customer satisfaction -- by the perceived importance and knowledge as rated by respondents. In addition, each table indicated mean and standard deviation of TQM educational needs, and then rank ordered the 49 competencies of educational needs under the four TQM domains. TQM educational needs was computed using the Borich formula. Thus, discrepancy scores between perceived importance and level of knowledge were multiplied by the importance mean for that item of all respondents.

Table 17 provided rankings of TQM educational needs for the 12 competencies associated with organizational culture. As shown in Table 17, the three greatest TQM educational needs of employees were (1) communication of an active flow of ideas, (2) encouraging new ideas, and (3) inspecting the quality of the final products or service. On the other hand, the least needed TQM educational competencies for organizational culture were (1) formal procedures and structures in the organization, (2) decisions by upper management, and (3) supporting work groups within the organization. The first
three rankings of TQM educational needs — communication of an active flow of ideas, encouraging new ideas, and inspecting the quality of the final products or service — were the same top ranks for perceived importance. The three highest ranked competencies in possessed knowledge were (1) encouraging team members to work together, (2) formal procedures and structures in the organization, and (3) decision by upper management. The means for perceived importance ranged from 4.31 to 5.39. Mean scores of level of knowledge possessed ranged from 3.12 to 3.58.
Table 17
Means and Standard Deviations of the Perceived Importance and Knowledge Possessed and Rank Order of TQM Competencies Related to Organizational Culture

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Importance M</th>
<th>SD</th>
<th>Knowledge M</th>
<th>SD</th>
<th>Rank</th>
<th>Educational Needs M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication of an active flow of ideas</td>
<td>5.30</td>
<td>1.03</td>
<td>3.25</td>
<td>0.96</td>
<td>1</td>
<td>10.99</td>
<td>6.53</td>
</tr>
<tr>
<td>Protecting employees territory in the organization</td>
<td>4.77</td>
<td>1.08</td>
<td>3.12</td>
<td>1.03</td>
<td>6</td>
<td>7.91</td>
<td>6.61</td>
</tr>
<tr>
<td>Encouraging new ideas</td>
<td>5.39</td>
<td>0.93</td>
<td>3.40</td>
<td>1.12</td>
<td>2</td>
<td>10.78</td>
<td>7.70</td>
</tr>
<tr>
<td>Formal procedures and structures in the organization</td>
<td>4.31</td>
<td>1.22</td>
<td>3.57</td>
<td>1.05</td>
<td>12</td>
<td>3.29</td>
<td>6.96</td>
</tr>
<tr>
<td>Creating an open atmosphere</td>
<td>4.98</td>
<td>1.08</td>
<td>3.44</td>
<td>1.14</td>
<td>5</td>
<td>7.94</td>
<td>7.15</td>
</tr>
<tr>
<td>Supporting work group within the organization</td>
<td>4.67</td>
<td>1.07</td>
<td>3.35</td>
<td>1.05</td>
<td>10</td>
<td>6.39</td>
<td>6.06</td>
</tr>
<tr>
<td>Encouraging team members to work together</td>
<td>5.02</td>
<td>1.11</td>
<td>3.58</td>
<td>1.09</td>
<td>8</td>
<td>7.54</td>
<td>6.82</td>
</tr>
<tr>
<td>Creating a culture to regularly collect quality information about the work</td>
<td>4.76</td>
<td>1.14</td>
<td>3.23</td>
<td>1.03</td>
<td>7</td>
<td>7.64</td>
<td>6.12</td>
</tr>
<tr>
<td>Inspecting the quality of the final products or service</td>
<td>5.31</td>
<td>1.03</td>
<td>3.53</td>
<td>1.15</td>
<td>3</td>
<td>9.44</td>
<td>7.29</td>
</tr>
<tr>
<td>Decisions by upper management</td>
<td>4.68</td>
<td>1.14</td>
<td>3.56</td>
<td>1.20</td>
<td>11</td>
<td>5.42</td>
<td>7.11</td>
</tr>
<tr>
<td>A supportive climate for solving problems</td>
<td>5.09</td>
<td>1.08</td>
<td>3.50</td>
<td>1.09</td>
<td>4</td>
<td>8.53</td>
<td>7.37</td>
</tr>
<tr>
<td>Encouraging critical thinking</td>
<td>4.74</td>
<td>1.11</td>
<td>3.22</td>
<td>1.13</td>
<td>9</td>
<td>7.22</td>
<td>7.02</td>
</tr>
<tr>
<td>Grand Total</td>
<td>4.92</td>
<td>1.09</td>
<td>3.40</td>
<td>1.09</td>
<td>7.76</td>
<td>6.90</td>
<td></td>
</tr>
</tbody>
</table>

* See Appendix C for the Raw Data
Table 18 indicated rankings of TQM educational needs for 12 competencies related to employees involvement and team work. The most needed TQM competencies in the domain of employees involvement and team work were (1) profit sharing, (2) team incentive in work group, and (3) a sense of job ownership. On the other hand, the least needed competencies were (1) designing work to be accomplished by teams, (2) group cohesion and interaction within work groups, and (3) non-monetary recognition awards for performance. The mean scores of perceived importance ranged from 4.76 to 5.28. The first three ranked competencies under perceived importance were (1) a sense of job ownership, (2) responsibility of every employee for quality, and (3) effective communication with fellow employees. The means scores of knowledge competencies ranged from 3.10 to 3.61. The first two competencies in level of knowledge were a sense of job ownership and effective communication with fellow employees.
Table 18
Means, Standard Deviations and Rank Order of the Perceived Importance, Amount of Knowledge Possessed and the Calculated TQM Educational Needs of Competencies Related to Employee Involvement and Team Work

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Importance M</th>
<th>Importance SD</th>
<th>Knowledge M</th>
<th>Knowledge SD</th>
<th>Rank</th>
<th>Educational Needs M</th>
<th>Educational Needs SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality control</td>
<td>4.76</td>
<td>1.07</td>
<td>3.16</td>
<td>1.17</td>
<td>9</td>
<td>7.73</td>
<td>6.70</td>
</tr>
<tr>
<td>Employment security</td>
<td>5.04</td>
<td>1.08</td>
<td>3.34</td>
<td>1.11</td>
<td>6</td>
<td>8.52</td>
<td>7.19</td>
</tr>
<tr>
<td>Profit sharing</td>
<td>5.07</td>
<td>1.04</td>
<td>3.10</td>
<td>1.06</td>
<td>1</td>
<td>10.09</td>
<td>7.80</td>
</tr>
<tr>
<td>Team incentive in work group</td>
<td>5.03</td>
<td>1.02</td>
<td>3.18</td>
<td>1.06</td>
<td>2</td>
<td>9.53</td>
<td>7.18</td>
</tr>
<tr>
<td>Non-monetary recognition awards for performance</td>
<td>4.77</td>
<td>1.07</td>
<td>3.21</td>
<td>1.07</td>
<td>10</td>
<td>7.71</td>
<td>6.94</td>
</tr>
<tr>
<td>A sense of job ownership</td>
<td>5.28</td>
<td>1.04</td>
<td>3.61</td>
<td>1.17</td>
<td>3</td>
<td>9.15</td>
<td>7.75</td>
</tr>
<tr>
<td>Responsibility of every employees for quality</td>
<td>5.15</td>
<td>1.07</td>
<td>3.45</td>
<td>1.11</td>
<td>4</td>
<td>8.99</td>
<td>7.50</td>
</tr>
<tr>
<td>Designing work to be accomplished by teams</td>
<td>4.84</td>
<td>0.93</td>
<td>3.37</td>
<td>1.08</td>
<td>12</td>
<td>7.30</td>
<td>6.51</td>
</tr>
<tr>
<td>Group cohesion and interaction within work group</td>
<td>4.94</td>
<td>0.97</td>
<td>3.45</td>
<td>1.07</td>
<td>11</td>
<td>7.60</td>
<td>6.50</td>
</tr>
<tr>
<td>Employee involvement in making decisions that affect their jobs</td>
<td>4.98</td>
<td>1.00</td>
<td>3.29</td>
<td>1.08</td>
<td>5</td>
<td>8.68</td>
<td>6.80</td>
</tr>
<tr>
<td>Effective communication with fellow employees</td>
<td>5.10</td>
<td>0.94</td>
<td>3.55</td>
<td>1.03</td>
<td>8</td>
<td>8.67</td>
<td>6.63</td>
</tr>
<tr>
<td>Concern of employees with the need for quality</td>
<td>4.99</td>
<td>0.92</td>
<td>3.42</td>
<td>1.07</td>
<td>7</td>
<td>8.09</td>
<td>6.63</td>
</tr>
<tr>
<td>Grand Total</td>
<td>5.00</td>
<td>1.01</td>
<td>3.34</td>
<td>1.09</td>
<td></td>
<td>8.45</td>
<td>7.01</td>
</tr>
</tbody>
</table>

* See Appendix C for the Raw Data
Table 19 presented rankings of TQM educational needs for 12 competencies associated with top management leadership and support. According to Table 19, the most needed competencies for employees were (1) providing adequate training activities for quality, (2) elimination of barriers that prevent teams or individuals from achieving quality performance, and (3) participation in related activities of quality improvement. In the mean time, the least needed competencies were (1) maintaining definite standards of performance, (2) encouraging the use of uniform procedure, and (3) interpersonal skills. Mean scores for perceived importance by respondents ranged from 3.36 to 4.95. The first three ranked competencies of TQM educational needs -- providing adequate training activities for quality, elimination of barriers that prevent teams or individuals from achieving quality performance, and participation in related activities of quality improvement -- were ranked the same for the perceived importance competencies. Furthermore, the three least ranked TQM educational competencies had the same rank order with importance competencies. Thus, employees perceived as less important maintaining definite standards of performance, encouraging the use of uniform procedures, and interpersonal skills.

Mean scores of respondents for knowledge competencies ranged from 3.12 to 3.62. The first three competencies in knowledge employees possessed were (1) regularly reviewing the organization's progress toward meeting its goals and objectives, (2) interpersonal skills, and (3) maintaining definite standards of performance.
Table 19
Means, Standard Deviations and Rank Order of the Perceived Importance, Amount of Knowledge Possessed and the Calculated TQM Educational Needs of Competencies Related to Top Management Leadership and Support

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Importance M</th>
<th>SD</th>
<th>Knowledge M</th>
<th>SD</th>
<th>Rank</th>
<th>Educational Needs M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in related activities of quality improvement</td>
<td>4.87</td>
<td>0.96</td>
<td>3.22</td>
<td>1.01</td>
<td>3</td>
<td>8.13</td>
<td>6.05</td>
</tr>
<tr>
<td>Providing adequate training activities for quality</td>
<td>4.95</td>
<td>0.95</td>
<td>3.12</td>
<td>1.09</td>
<td>1</td>
<td>9.18</td>
<td>6.96</td>
</tr>
<tr>
<td>Establishment of a quality council, committee or team to initiate quality improvement efforts</td>
<td>4.67</td>
<td>1.10</td>
<td>3.20</td>
<td>1.05</td>
<td>6</td>
<td>6.87</td>
<td>6.31</td>
</tr>
<tr>
<td>Taking personal responsibility for quality improvement</td>
<td>4.66</td>
<td>1.16</td>
<td>3.30</td>
<td>1.12</td>
<td>8</td>
<td>6.53</td>
<td>6.42</td>
</tr>
<tr>
<td>Elimination of barriers that prevent teams or individuals from achieving quality performance</td>
<td>4.94</td>
<td>0.97</td>
<td>3.22</td>
<td>1.08</td>
<td>2</td>
<td>8.81</td>
<td>6.37</td>
</tr>
<tr>
<td>Maintaining definite standards of performance</td>
<td>3.36</td>
<td>1.42</td>
<td>3.38</td>
<td>1.02</td>
<td>12</td>
<td>0.09</td>
<td>5.57</td>
</tr>
<tr>
<td>Networking with other departments or divisions in order to share quality improvement</td>
<td>4.69</td>
<td>1.10</td>
<td>3.20</td>
<td>1.04</td>
<td>5</td>
<td>7.29</td>
<td>6.41</td>
</tr>
<tr>
<td>Keeping the group informed</td>
<td>4.81</td>
<td>0.95</td>
<td>3.26</td>
<td>1.02</td>
<td>4</td>
<td>7.80</td>
<td>6.24</td>
</tr>
<tr>
<td>Encouraging the use of uniform procedures</td>
<td>3.96</td>
<td>1.33</td>
<td>3.27</td>
<td>0.97</td>
<td>11</td>
<td>2.82</td>
<td>5.87</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>4.53</td>
<td>1.09</td>
<td>3.45</td>
<td>1.04</td>
<td>10</td>
<td>5.16</td>
<td>5.81</td>
</tr>
</tbody>
</table>
Cont'd Table 19

<table>
<thead>
<tr>
<th>Description</th>
<th>Value1</th>
<th>Value2</th>
<th>Value3</th>
<th>Value4</th>
<th>Value5</th>
<th>Value6</th>
<th>Value7</th>
<th>Value8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regularly reviewing the quality work</td>
<td>4.65</td>
<td>1.02</td>
<td>3.27</td>
<td>1.07</td>
<td>7</td>
<td>6.75</td>
<td>6.59</td>
<td></td>
</tr>
<tr>
<td>Regularly reviewing the organization's progress toward meeting its goals and objectives</td>
<td>4.73</td>
<td>1.03</td>
<td>3.62</td>
<td>1.13</td>
<td>9</td>
<td>5.51</td>
<td>6.57</td>
<td></td>
</tr>
<tr>
<td>Grand Total</td>
<td>4.57</td>
<td>1.09</td>
<td>3.29</td>
<td>1.05</td>
<td></td>
<td>6.24</td>
<td>6.27</td>
<td></td>
</tr>
</tbody>
</table>

* See Appendix C for the Raw Data
Table 20 presented rankings of TQM educational needs for the 13 competencies associated with customer satisfaction. The most needed educational competencies were (1) learning about surveys that go beyond current customers, (2) providing timely service consistent with customer needs, and (3) a customer focused attitude. In contrast, the three least needed competencies were (1) recognizing the individuality of each customer, (2) routine analysis on customer feedback, and (3) understanding the concepts of the external customer. Means scores of respondents for perceived importance ranged from 4.58 to 5.28. The first three importance competencies perceived by employees were (1) customer focused attitude, (2) providing timely service consistent with customer needs, and (3) checking to see what customers need. Mean scores for level of knowledge possessed ranged from 3.12 to 3.65. The first three competencies for level of knowledge employees possessed were (1) customer focused attitude, (2) understanding the concepts of the external customers, and (3) recognizing satisfied customers as long-term profits.
Table 20
Means, Standard Deviations and Rank Order of the Perceived Importance, Amount of Knowledge Possessed and the Calculated TQM Educational Needs of Competencies Related to Customer Satisfaction

<table>
<thead>
<tr>
<th>Competencies</th>
<th>Importance M</th>
<th>SD</th>
<th>Knowledge M</th>
<th>SD</th>
<th>Educational Needs Rank</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Understanding the concepts of the internal customer</td>
<td>5.03</td>
<td>0.98</td>
<td>3.38</td>
<td>1.11</td>
<td>9</td>
<td>8.51</td>
<td>6.82</td>
</tr>
<tr>
<td>Meeting with vendors suppliers to discuss quality</td>
<td>4.91</td>
<td>0.97</td>
<td>3.38</td>
<td>1.12</td>
<td>10</td>
<td>7.67</td>
<td>6.61</td>
</tr>
<tr>
<td>Checking to see what customers need</td>
<td>5.15</td>
<td>0.94</td>
<td>3.39</td>
<td>1.14</td>
<td>4</td>
<td>9.22</td>
<td>7.03</td>
</tr>
<tr>
<td>Planning customer meetings to get their insight, reaction, and advice</td>
<td>4.90</td>
<td>1.01</td>
<td>3.21</td>
<td>1.13</td>
<td>8</td>
<td>8.54</td>
<td>6.77</td>
</tr>
<tr>
<td>Understanding the concepts of the external customer</td>
<td>4.96</td>
<td>1.01</td>
<td>3.53</td>
<td>1.14</td>
<td>11</td>
<td>7.52</td>
<td>6.83</td>
</tr>
<tr>
<td>Predicting customer behavior</td>
<td>5.14</td>
<td>0.93</td>
<td>3.42</td>
<td>1.15</td>
<td>5</td>
<td>9.18</td>
<td>6.94</td>
</tr>
<tr>
<td>Recognizing satisfied customers as a long-term profit</td>
<td>5.12</td>
<td>0.98</td>
<td>3.50</td>
<td>1.20</td>
<td>7</td>
<td>8.66</td>
<td>7.14</td>
</tr>
<tr>
<td>Surveys go beyond current customers</td>
<td>4.94</td>
<td>0.97</td>
<td>3.12</td>
<td>1.23</td>
<td>1</td>
<td>9.35</td>
<td>7.13</td>
</tr>
<tr>
<td>Having service standards derived from customer requirements</td>
<td>5.07</td>
<td>0.98</td>
<td>3.38</td>
<td>1.12</td>
<td>6</td>
<td>8.94</td>
<td>6.98</td>
</tr>
<tr>
<td>Routine analysis on customer feedback</td>
<td>4.72</td>
<td>1.03</td>
<td>3.27</td>
<td>1.07</td>
<td>12</td>
<td>7.27</td>
<td>6.05</td>
</tr>
<tr>
<td>Recognizing the individuality of each customer</td>
<td>4.58</td>
<td>1.06</td>
<td>3.17</td>
<td>1.12</td>
<td>13</td>
<td>6.95</td>
<td>5.99</td>
</tr>
</tbody>
</table>
Cont'd Table 20

<table>
<thead>
<tr>
<th></th>
<th>5.15</th>
<th>1.03</th>
<th>3.47</th>
<th>1.18</th>
<th>2</th>
<th>9.28</th>
<th>7.22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providing timely service</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>consistent with customer needs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer focused attitude</td>
<td>5.28</td>
<td>1.08</td>
<td>3.65</td>
<td>1.22</td>
<td>3</td>
<td>9.27</td>
<td>7.57</td>
</tr>
<tr>
<td>Grand Total</td>
<td>5.00</td>
<td>1.00</td>
<td>3.37</td>
<td>1.15</td>
<td>8.49</td>
<td>6.85</td>
<td></td>
</tr>
</tbody>
</table>

* See Appendix C for the Raw Data
Table 21 showed the grand mean scores and standard deviations for the four domains of TQM educational needs of employees. Table 21 indicated rankings of TQM educational needs for the four domains by using grand means. According to Table 21, the most needed TQM domain for employees was customer satisfaction, while the least needed domain for employees was top management leadership and support. Mean scores for the four domains ranged from 6.24 to 8.49.

Table 21
The Grand Means, Standard Deviations, and Ranks Order for the Four Domains of Educational Needs

<table>
<thead>
<tr>
<th>Variables</th>
<th>M</th>
<th>SD</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1</td>
<td>7.76</td>
<td>6.90</td>
<td>3</td>
</tr>
<tr>
<td>Q2</td>
<td>8.45</td>
<td>7.01</td>
<td>2</td>
</tr>
<tr>
<td>Q3</td>
<td>6.24</td>
<td>6.27</td>
<td>4</td>
</tr>
<tr>
<td>Q4</td>
<td>8.49</td>
<td>6.85</td>
<td>1</td>
</tr>
<tr>
<td>Grand Total</td>
<td>7.74</td>
<td>6.76</td>
<td></td>
</tr>
</tbody>
</table>

n=391

Q1: Organizational Culture
Q2: Employee Involvement and Team Work
Q3: Top Management Leadership and Support
Q4: Customer Satisfaction
The Relationship Between Perceived Importance and Knowledge Possessed

The sixth research objective of this study was to determine the relationships between perceived importance and level of knowledge employees possessed under each of the four domains: organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction. In order to meet research Objective 6, a correlation matrix was constructed and presented in Table 22.

As indicated in Table 22, to determine the relationships between importance and knowledge, the Pearson product moment correlation coefficients (r) were calculated. The Pearson product moment correlation coefficients (r) for the four domains ranged from .68 to .78. Therefore, the relationships were positive and substantial to very strong. These interrelationships among the four domains provided further evidence of a single underlying construct that could be conceptualized to be perceptions of TQM.

The data indicated the relationships among the four domains;

1. The Pearson product moment correlation coefficient (r) for the relationship between organizational culture and employee involvement and team work was .78. Therefore, a very strong positive relationship existed and as organizational culture score increased so did employee involvement and team work scores.

2. The Pearson product moment correlation coefficient (r) for the relationship between organizational culture and top management leadership and support was .69. Therefore, there was a substantial positive relationship and as organizational culture scores increased so did top management leadership and support score.
3. The Pearson product moment correlation coefficient \( r \) for the relationship between top management leadership and support and employee involvement and team work was .76. Therefore, a very strong positive relationship existed and as top management leadership and support scores increased so did employee involvement and team work scores.

4. The Pearson product moment correlation coefficient \( r \) for the relationship between organizational culture and customer satisfaction was .68. Therefore, a substantial positive relationship existed and as organizational culture scores increased so did customer satisfaction scores.

5. The Pearson product moment correlation coefficient \( r \) for the relationship between customer satisfaction and employee involvement and team work was .73. Therefore, there was very strong positive relationship and as customer satisfaction scores increased so did employee involvement and team work scores.

6. The Pearson product moment correlation coefficient \( r \) for the relationship between customer satisfaction and top management leadership and support was .73. Therefore, a very strong positive relationship existed and as customer satisfaction scores increased so did top management leadership and support scores.
Table 22

The Relationship between Perceived Importance and Knowledge Possessed

<table>
<thead>
<tr>
<th>Knowledge</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1: Organizational Culture</td>
<td>1.00</td>
<td>0.78</td>
<td>0.69</td>
<td>0.68</td>
</tr>
<tr>
<td>Q2: Employee Involvement and Team Work</td>
<td>1.00</td>
<td>0.76</td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>Q3: Top Management Leadership and Support</td>
<td>1.00</td>
<td></td>
<td>0.73</td>
<td></td>
</tr>
<tr>
<td>Q4: Customer Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td>1.00</td>
</tr>
</tbody>
</table>

Q1: Organizational Culture
Q2: Employee Involvement and Team Work
Q3: Top Management Leadership and Support
Q4: Customer Satisfaction

The Relationship Between Selected Variables and TQM Educational Needs for Four Domains

The seventh objective of this study was to determine the relationships among selected personal and business characteristics and their TQM educational needs under four domains -- organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction.

Table 23 presented the relationships among each of the selected independent variables -- personal and business variables -- and TQM educational needs under each of the four domains. According to the scale suggested by Davis (1971), the correlation
coefficients between the personal and business variables and the four domains of TQM educational needs revealed a range from negligible to low relationships.

Among the selected independent variables, familiarity with the TQM principles had low relationship with each of the four domains of organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction. Two domains -- employee involvement and team work and top management leadership and support -- had low relationships with gender and educational background.

The rest of the correlations, as shown in Table 23, were negligible. In other words, in all four domains, data revealed that there was negligible relationships between in the TQM educational needs of the respondents and their age, the current job position, number of years working in the company, number of training programs had participated, type of organizational department, type of business, number of employees in the department, number of employees in the company, number of years in TQM implementation, and the location of the company. This would indicate that irrespective of the personal or business characteristics the respondents varied in their TQM educational needs.
Table 23
Correlation Matrix of TQM Educational Needs and Selected Independent Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>.06</td>
<td>.10</td>
<td>.11</td>
<td>.02</td>
</tr>
<tr>
<td>B</td>
<td>-.02</td>
<td>-.04</td>
<td>-.06</td>
<td>.02</td>
</tr>
<tr>
<td>C</td>
<td>-.04</td>
<td>-.13</td>
<td>-.18</td>
<td>-.06</td>
</tr>
<tr>
<td>D</td>
<td>.03</td>
<td>.06</td>
<td>-.07</td>
<td>.03</td>
</tr>
<tr>
<td>E</td>
<td>-.02</td>
<td>.01</td>
<td>-.02</td>
<td>.06</td>
</tr>
<tr>
<td>F</td>
<td>-.01</td>
<td>.02</td>
<td>-.09</td>
<td>-.002</td>
</tr>
<tr>
<td>G</td>
<td>.01</td>
<td>-.07</td>
<td>-.08</td>
<td>-.02</td>
</tr>
<tr>
<td>H</td>
<td>-.18</td>
<td>-.15</td>
<td>-.21</td>
<td>.13</td>
</tr>
<tr>
<td>I</td>
<td>.06</td>
<td>.07</td>
<td>.07</td>
<td>.03</td>
</tr>
<tr>
<td>J</td>
<td>-.06</td>
<td>-.08</td>
<td>-.03</td>
<td>-.03</td>
</tr>
<tr>
<td>K</td>
<td>.02</td>
<td>.03</td>
<td>-.06</td>
<td>-.01</td>
</tr>
<tr>
<td>L</td>
<td>-.01</td>
<td>-.003</td>
<td>-.08</td>
<td>.05</td>
</tr>
<tr>
<td>M</td>
<td>-.03</td>
<td>-.02</td>
<td>-.03</td>
<td>.01</td>
</tr>
<tr>
<td>N</td>
<td>-.01</td>
<td>.03</td>
<td>.03</td>
<td>.06</td>
</tr>
</tbody>
</table>

Q1: Organizational Culture
Q2: Employee Involvement and Team Work
Q3: Top Management Leadership and Support
Q4: Customer Satisfaction

A: Gender (Coded as Male = 1; Female = 2)
B: Age
C: Educational Background
D: Current Job Position
E: Number of Years Working in The Company
F: Number of Training Programs Had Participated
G: Number of TQM Training Programs Had Participated
H: Familiarity with The TQM Principles
I: Type of Organizational Department
   (Coded as Planning = 1; Purchase = 2; Trade & Marketing = 3; Personnel = 4; Manufacture = 5; Research Development = 6; Finance = 7; Others = 8)
J: Type of Business
   (Coded as Electric Industry = 1; Machine Industry = 2; Petrochemical Industry = 3; Food Industry = 4; Construction = 5; Textile Industry = 6; Finance Business = 7, Others = 8)
Predictors of TQM Educational Needs

The eighth objective was to determine the best set of variables to predict TQM educational needs. However, the correlations matrix revealed either low or negligible relationships between each of the selected independent variables and TQM educational needs for the four domains. In other words, most of personal and business characteristics did not have a great impact on explaining respondents' TQM educational needs. Therefore, regression was not conducted to address research Objective 8. This decision was based upon the premise that the independent and dependent variables should have been correlated prior to regressing TQM educational needs upon the independent variables.

Respondents were homogeneous as related to the dependent variables. Future researchers do not need to be concerned about people being different on these independent variables regarding TQM educational needs.
Hypotheses Testing

In order to test the hypotheses, the relationships between personal and business variables are presented Table 24. The personal variables included: gender, age, educational background, current background, number of years working, number of training programs, number of TQM training programs, familiarity with the TQM principles, type of organizational department. The business variables consisted of type of business, number of employees in department, number of employees in company, number of years of TQM implementation, and location.
Table 24
Correlation Matrix of TQM Educational Needs and Selected Personal and Business Variables

<table>
<thead>
<tr>
<th>Personal /Business Variables</th>
<th>Statistics</th>
<th>Correlation Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>$r_{pb}$</td>
<td>.08</td>
</tr>
<tr>
<td>Age</td>
<td>$r_s$</td>
<td>-.03</td>
</tr>
<tr>
<td>Educational background</td>
<td>$r_s$</td>
<td>-.11</td>
</tr>
<tr>
<td>Current job position</td>
<td>$r_s$</td>
<td>.03</td>
</tr>
<tr>
<td>Number of years working in the company</td>
<td>$r$</td>
<td>.01</td>
</tr>
<tr>
<td>Number of training programs had participated</td>
<td>$r$</td>
<td>-.02</td>
</tr>
<tr>
<td>Number of TQM training programs had participated</td>
<td>$r$</td>
<td>-.04</td>
</tr>
<tr>
<td>Familiarity with the TQM principles</td>
<td>$r_s$</td>
<td>-.18</td>
</tr>
<tr>
<td>Type of organizational department</td>
<td>$r_{pb}$</td>
<td>.02</td>
</tr>
<tr>
<td>Type of business</td>
<td>$r_{pb}$</td>
<td>-.02</td>
</tr>
<tr>
<td>Number of employees of the department</td>
<td>$r$</td>
<td>-.01</td>
</tr>
<tr>
<td>Number of employees of the company</td>
<td>$r$</td>
<td>-.01</td>
</tr>
<tr>
<td>Number of years of TQM implementation</td>
<td>$r$</td>
<td>-.02</td>
</tr>
<tr>
<td>Location</td>
<td>$r_{pb}$</td>
<td>.03</td>
</tr>
</tbody>
</table>

$r_{pb}$ = Point Biserial Correlation Coefficient

$r$ = Pearson Product Moment Correlation Coefficient

$r_s$ = Spearman Rank-Order Correlation Coefficient
A. Relationships between personal variables and TQM educational needs

Hypothesis 1: There will be no relationship between gender and TQM educational needs.

As shown in Table 24, a negligible positive relationship existed between gender and TQM educational needs. The point biserial correlation coefficient was .08. While a relationship was found (.08), this relationship would be termed negligible (Davis, 1971).

Hypothesis 2: There will be no relationship between age and TQM educational needs.

As shown in Table 24, a negligible negative relationship existed between age of respondents and TQM educational needs. The Spearman rank-order correlation coefficient value ($r_s$) was -.03. While a relationship was found (-.03), this relationship would be termed negligible (Davis, 1971).

Hypothesis 3: There will be no relationship between educational background and TQM educational needs.

As shown in Table 24, a low negative relationship existed between educational background of respondents and TQM educational needs. The Spearman rank-order correlation coefficient ($r_s$) was -.11. While a relationship was found (-.11), this relationship would be termed low (Davis, 1971).

Hypothesis 4: There will be no relationship between the current job position and TQM educational needs.

As shown in Table 24, a negligible positive relationship existed between the current job position and TQM educational needs. The Spearman rank-order correlation coefficient was .03. While a relationship was found (.03), this relationship would be termed negligible (Davis, 1971).
Hypothesis 5: There will be no relationship between number years of working in the company and TQM educational needs.

As shown in Table 24, the relationship between number of working in the company and TQM educational needs was negligible and positive. Pearson product moment correlation coefficient (r) was .01. While a relationship was found (.01), this relationship would be termed negligible (Davis, 1971).

Hypothesis 6: There will be no relationship between number of training programs had participated and TQM educational needs.

As shown in Table 24, a negligible negative relationship existed between number of training programs in which the respondents had participated and TQM educational needs. The Pearson product moment correlation coefficient (r) was -.02. While a relationship was found (-.02), this would be termed negligible (Davis, 1971).

Hypothesis 7: There will be no relationship between number of TQM training program had participated and TQM educational needs.

As shown in Table 24, a negligible negative relationship existed between number of TQM training program in which the respondents had participated and TQM educational needs. The Pearson product moment correlation coefficient (r) was -.04. While a relationship was found (-.04), this relationship would be termed negligible (Davis, 1971).

Hypothesis 8: There will be no relationship between familiarity with TQM principles and TQM educational needs.

As shown in Table 24, a low negative relationship existed between familiarity with TQM principles and TQM educational needs. The Spearman rank-order correlation coefficient was -.18. While a relationship was found (-.18), this relationship would be termed low (Davis, 1971).
Hypothesis 9: There will be no relationship between type of organizational department and TQM educational needs.

As shown in Table 24, a negligible positive relationship existed between type of organizational department of respondents and TQM educational needs. The point biserial correlation coefficient was .06. While a relationship was found (.06), this relationship would be termed negligible (Davis, 1971).

B. Relationships between business variables and TQM educational needs

Hypothesis 10: There will be no relationship between type of business and TQM educational needs.

As shown in Table 24, a negligible negative relationship existed between type of business and TQM educational needs. The point biserial correlation coefficient was -.06. While a relationship was found (-.06), this relationship would be termed negligible (Davis, 1971).

Hypothesis 11: There will be no relationship between number of employees in department and TQM educational needs.

As shown in Table 24, a negligible negative relationship existed between number of employees in department and TQM educational needs. The Pearson product moment correlation coefficient (r) was -.01. While a relationship was found (-.01), this relationship would be termed negligible (Davis, 1971).
Hypothesis 12: There will be no relationship between number of employees in company and TQM educational needs.

As shown in Table 24, the Pearson product moment correlation coefficient ($r$) for the relationship between number of employees in company and TQM educational needs was - .01. This relationship was negligible and negative. While a relationship was found (- .01), this relationship would be termed negligible (Davis, 1971).

Hypothesis 13: There will be no relationship between number of years of TQM implementation and TQM educational needs.

As shown in Table 24, the Pearson product moment correlation coefficient ($r$) between number of years in TQM implementation and TQM educational needs was - .02. The relationship was negative and negligible. While a relationship was found (- .02), this relationship would be termed negligible (Davis, 1971).

Hypothesis 14: There will be no relationship between company location and TQM educational needs.

As shown in Table 24, a negligible positive relationship existed between company location and TQM educational needs. The point biserial correlation coefficient ($r_{pb}$) was .03. While a relationship was found (.03), this relationship would be termed negligible (Davis, 1971).

In conclusion, low correlations can result from the lack of variability in the variables being correlated. In this study, correlations tended to be low and negligible which may reflect the lack of variation in the variables being correlated.
CHAPTER V

SUMMARY AND RECOMMENDATION

The purpose of this study was to determine the TQM educational needs of selected Korean employees and businesses, to describe the characteristics of employees and businesses, and to determine the relationship among these selected personal and business variables and TQM educational needs.

Variables

This study was designed to measure the following variables:

Independent variables

A. Personal Variables
   Gender
   Age
   Educational background
   Current job position
   Number of years working in the company
   Number of training programs participated
   Number of TQM training programs participated
   Familiarity with the TQM principles
   Type of organizational department
B. **Business Variables**

Type of business

Number of employees in the department

Number of employees in the company

Number of years of TQM implementation

The location of the company

**Dependent Variable**

TQM educational needs

**Research Objectives**

The following set of research objectives were formulated for the study.

1. To describe demographic characteristics of employees according to gender, educational background, age, current job position, number of years working in the company, number of training programs participated, number of TQM training program participated, familiarity with the TQM principles, and type of organizational department.

2. To describe selected characteristics of the businesses according to type of business, number of employees in the department, number of employees in the company, and number of years TQM implementation, and the location of a company.

3. To identify the relative importance of TQM as perceived by employees.

4. To identify the relative knowledge of TQM as perceived by employees.
5. To determine the TQM educational needs of employees.

6. To determine the relationship between perceived importance and knowledge.

7. To determine the relationships among selected demographic characteristics of the employees and their educational needs in TQM.

8. To determine the best set of variables to predict TQM educational needs.

**Research Hypotheses**

The following research hypotheses were established to fulfill the research purpose.

A. Relationships between personal variables and TQM educational needs

1. There will be a positive relationship between gender, when males are coded one and females are two, and TQM educational needs.

2. There will be a positive relationship between age and TQM educational needs.

3. There will be a negative relationship between educational background and TQM educational needs.

4. There will be a positive relationship between current job position and TQM educational needs.

5. There will be a negative relationship between number of years working in the company and TQM educational needs.
6. There will be a negative relationship between an index of training program participation and TQM educational needs.

7. There will be a negative relationship between index of participation in TQM training and TQM educational needs.

8. There will be a negative relationship between participants perceived familiarity with the principles of TQM and TQM educational needs.

9. There will be a relationship between the type of organizational department and TQM educational needs.

B. Relationships between business variables and TQM educational needs

10. There will be a relationship between type of business and TQM educational needs.

11. There will be a positive relationship between number of employees of the department and TQM educational needs.

12. There will be a positive relationship between number of employees of the company (size of company) and TQM educational needs.

13. There will be a negative relationship between number of years of TQM implementation in the business and TQM educational needs.

14. There will be a relationship between location of the company and TQM educational needs.
Population and Sampling

The target population of this study was all employees who worked for large-sized companies in Korea that had adopted TQM. The total number of employees in the population was counted using the list of large-sized company that came from Korea Development Institute (KDI). The accessible population was every employees listed in the directories of randomly selected companies.

Two-stage cluster sampling was used to select the subjects needed for the study. In this study, the researcher first randomly selected 14 companies from a list of large-sized companies in Korea and then randomly selected one department from each company. Therefore, the 14 departments selected from the companies became the unit of analysis. All the employees in the selected 14 clusters were involved as subjects in this study. The subjects were 644 employees who worked for large-sized Korea companies that had adopted TQM by 1995. Responded to the questionnaire were 562. Of the 562 accepting sample, the 391 who supplied complete data constituted the data sample.

Instrumentation

In this study, the instrument was designed to accomplish two major purposes: (1) to measure the dependent variable (TQM educational needs), (2) to gather information on the personal (gender, age, educational background, current job position, number of years working in the company, number of training programs participated, number of TQM training programs participated, familiarity with the TQM principles, and type of organizational department) and business variables (type of business, number of employees in the department, number of employees in the company, number of years of TQM implementation, and the location of the company). Therefore, the instrument was
comprised of two parts: (1) the first part contained 49 questions related knowledge and importance of the TQM competencies which were sub-divided into four domains (organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction) and (2) the second part contained questions associated with personal and business background.

The study was designed to use the Borich Assessment Model (1980). To calculate the TQM educational needs by using the Borich formula, the discrepancy scores between importance score of each competency and the level of knowledge score that each respondent possessed was multiplied by the mean score of the importance of each competency obtained by all respondents.

The translation work of the instrument into Korea was completed in several steps: (1) the translation of the instruments into the Korean language by the researcher, (2) reviewing of the translations by Korean bilingual experts including one Ph. D student in the Department of English Literature, one Ph. D student in Linguistics, and one professor in the College of Business, and (3) a final review of the instrument by a TQM expert in Korea in order to compare it to the English version.

The content validity of the instrument was established by a panel of experts (Appendix B). For the reliability of this instrument, a Cronbach's alpha was employed to determine the internal consistency of the items in the four domains of TQM competencies and the internal consistency of the overall instrument. Table 1 presented the Cronbach's alphas for the four domains of TQM.

Data were collected from May 18 to June 10, 1995, in Korea. The researcher delivered the questionnaire to each of the randomly selected department and gave oral
directions for completion of each part. All employees were asked to complete the questionnaire within 20 minutes.

Data Analysis

Data collected from respondents for this study were analyzed using the SAS at The Ohio State University Computer Center. In order to describe selected personal and business characteristics, frequencies, percentages, and measures of central tendency were employed. The appropriate correlation coefficients were described to determine the direction and magnitude of the relationships among the independent variables (personal and business variables) and the dependent variable (TQM educational needs). The Spearman rank-order correlation coefficient, Pearson product moment correlation coefficient, and point biserial correlation coefficient were used.

Summary of Findings

Of the 644 subjects, respondents to the questionnaire were 562 (87.27%). Of the 562 accepting sample, 391 who supplied complete data (60.71%) constituted the data sample and were analyzed for the study.

Personal Characteristics of the Respondents

This study revealed that the majority of the respondents (89.7%) were male. The average age of respondents was 34 years and the majority of respondents (76.2%) were less than 35 years. The findings indicated that the majority of the respondents (71.5%) possessed a college degree. The majority current job position of respondents (74.9%)
were assistant managers and office employees. Only five respondents (1.3%) were line employees and four respondents (1.0%) were chief executive officer.

Most of the respondents (92%) had worked for their companies for 13 years or less. On the other hand, only four respondents (1%) had worked over 24 years. The findings on number of training programs in which respondents had participated revealed that the majority of the respondents (58.1%) had participated in training programs between 1 and 3 times. Only 10 respondents (3.5%) had attended educational programs 13 times or more. However, of the 391 respondents, 26.1% (102) had not participated in any educational programs. The findings of the number of TQM training programs in which respondents had participated indicated that 86 respondents (22%) had attended in TQM educational programs. Among 86 respondents, 37 (43%) had participated in TQM educational program at least one time. Only 6 had (7.0%) had attend over 4 times.

The majority of the respondents (40.6%) reported their familiarity with the principles of TQM was to a very small degree. Only 24 respondents (6.3%) reported a high degree or more of familiarity with TQM principles. The organizational department of the respondents tend to be varied to Planning, Purchase, Trade & Marketing, Personnel & General Affairs, Manufacture, Research Development, Finance, and others. Of the 391 respondents, 28.2% (109) of the respondents had worked in job categorized as a trade and marketing.

**Business Characteristics of the Respondents**

The findings of the type of business indicated that 29.8% (116) of the respondents had worked in jobs categorized as a machine industry. On the other hand, 2.1% (8) of the respondents had worked in a food industry and only 1.5% (6) were in jobs related to
textile industry. The majority of the companies (84.1%) had been implementing TQM principles for 10 years or more, and about 14% of the respondents indicated that their companies had been implementing TQM principles for one year or less. The vast majority of the companies of the respondents were located in Seoul which is the capital city of Korea. About 20% of the respondents worked in the Kyung-Gi area. Kyung-Gi is the province surrounding the capital and includes two large cities.

The Perceived Importance, Knowledge Possessed and TQM Educational Needs

The findings of the perceived importance and amount of knowledge possessed in competencies related to organizational culture indicated that the means perceived importance ranged from 4.31 to 5.39 and mean scores of knowledge ranged from 3.12 to 3.58. The three most important competencies that employees perceived were (1) encouraging new ideas, (2) inspecting the quality of the final products or service, and (3) communication of an active of ideas. On the other hand, the first three competencies that employees most possessed were (1) encouraging team members to work together, (2) formal procedures and structures in the organization, and (3) decisions by upper management.

The findings of competencies related to employee involvement and team work revealed that the means scores of perceived importance ranged from 4.76 to 5.28. The first three high ranked competencies were (1) a sense of job ownership, (2) responsibility of every employees for quality, and (3) effective communication with fellow employees. The means scores of knowledge possessed ranged from 3.10 to 3.61. High ranked competencies were (1) a sense of job ownership, (2) effective communication with fellow
employees, and (3) responsibility of every employee for quality and group cohesion and interaction within work group.

The findings associated with top management leadership and support indicated that mean scores for perceived importance by respondents ranged from 3.36 to 4.95. The first three high ranked competencies were (1) providing adequate training activities for quality, (2) elimination of barriers that prevent teams or individuals from achieving quality performance, and (3) participation in related activities of quality improvement.

Means scores of respondents for knowledge competencies ranged from 3.13 to 3.62. The first three high ranked competencies for knowledge employees possessed were (1) regularly reviewing the organization's progress toward meeting its goals and objectives, (2) interpersonal skill, and (3) maintaining definite standards of performance.

The findings for the domain of customer satisfaction indicated that means scores of respondents for perceived importance ranged from 4.58 to 5.28. The first three employee perceived competencies for importance were (1) customer focused attitude, (2) providing timely service consistent with customer needs, and (3) checking to see what customers need. Means scores for level of knowledge employees possessed ranged from 3.12 to 3.65. The first three high ranked competencies for knowledge employees possessed were (1) customer focused attitude, (2) understanding the concepts of the external customers, and (3) recognizing satisfied customers as long-term profits.

On the basis of the grand means for each of the four domains of TQM educational needs, rankings of educational needs for employees were:

(1) Customer satisfaction.
(2) Employee involvement and team work.
(3) Organizational culture.
(4) Top management leadership and support.

The Borich formula was used to determine the TQM educational needs of respondents. The four high rankest competencies for each the four domains of TQM were:

A. **Organizational Culture**
   1. Communication of an active flow of ideas.
   2. Encouraging new ideas.
   3. Inspecting the quality of the final products or service.
   4. A supportive climate for solving problems.

B. **Employee Involvement and Team Work**
   1. Profit sharing.
   2. Team incentive in work group.
   3. A sense of job ownership.
   4. Responsibility of every employee for quality.

C. **Top Management Leadership and Support**
   1. Providing adequate training activities for quality.
   2. Elimination of barriers that prevent teams or individuals from achieving quality performance.
   3. Participation in related activities of quality improvement.
   4. Keeping the group informed.
D. **Customer Satisfaction**

1. Surveys go beyond current customers.
2. Providing timely service consistent with customer needs.
3. Customer focused attitude.
4. Checking to see what customers need.

**The Relationships Between Perceived Importance and Knowledge Possessed**

In order to determine the relationships between importance employees perceived and level of knowledge employees possessed, the Pearson product moment correlation coefficients were calculated. The Pearson product moment correlation coefficients for the four domains ranged from .68 to .78. Therefore, the relationships were positive and substantial to very strong. These interrelationships among the four domains provided further evidence of a single underlying construct that could be conceptualized to be perceptions of TQM.

**The Relationships Between Selected Variables and TQM Educational Needs for the Four Domains**

The correlation coefficients between the personal and business variables and the four domains of TQM educational needs revealed a range from negligible to low relationships. Among the selected independent variables, familiarity with the TQM principles had low relationship with each of the four domains of organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction. Two domains -- employee involvement and team work and top
management leadership and support -- had low relationships with gender and educational background. The findings showed that the rest of the correlations were negligible. In other words, there was negligible relationships between in the TQM educational needs of the respondents and their age, the current job position, number of years working in the company, number of training programs had participated, type of organizational department, type of business, number of employees in the department, number of employees in the company, the company location, and number of years in TQM implementation. Low correlation can result from the lack of variability in the variables being correlated. Therefore, respondents were homogeneous as related to the dependent variables.

**Discussion of Findings**

The finding that the vast majority of the respondents were male explained that the Korean work place is still a male-dominated work force. A positive relationship between gender and TQM educational needs was consistence with researches of Greenhaus (1983) and Hurgensen (1978) that reported sex differences on-the-job.

The relationship between age and educational needs was a controversial issue. As people get older, changes come harder and harder. Cross and Zusman (1977) reported that interest and educational needs begin to diminish in the early thirties and drop sharply after age 55. However, statistics showed a rapidly aging population in many organizations. Hale (1990) reported that more older individuals continue to have successful experience in both training programs and the work force. Moreover, older employees have the necessary intelligence, learning ability, and motivation to participate in job training programs. For this study, aging people in the company were in an
executive position. A negative relationship between age and TQM educational needs existed. It could be interpreted that executives of Korea companies tend to spend more of their time on strategies and financial issues than on building rapport with employees and looking for educational needs of employees.

Top managers are flexible and open to bring in new ideas and to make changes. The leaders should fully be in charge of the employees' needs and concerns in the TQM implementation process. Deming (1986), Tigner (1989), and Rohan (1989) stressed that senior management build and achieve a strategic quality plan and commits the energies and resources needed to sustain the effort over the three to seven years required to see positive results. For this study, a positive relationship between a current job position and TQM educational needs could be interpreted that top leaders are familiar with the basics of TQM and decide to adopt TQM principles since they have a major role in achieving quality and productivity improvement for an organization.

The data showed the majority of the respondents (84.6%) possessed a college degree or post graduate degree. Cross (1977) noted that the more education people have, the more interested they become in further education. However, there was a discrepancy in the research literature about the relationship between educational background and educational needs. This finding could explain that well educated employees have more knowledge of TQM principles than less educated employees. Therefore, employees who have advanced degree have less TQM educational needs.

Training is critical to help teams focus on improving processes in a constructive team member (Kiesch, 1990). Training involves the reinforcement of routine practices and procedures that are critical and important to ensuring high productivity. Pegels (1995) stressed that training applies to specific skills and should be offered to those
employees needing them. Training programs, for this study, included a new employee training course, an experienced employee training course, a new manager course, a new director course, a leader course, a CEO development course, study for language, and/or a business letter writing course. In this study, a negative relationship existed between number of training programs employees in which had participated and TQM educational needs because the more in which training programs employees had participated the less they needed TQM educational programs. It could be explained that employees wanted to participate in practical educational training such as language programs or programs for promotion because they focused on short term needs.

Training is the most important factor in a successful implementation of TQM and an integral and essential part of the TQM initiative (Ginnodo and Wellins, 1992). However, today's quality concept courses are not intended to teach specific skills or to change employee behavior on the job (Brown, Hitchcock, and Willard, 1994). Therefore, a negative relationship (-.04) between number of TQM training programs in which employees had participated and TQM educational needs could be interpreted that Korean companies began to adopt TQM principles in their organization with the widely publicized TQM miracle stories from other countries. They typically attend and conduct a number of workshops on quality topics without a clear idea and their needs. As a result, Korea companies should design a plan for implementing TQM based on their specific needs and culture of their own organization.

Truesdell (1994) stressed that employees in a quality oriented company should be constantly reviewing industry literature and periodicals, attending trade shows and listening to the presentations of salespeople to prepare for the new ideas and opportunities that constantly surround companies today. For this study, a negative relationship
between familiarity with the TQM principles and TQM educational needs could be interpreted that employees who were familiar with TQM or had knowledge of TQM were asked from the company to move their interests and concerns to other new developed concepts. Because the company was given the diversity of content and the variety of delivery methods, many do not know what kind of strategy is appropriate or how much training needs to be provided.

There were discrepancies in the research literature about the relationship between the size of the company and TQM educational needs. According to the study of Shaffer and Gyan (1989), larger firms were more concerned than smaller firms about the need to train current employees. Thus, the larger firms were more frequently engaged in their own formal training programs. Truesdell (1994) indicated that small businesses more often did stop implementing TQM when they faced obstacles than did larger businesses. The larger businesses set up a bureaucracy to administer the program which had a life of its own and tended to perpetuate the systems and procedures which make TQM a permanent part of the culture. On the other hand, small businesses made the mistake of approaching it as a program with a specific life and, once a planned set of events has occurred, they became consumed with other pressing needs and the program was forgotten. For this study, the negative relationship between the size of the company and TQM educational needs would be interpreted that larger companies had more management theories and then adapted to change to compete in the consistently changing industry.

The research of Brown, Hitchcock, and Willard (1994) indicated four common failings that organizations make in their implementations. First, even if executives implement TQM for appropriate reasons, they do not know how to support the effort.
Second, organizations fail because they implement TQM without identifying a compelling need. Third, TQM requires a significant investment in education and training. However, many organizations do not see a return on their training dollars because they implement the wrong training or implement the training in the wrong way. Finally, TQM is a long-term improvement strategy. According to Whitley (1991), for some organizations, one of the reasons for TQM failure was an unwillingness to stick with it through the tough times, such as when the implementation started to develop problems and employees become disinterested or frustrated in the process. However, when organizations have experienced false starts or initial problems in the implementation process they have to utilize what they learned from these mistakes as a foundation for eventual quality improvement. For this study, a negative relationship between length of TQM implementation and TQM educational needs could be explained in that many organizations want to see results within the initial years.

According to the findings of rank order of the four domains based on the grand means, the most needed TQM domain for employees was customer satisfaction, while the least needed domain for employees was top management leadership and support. This finding could reflect that the current focus of Korean companies, recently, has become customer satisfaction. More specifically, companies are expected to identify their customers and find out what their customer wants, needs, likes, or prefers.

The primary reason TQM fails is the lack of top management commitment. According to the review of Wall and Zeynel (1991), a successful quality improvement effort requires that top management take the initiative to set the overall direction, plan strategically the quality improvement procedures and organize the steps for implementation, and on the other hand, empower their followers to generate ideas, entrust
themselves with their followers, encourage open communication among employees, and respect the ideas made by the followers. However, in Korea, most companies have hierarchical systems of committees and teams that are typically pyramidal with one person at the top of the pyramid and control flows in a downward direction. In addition to the traditional organization structure, with its several steps of management, the committee approach to the implementation of TQM creates more committees, more meetings, and more bureaucracy in companies. Therefore, employees perceive TQM as a slogan or a name with three initials that was examined by leaders.

There were either negligible and low relationships between the TQM educational needs and selected personal and business characteristics. In conclusion, TQM educational needs will serve the various groups of employees, regardless of the demographic characteristics examined in this study.

**Recommendations**

The following recommendations are presented according to the findings of this study.

1. Korean organizations introduced many of approaches creatively and exhaustively and carried out to improve the educational training programs. However, their efforts rested on the extent to which they provide ambiguous and indirect recommendations for program improvement. This study indicated that the employees in Korea do have TQM educational needs. The three most needed competencies in the domain of customer satisfaction were (1) surveys go beyond current customers, (2) providing timely service consistent with customer needs, and (3) customer focused attitude. Therefore, TQM educational programs should be planned to meet these needs and
should be given priority to those needs ranked highest within each TQM principles area.

2. Many organizations, in Korea, pursue TQM because their customers and a current trend push them to do so. On the other hand, in some organizations, TQM is implemented by a CEO who read a book or heard a speech and thinks it is a good idea. However, companies should consider why they are trying to implement TQM. In other words, TQM educational programs should reflect employees' needs and address programs that are most preferred by the employees, instead of using inadequate or inappropriate training programs.

3. Top management leadership and support is critical as a key role in TQM effort, and support and enthusiasm of top leaders for TQM is especially essential because the lack of executive commitment is the primary reason TQM fails. Therefore, a long-term commitment by leaders may be a necessary condition for TQM success. However, they do not adequately demonstrate their commitment and substitute ineffective approaches for visible action. In order for leaders to successfully demonstrate, first, they should participate in TQM training courses and in quality related committee and team meeting. Second, they should spent the amount of time reviewing customer satisfaction and quality data, as compared with financial and operating data. Third, executives should create and manage the organizational systems that facilitate learning. Finally, leaders manage the interpersonal relationships that empower and encourage learning in employees.
4. Most companies are looking for a shortcut to TQM educational programs, or a quick fix that will provide most of the benefits with less of the expense or efforts. However, the training is the most important factor in a successful implementation of TQM. Therefore, companies should consider TQM training as investments in their human resources rather than expenses. In addition, every employees in the organization should be needed the minimum amount of training, especially, executives and managers who lead the TQM effort need more training than other level of employees. Employees should be taught an understanding of the quality tools and how to apply them in their day-to-day work environment. Employees should be also equipped with the knowledge and skills to analyze problems and improve their performance.

5. Among the four domains of TQM (organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction), customer satisfaction was the most needed domain by employees in Korean companies. This findings suggests that the employees should be trained and informed what customer are expecting and wanting. The customer survey helps determine exactly what the customer expects from the organization. Feedback from the customer can take place informally, through conversation, or formally, via surveys or questionnaires.

6. In conclusion, TQM educational planners should design programs to give priority to those competencies with the highest calculated educational needs, according to the descending order of priority presented in Table 17 through Table 20. The findings of
this study can help to get effective benefits from TQM implementation by focusing on the needs and interests of the employees.

Need for Further Study

1. The results of this study related to TQM educational needs revealed that the relationship between the selected personal and business characteristics and the TQM educational needs were negligible to low. This negligible and low relationships imply that employees are a fairly homogenous group. Therefore, in further studies, other personal and business characteristics should be selected to examine the relationships between the TQM training needs and the characteristics of the employees and businesses.

2. This study should be replicated with diverse populations to increase its generalizability. Therefore, further research should be conducted to determine the TQM educational needs of employees in small-sized companies in Korea and to determine whether or not there is variation between these groups in TQM educational needs.

3. The educational environment, universities and colleges, may apply basic TQM skills and strategies to enhance learning because quality principles have tremendous implications for education. The continuous quality improvement process will improve the role of the individual, maximize the individual student's potential, and create an environment that maximize students' growth and improvement. Then, further studies should apply the concepts of TQM to practical school and classrooms
or activities with additional items and variables.

4. This study revealed the low and negligible relationships among personal and business characteristics and TQM educational needs. Thus, further studies should add other influencing factors so that significant relationships could be derived from the findings. The possible factors may include employee attitude, evaluation, compensation, and benefits.

5. This study could be replicated with other employees from different cultures and groups in other countries to compare the results of this study or to discover changes in TQM educational needs over time.

6. Qualitative research methods -- case study, simulation, ethnographic research, in-depth interviews, and participant observations -- are recommended to examine the relationships among employee and business characteristic and TQM educational needs for comparative purposes. The results of each research methodology could be analyzed by comparing and combining the research findings in an effort to develop a better understanding of TQM principles of employees.

7. Further studies should be focused on "quality tools training" to identify additional TQM training needs. Employees have to learn how to draw Pareto charts, how to prepare cause-effect diagrams, and how to create a control chart.
8. Further studies should focus on teaching small groups of employees to search out problems in each area of the process. Business should begin to focus on processes and systems that maximize the use of peoples' skills, and create a work environment that motivates people and utilizes their talents. Thus, an effective Total Quality Management model should address continuous improvement in all organizational processes to reduce the waste that adds to the cost of poor quality.

9. Most companies implemented TQM principles without an evaluation stage. Therefore, future strategic planning should include reviewing and evaluating quality gains made through TQM.

10. TQM educational needs are recommended to be analyzed in each of the four domains of TQM principles -- organizational culture, employee involvement and team work, top management leadership and support, and customer satisfaction -- instead of looking at TQM educational needs of employees as a whole.
APPENDIX A

COVER LETTER TO SURVEY PARTICIPATION FOR A STANDARD UNIFORM

DESCRIPTION

&

THE QUESTIONNAIRE
Dear

Faced with increasing global competition and rapid technological advancement, Korean companies have recognized that quality improvement efforts must occur in order to survive. In response to the need to become more competitive, effective and efficient, Total Quality Management (TQM) philosophy and approaches must be practiced extensively in Korean businesses. Thus, we are now in the process of conducting research on assessing TQM educational needs of employees in Korean companies. The purpose of this study is to determine the TQM educational needs of employees by identifying perceived importance and knowledge about each competency.

This questionnaire consists of two parts. Part I contains questions related knowledge and importance of the TQM competencies. Part I is classified into four sections: (1) organizational culture, (2) employee involvement and team building, (3) top management leadership, and (4) customer satisfaction. The second part contains questions related to your personal background information.

It is important that you complete all three parts. Your response to the questionnaires is critical to the success of this study. The estimated time for completion of the questionnaires is 20 to 30 minutes. All your responses will be kept confidential and used only as grouped responses for research purposes.

I greatly appreciate your time, consideration, and assistance.

Sincerely,

Sunny Kim
Comprehensive Vocational Education

Dr. Larry E. Miller
Department of Agricultural Education
Part I

Educational Needs on TQM Principles

DIRECTIONS: Listed below are a number of competencies which may be needed by employees in a TQM company. You are requested to rate each competency twice. First, to the left of each item, rate how important (between very important and least important) you think the competency is for employees to successfully implement TQM. Use the following scale to indicate your decisions:

IMPORTANCE
1 = HIGHLY UNIMPORTANT
2 = MODERATELY UNIMPORTANT
3 = SLIGHTLY UNIMPORTANT
4 = SLIGHTLY IMPORTANT
5 = MODERATELY IMPORTANT
6 = HIGHLY IMPORTANT

Second, to the right of the each item under each category, rate the amount of knowledge you believe you possess in this competency. Use the following scale in making your decisions:

KNOWLEDGE
1 = VERY LOW KNOWLEDGE
2 = LOW DEGREE OF KNOWLEDGE
3 = AVERAGE DEGREE OF KNOWLEDGE
4 = ABOVE AVERAGE DEGREE OF KNOWLEDGE
5 = HIGH DEGREE OF KNOWLEDGE
6 = VERY HIGH DEGREE OF KNOWLEDGE

Please answer each item by circling the appropriate number.
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<td>6 = Highly important</td>
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### I. Organizational Culture

1. Communication of an active flow of ideas
2. Protecting employees territory in the organization
3. Encouraging new ideas
4. Formal procedures and structures in the organization
5. Creating an open atmosphere
6. Supporting work group within the organization
7. Encouraging team members to work together
8. Creating a culture to regularly collect quality information about the work
9. Inspecting the quality of the final product or service
10. Decisions by upper management
11. A supportive climate for solving problems
12. Encouraging critical thinking

### II. Employee Involvement and Team Work

13. Quality circles
14. Employment security
15. Gainsharing
16. Team incentive in work group
17. Non-monetary recognition awards for performance
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1 2 3 4 5 6 18. A sense of job ownership
1 2 3 4 5 6 19. Responsibility of every employee for quality
1 2 3 4 5 6 20. Designing work to be accomplished by teams
1 2 3 4 5 6 21. Group cohesion and interaction within work group
1 2 3 4 5 6 22. Employee involvement in making decisions that affect their job
1 2 3 4 5 6 23. Effective communication with fellow employees
1 2 3 4 5 6 24. Concern of employees with the need for quality

**III. Top Management Leadership and Support**

1 2 3 4 5 6 25. Participation in related activities of quality improvement
1 2 3 4 5 6 26. Providing adequate training activities for quality
1 2 3 4 5 6 27. Establishment of a quality council, committee or team to initiate quality improvement efforts
1 2 3 4 5 6 28. Taking personal responsibility for quality
1 2 3 4 5 6 29. Elimination of barriers that prevent teams or individuals from achieving quality performance
1 2 3 4 5 6 30. Maintaining definite standards of performance
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1 2 3 4 5 6 31. Networking with other departments or divisions in order to share quality improvement

1 2 3 4 5 6 32. Keeping the group informed

1 2 3 4 5 6 33. Encouraging the use of uniform procedures

1 2 3 4 5 6 34. Interpersonal skills

1 2 3 4 5 6 35. Regularly reviewing the quality of work

1 2 3 4 5 6 36. Regularly reviewing the organization's progress toward meeting its goals and objectives

1 2 3 4 5 6 37. Understanding the concepts of the internal customer

1 2 3 4 5 6 38. Meeting with vendors and suppliers to discuss quality

1 2 3 4 5 6 39. Checking to see what customers need

1 2 3 4 5 6 40. Planning customer meeting to get their insight, reaction, and advice

1 2 3 4 5 6 41. Understanding the concepts of the external customer

1 2 3 4 5 6 42. Predicting customer behavior (preference, purchase decision)

1 2 3 4 5 6 43. Recognizing satisfied customers as a long-term profit

1 2 3 4 5 6 44. Surveys go beyond current customers

**IV. Customer Satisfaction**
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<tr>
<td>1 2 3 4 5 6 45. Having service standards derived from customer requirements</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>1 2 3 4 5 6 46. Routine analysis on customer feedback</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>1 2 3 4 5 6 47. Recognizing the individuality of each customer</td>
<td>1 2 3 4 5 6</td>
</tr>
<tr>
<td>1 2 3 4 5 6 48. Providing timely service consistent with customer needs</td>
<td>1 2 3 4 5 6</td>
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<tr>
<td>1 2 3 4 5 6 49. Customer (external and internal) focused attitude</td>
<td>1 2 3 4 5 6</td>
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Part II

Personal Background Information

Directions: Please respond by circling the number of the appropriate answer to each of the following questions or filling in the blanks provided.

Q-1. What is your gender? (Circle only one.)
   1. MALE
   2. FEMALE

Q-2. What was your age at your last birthday? (Circle only one.)
   1. 30 AND BELOW
   2. 31 - 35
   3. 36 - 40
   4. 41 - 45
   5. 46 - 50
   6. 51 AND ABOVE

Q-3. What is your level of education? (Circle only one.)
   1. HIGH SCHOOL
   2. COLLEGE OR UNIVERSITY
   3. MA OR PHD
Q-4. What is a current job position in your company? (Circle only one.)

1. LINE EMPLOYEE
2. OFFICE EMPLOYEE
3. ASSISTANT MANAGER
4. MANAGER
5. ASSISTANT DIRECTOR
6. DIRECTOR
7. CHIEF OFFICER EXECUTIVE

Q-5. How many years have you working in your company? (Circle only one.)

1. LESS THAN 3 YEARS
2. 4 - 8 YEARS
3. 9 - 13 YEARS
4. 14 - 18 YEARS
5. 19 - 23 YEARS
6. OVER 24 YEARS

Q-6. Have you been participated in any training programs?

NO ___________________________
YES __________________________

If yes,
How many times did you participate and how long? (Please write in.)
NUMBER ______________________
TOTAL HOURS ___________________
Q-7. Have you ever participated in a TQM training program?

NO _____________________________
YES ____________________________

If yes, how many times and how long? (Please write in.)
NUMBER ________________
TOTAL HOURS ________________

Q-8. To what degree do you believe you are familiar with the principles of TQM?
(Circle only one.)

1. TO A VERY SMALL DEGREE
2. NOT VERY MUCH
3. MODERATELY
4. TO A HIGH DEGREE
5. TO A VERY HIGH DEGREE

Q-9. What is the name of your department? (Circle only one.)

1. Planning and Management
2. Purchase
3. Trade and Marketing
4. Personnel and General Affaire
5. Manufacture
6. Research
7. Financial
8. Others
Part III

Business Background Information

Q-1. What is your type of business? (Circle only one.)

1. Electric Industry
2. Machine Industry
3. Petrochemical Industry
4. Food Industry
5. Construction
6. Textile Industry
7. Finance Business
8. Others

Q-2. How many employees does your department have? (Please write in.)

________________________________________

Q-3. How many employees does your company have? (Please write in.)

________________________________________
Q-4. For how many years has your organization implemented TQM? (Circle only one.)

1. LESS THAN 1 YEAR
2. 1 - 2 YEARS
3. 3 - 4 YEARS
4. 5 - 6 YEARS
5. 7 - 8 YEARS
6. 9 - 10 YEARS
7. OVER 10 YEARS
8. HAS NOT IMPLEMENTED TQM

Q-5. Where is your organization located? (Circle one.)

1. SEOUL AREA
2. KYUNG IN AREA
3. OTHERS
APPENDIX B

COVER LETTER TO PANEL OF EXPERTS
March 27, 1995

Sunny Kim
101 Curl Dr. #644
Columbus, OH.43210

Dear

Faced with increasing global competition and rapid technological advancement, Korean companies have recognized that quality improvement efforts must occur in order to survive. In response to the need to become more competitive, effective and efficient, Total Quality Management (TQM) philosophy and approaches must be practiced extensively in Korean businesses.

We, thus, are now in the process of conducting research on assessing the TQM educational needs of employees in Korean companies. The purpose of this study is to determine the TQM educational needs of employees by identifying perceived importance and knowledge about each domain: organizational culture, team building and employee empowerment, top management leadership, and customer satisfaction. The purpose of this letter is to solicit your advice on the instrument for data collection.

Listed on the questionnaire are a number of competencies which may be needed by employees to implement successfully TQM. I would appreciate your reviewing the instrument from your perspective. You may add, delete or change the terms or concepts used where you think it will clarify the meaning. You may provide your comments under each question item.

Please return the materials with your comments or suggestions. I would be greatly appreciated if you could return the information by March 31, 1995.

Thank you, in advance, for your time, consideration, and professional assistance.
Sincerely,

Sunny Kim
Comprehensive Voc. Ed.

Dr. Larry E. Miller
Department of Agricultural Ed.
Larry E. Miller, Ph. D.
Professor, Comprehensive Vocational Education
The Ohio State University
Columbus, Ohio

C. Harold Brown, Ph. D.
Executive Director, Executive Education
The Ohio State University
Columbus, Ohio

Jay S. Kim, Ph. D.
Professor, College of Business
The Ohio State University
Columbus, Ohio

Keith L. Smith, Ph. D.
Professor, Agricultural Education
The Ohio State University
Columbus, Ohio
APPENDIX C

FREQUENCY AND PERCENTAGE DISTRIBUTIONS OF RESPONDENTS TO THE LEVEL OF IMPORTANCE AND AMOUNT OF KNOWLEDGE POSSESSED IN THE FOUR DOMAINS
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<td>Communication of an active flow of ideas</td>
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<td>8  61 183</td>
<td>105 27</td>
<td>7 391</td>
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<td>Protecting employees territory in the organization</td>
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<td>142 111</td>
<td>17 81 165</td>
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<td>Encouraging new ideas</td>
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<td>109 233</td>
<td>15 63 140</td>
<td>108 55 9</td>
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<td>115 67 389</td>
<td>6 46 141</td>
<td>126 60 10</td>
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<td>Creating an open atmosphere</td>
<td>2  6 20 64</td>
<td>159 140</td>
<td>18 54 140</td>
<td>113 53 13</td>
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<td>Supporting work group within the organization</td>
<td>1  6 28 132</td>
<td>131 93</td>
<td>391 8 69 154</td>
<td>114 37 9</td>
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