Order Number 9428979

A study in organizational change: The attitudes of personnel toward Total Quality Management implementation in a state department of education

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Morgan State University, 1994

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MORGAN STATE UNIVERSITY

A STUDY IN ORGANIZATIONAL CHANGE:

THE ATTITUDES OF PERSONNEL TOWARD TOTAL QUALITY MANAGEMENT IMPLEMENTATION IN A STATE DEPARTMENT OF EDUCATION

by

JACQUELINE LOUISE BROWN FRIERSON

BALTIMORE, MARYLAND
October, 1993

MORGAN STATE UNIVERSITY
SCHOOL OF GRADUATE STUDIES

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A DISSERTATION SUBMITTED TO THE FACULTY
OF THE SCHOOL OF GRADUATE STUDIES

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2/3/94
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ACKNOWLEDGEMENTS

To God be the glory! This dissertation would have never been completed had it not been for my three advisors, Dr. Joseph T. Durham, Dr. Iola Ragins Smith and Dr. Andrew H. West. These three people never let go of my hand. The chairman of my committee, Dr. Durham, a man of quality and insight, inspired me from the beginning. "The Elder," as he is known to his students, convinced me, to quote Virgil, "that one day even these things would be pleasant to recall". I would like to thank Dr. Iola Ragins Smith, whose level of support reached far beyond that of student and instructor in my walk along the way, who at no time was too busy to give me the time I needed. I wish to extend my thanks to Dr. West, for introducing me to the corporate way of thinking. He moved my mental state from the level of a classroom teacher and high school administrator to a higher plane. His introductions were invaluable and his patience with a novice was outstanding.

I would also like to thank those people who assisted me in my

Quality walk: Frank Cullen, Hardy Cook, Marvin Jones, Charles Zimmerman, Scott Chapman, Melvin Alexander, Dr. Nicholas Hobar, William Murray, Dr. Joseph Shilling, Dr. Deborah Rose, Terry Hart and the Baltimore Section of the American Society for Quality Control.

I owe a debt of gratitude to the "Oracle", The Reverend Paul Lee, Yvonne Britton Barner, Francine Brown, Dr. Samuel Banks, Dr. Reed Winston, Winona Taylor, James Scofield, Jacqueline Waters-Scofield, Charlotte W. Brown, Dr. Lawrence Leak, Dr. James Haynes, Toni Holder, Dr. Robert Anastasi, Susanne Gray, Brenda Conley, Dr. Patsy Blackshear, Dr. Spencer Holland, Dr. Gilbert Austin, Jaime Santiago, Romaine Carter, Linda Ruth Harris Turner, and Claudetta Cockrell.

To the Maryland State Department of Education, I owe a debt that can never be repaid. Thanks to Dr. Nancy Grasmick; Dr. Bonnie Copeland, my champion; the Total Quality Council; Lorraine Flowers; Edith Parker, and Sandra Frazier.

Finally, I want to thank all of those Black Folk who came before me and may not even have been able to read or write and did not have the opportunities we have today, but knew how to pray. Thank you for praying for the unborn generations, of which I am one. To my two mothers, Ruth Chapman and Marian Frierson, thank you.

The last sentence of thanks is reserved for the two people who supported me and loved me through this entire process, Michaeljohn and Harold Frierson.

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ABSTRACT

BY

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This study investigated the relationship between the attitudes of employees in a state agency and the impact of these attitudes on the implementation of Total Quality Management in the agency.

The hypothesis is: There is a relationship between certain demographic characteristics of employees and the degree to which they accept or reject the implementation of Total Quality Management in the organization.

Questions posed by this study were:

1. Do the attitudes of employees at a state department of education vary in accordance with their level of education, age, ethnic background, gender, length of employment in the agency and the department in which they work?

2. Can specific attitudes exhibited by resisters and adapters be identified?

The target population consisted of the four hundred people employed by a state department of education who work at the headquarters site, with those departments who had representatives on the Total Quality Council. This state department is located in a metropolitan area in a southeastern state.

This study used analysis of variance of the five age groups designated, the six ethnic backgrounds identified, gender, and years of employment. Other demographic factors used included the highest level of education attained and the department where the employee worked. The analysis of variance was completed for each of the four broad areas that comprised the Twelve Conditions of Excellence. Where there were significant differences, independent tests were conducted, as well as a complete intercorrelation matrix across the four scales based on the demographic data collected.

In two variables, length of service and gender, there were no

differences. In the other variables, level of education, age, ethnic background and department of employment, there were differences. The most consistent differences were found in the areas of level of education, ethnic background and department of employment. In the complete correlation matrix, all of the correlations were significant at <.01, indicating the Twelve Conditions of Excellence are highly correlated one to the other. The results of the analysis permitted the researcher to conclude that in some areas there were differences in attitude based on the listed demographics and specific attitudes exhibited by resisters and adapters were identified.

CHAPTER 1

INTRODUCTION

The Roots of Quality

Total Quality is not new. Its roots can be traced to antiquity. Dr. Joseph Juran, in a history of Quality, traced it back to the Egyptians and the pyramids, as well as to the ancient Chinese.[1] The Egyptians used inspectors to check the work of stone masons who dressed stones for the pyramids. Figure 1 illustrates this.

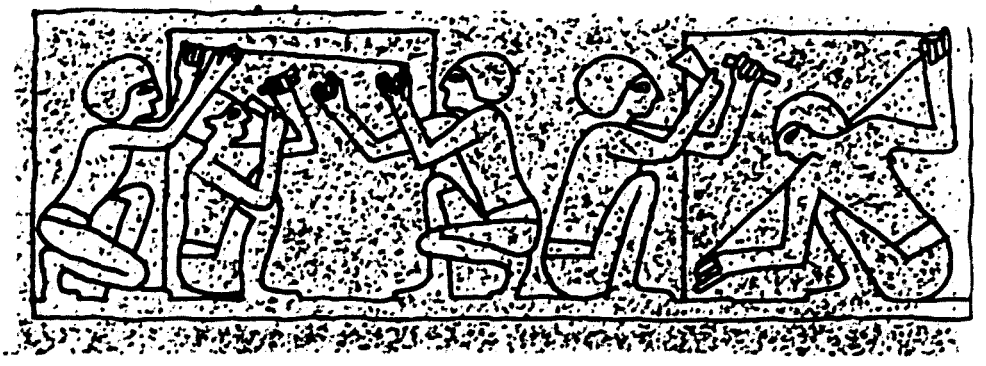

Figure 1. The Roots of Total Quality.

Source: J. M. Juran, Juran's Quality Handbook, Fourth Edition (New York: McGraw-Hill, Inc., 1988).

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[1]Joseph M. Juran, "China's Ancient History of Managing for Quality," Quality Progress, July 1990, 31-35.

The ancient Chinese set up a separate department of the central government to establish and maintain quality standards.[2] Even Hammurabi, in his famous code, dating from 2150 B.C., had rules about quality. His 282 laws controlled all aspects of Babylonian life. There were laws dealing with agriculture, commerce and industry, property rights, contracts, marriage and divorce and even quality.[3]

The Code was based on older Akkadian and Sumerian laws, which Hammurabi revised, adjusted and expanded.[4] The epilogue summed up his efforts to provide social justice for his people:

> Let any oppressed man who has a curse, come before my image as King of Righteousness! Let him read the inscription on my monument! Let him heed my weighty words! And may my monument enlighten him as to his cause and may he understand his case! May he set his heart at ease! (And he will exclaim)! "Hammurabi indeed is a ruler who is like a real father to his people...."[5]

These are the codes that addressed buildings and quality:

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[2]Joseph M. Juran, "Made in U.S.A: A Renaissance in Quality," Harvard Business Review July-August 1993, 43.

[3]Anatole G. Mazour and John M. Peoples, Men and Nations (New York: Harcourt Brace Jovanovich, Inc., 1971), 41.

[4]John W. Snyder, World Book Encyclopedia (Chicago: World Book, Inc., 1990), 36.

[5]R.F. Harper, The Code of Hammurabi(Chicago: University of Chicago Press, 1904), 101.

#229 — If a builder has built a house for a man and has not made strong his work, and the house he built has fallen, and he has caused the death of the owner of the house, that builder shall be put to death.

#230 — If he has caused the son of the owner of the house to die, one shall put to death the son of that builder.

#232 — If he has caused the loss of goods, he shall render back whatever he has caused the loss of, and because he did not make strong the house he built, and it fell, from his own goods, he shall rebuild the house that fell.[6]

#233 — If a builder has built a house for a man, and has not jointed his work, and the wall has fallen, that builder at his own cost shall make good that wall.[7]

In Phoenicia, inspectors punished repeated quality violators by chopping off their hands. Inspectors accepted or rejected products and enforced specifications created by the government. The Aztecs in Central America also used stone cutting inspections.[8]

Quality During the Middle Ages

The Guild System developed in Europe during the thirteenth century A.D. Not only were these craftsmen trainers or teachers, they were

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[6]The Oldest Code of Laws in the World, trans. C.H.W. Johns, 1903, 48.

[7]Ibid., 49.

[8]Howard S. Gitlow, Planning For Quality, Productivity and Competitive Position (Homewood: Dow-Jones-Irvin, 1990), 1.

inspectors as well. They built quality into their goods. They knew their trade, their products and their customers. There was a tremendous amount of pride attached to their work in addition to training others to do quality work. The government set and provided standards such as weights and measures. In most cases, one person could inspect all of a product and set a single standard for quality.[9] On a small scale, this system worked well, but the population of the world grew as did the demand for more products.[10]

Interchangeable Parts

Through the development of division of labor and interchangeable parts and the rise of the Industrial Revolution, mass production of manufactured goods became possible.[11] This changed the customer supplier relationship.

The Nineteenth Century

In 1804, E.I. du Pont wrote a letter to the then Secretary of State James Madison, which shows the heritage of quality:

In constructing on the Brandywine near Wilmington, Delaware, a

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[9]Ibid.

[10]Ibid.

[11]Ibid., Idem, Gitlow.

> manufacture of Powder, I have wanted to make the establishment in every way worthy of the scale on which I have built it and I have tried to secure for it the best of all the processes used in Europe, and to give my own attention to improving the refining of the Saltpetre as well as to any other changes that may affect the quality of the Powder. My efforts have had some success and the reputation that my Powder has already acquired is an ample reward for the pains that I have taken.[12]

The modern industrial system began to emerge at the end of the nineteenth century. In the United States, Frederick Winslow Taylor pioneered the concept of scientific management. Under this concept, the design of the system changed. Tasks for which workers were formerly responsible were placed in the hands of engineers and managers. Scientific management identified four principles. The first principle was called the development of a science. That meant putting down on paper all the knowledge the workmen had in their heads. The managers wrote down this information.[13] The second set of principles involved studying the men as they worked to determine the nature, character and performance of all workers to determine their strengths and weaknesses, then providing training necessary for optimal worker performance. This evaluation was to

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[12]Etienne I. du Pont to James Madison, 1804, DuPont, Newark, Delaware.

[13]D.S. Pugh, ed., Organizational Theory, Selected Readings (New York: Penguin Books, 1987), 158.

be an ongoing process.[14] The third principle brought together the science and the scientifically selected and trained workmen. This involves bringing the management closer to the worker. The fourth principle was an almost equal division of labor between managers and the workmen. This was used to separate workers from the responsibility of their jobs, not producing a quality product. This division between manager and workman was carried to the extreme. First the workman performed a task, then the management, then the worker. Taylor viewed his system as one that would yield greater productivity for the factory owner and higher wages for the worker.[15]

Quality in the Early Twentieth Century

By the twentieth century, goods that previously had been accessible only to the wealthy were now available to the masses because of mass manufacturing. Henry Ford, founder of the Ford Motor Company, introduced the moving assembly line into the automotive manufacturing process, thus allowing complex operations to be reduced to simple procedures performed by unskilled workers. The result was highly technical products available at a low cost. Inspection to separate conforming and non

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[14]Ibid., 159.

[15]Ibid.

conforming products was built into this set-up.[16] Eighty years ago, Henry Ford Senior developed a process using some of the same principles that are found in the Total Quality Management process of today.[17]

However, soon it became clear that the primary goal was meeting manufacturing deadlines instead of assuring and improving quality. If quality was poor, an employee might be reprimanded, but if production goals were not met, an individual could be fired. After awhile, upper management realized that quality was suffering, so a separate position, that of chief inspector, was created.[18]

Industrial technology changed rapidly between 1920 and 1940. The Bell System and Western Electric, its manufacturing component, led the way in quality control, by implementing an inspection engineering department to handle problems created by defects in their products and to monitor coordination among the departments. George Edwards and Walter Shewhart were members of this inspection engineering department.[19]

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[16]Ibid., 2.

[17]Thomas R. Stuelpnagel, "'Deja Vu': TQM Returns to Detroit and Elsewhere," Quality Progress, September 1993, 91.

[18]Ibid., Idem, Gitlow.

[19]Ibid.

George Edwards stated:

> Quality Control exists when successive articles of commerce have their characteristics more nearly like its (sic) fellows and more nearly approximating the designer's intent than would be the case if the application were not made. To me, any procedure, statistical or otherwise, which has the results I have just mentioned, is quality control, and any procedure which does not have these results is not quality control.[20]

Not only did George Edwards coin the term quality assurance, he also advocated quality as part of the responsibility of management. He said:

> This approach recognized that good quality is not accidental and that it does not result from mere wishful thinking, that it results rather from the planned and interlocked activities of all the organizational parts of the company, that it enters into designing, planning, engineering, technical and quality planning, specification, production layouts, standards and even into training of administrative, supervisory and productive personnel. This approach means placing one of the officers of the company in charge of the quality control program in a position at the same level as the controller or as the other managers in the operation. Its objective would be the elimination of the hunch factors that at present so largely determine the product quality of too many companies. It puts a man at the head of the quality control program in a position to establish and make effective a company-wide policy with respect to quality, to direct the actions to be taken where it is necessary and to place responsibility where it belongs in each instance.[21]

In 1924, Walter Shewhart, a mathematician, introduced statistical quality control. This method provided a way for economically controlling

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[20]Ibid.

[21]Ibid.

quality in a mass production setting. Shewhart was concerned with many aspects of quality control. In his book of lectures at the Graduate School of the United States Department of Agriculture, he asked the students to write several letter A's as carefully as possible and then observe these letters for variation. It was apparent that no matter how carefully one formed the letters, there was some variation. This was a very simple but powerful example of variation in a process.[22]

Though Shewhart was primarily interested in statistical methods, he was very aware of management and behavioral science principles. He was the first person to discuss the philosophical aspects of quality. As an example, he pointed out that quality was objective as well as subjective. The development of this multidimensional view of quality is uniquely attributable to Shewhart.[23]

In 1935, E.S. Pearson developed British Standard 600 for acceptance of incoming materials. British standard 1008 superseded British Standard 600. This new standard was an adaptation of the United States Z-1 Standard developed during World War II. From this point on, acceptance of sampling

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[22]Francis J. Cullen, interviewed by author, 22 October 1993, Millersville, Maryland.

[23]Ibid.

developed quickly.[24]

Quality During World War II

The pace of technology in quality quickened by the start of World War II. The need to improve product quality resulted in information sharing. Vendor certification became a part of the program of many companies. Quality Assurance professionals developed failure analysis techniques to solve problems; quality engineers became involved in early product design. Additionally, the environmental performance testing of products began.[25]

In 1946, the American Society for Quality Control (ASQC) was formed. George Edwards was elected President, and he said:

> Quality is going to assume a more and more important place alongside competition in cost and sales price, and the company which fails to work out some arrangement for securing effective quality control is bound, ultimately, to find itself faced with the kind of competition it can no longer meet successfully."[26]

In 1946 also, Kenichi Koyanagi established the Union Of Japanese Scientists and Engineers (JUSE); Ichiro Ishikawa was its first chairman. One

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[24]Ibid.

[25]Ibid., Idem, Gitlow, 4.

[26]Ibid.

of the first things JUSE did was to establish the Quality Control Research Group (QCRG). The major members of that group were Shigeru Mizuno, Kaoru Ishikawa and Tetsiuchi Asaka. These three men not only developed and led Japanese Quality Control, they also created quality circles.[27] According to Bruce and M. Suzanne Brocks, authors of Quality Management, Implementing the Best Ideas of the Masters, quality circles are a small group or team that is composed of employees who meet regularly to identify quality problems that have to do with their own work, and to generate possible solutions to these problems.[28]

Post World War II Quality

In 1950, W. Edwards Deming, a statistician who had worked at Bell with Edwards and Shewhart, was invited by JUSE to speak to the leading Japanese industrialists who were interested in rebuilding Japan. They were interested in rising from the ruins of the war, breaking into foreign markets and changing Japan's image of producing poorly made manufactured goods. This was the time when the words "made in Japan" produced images of shoddy goods. Deming convinced the industrialists that if they used his

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[27]Ibid.

[28]Bruce and M. Suzanne Brocks, Quality Management, Implementing the Best Ideas of the Masters (Homewood: Business One Irwin, 1992), 262.

methods, Japanese quality would become the best in the world.[29]

The industrialists adopted Deming's methods and teachings; as a result, Japanese quality and productivity improved. The Deming Prizes, named in honor of W. Edwards Deming and established by JUSE, are awarded yearly and are highly coveted. One prize is awarded to an individual who shows excellence in achievement in the theory or application of statistical quality control or a person who makes an outstanding contribution to the dissemination of statistical quality control techniques. Three application prizes are awarded to (1) a company that has made great gains in quality, (2) a division of a company that has made great gains in quality, and (3) a small company that has made great gains in quality. Winning Japanese companies included Toyota, Hitachi and Nissan. In 1989, Florida Power and Light became the first non-Japanese company to win one of the Deming Prizes.[30]

In the 1950's and early 1960's, Armand V. Feigenbaum set forth the basic principles of Total Quality Control (TQC). He asserted that quality control exists in all areas of a business, from sales to design. Until Feigenbaum, quality efforts were mainly directed toward correction, not

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[29]Ibid.,Idem, 5.

[30]Ibid.

prevention. In 1958, Kaoru Ishikawa and a team visited Feigenbaum at General Electric. The team liked the name TQC and took it back to Japan, though their view of TQC differed from Feigenbaum's.[31]

The outbreak of the Korean War sparked an increased emphasis on reliability as well as end-product testing. In spite of the additional testing, firms were still not able to meet their reliability and quality objectives. Because of this problem, quality awareness and quality improvement programs began to emerge in manufacturing and engineering. Service Industry Quality Assurance (SQA) began also to focus on the use of quality methods in hotels, banks, government and other service areas. By the end of the 1960's, most major American corporations had a quality program. At this juncture, American industry was still on top in the world marketplace as Europe and Japan continued to rebuild.[32]

In 1954, Dr. Joseph Juran was invited to Japan to explain to top and mid-level managers their role in the quality control process. At first, Japanese managers were not interested in the concept of quality control, but Juran gained their support and commitment. Dr. Juran's visit brought about a new wave of quality control activity. He led the way from technologically

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[31]Ibid.

[32]Ibid.

based quality in factories to a system that was based on a holistic concern for quality in all aspects of management in an organization. In Managerial Breakthrough, one of his most important books, Juran answered the question many managers asked: "What am I here for?" Juran explained that managers have two basic functions: (1) breaking through current processes to new levels of performance and (2) holding the improved process at their the new performance levels. These two basic notions are critical to the TQC philosophy as it exists today. Another significant Juran book is the Quality Control Handbook, a reference guide to quality improvement, which is edited by Joseph Juran.[33]

In the mid to late 1950's, TQC was named in the works of Armand Feigenbaum, but its concepts were developed by drawing on the works of Joseph Juran and W. Edwards Deming. Total Quality Control expanded the quality concept to include quality of design (including product development) in addition to quality of performance as well as the traditional view of quality. Total Quality Control required that everyone in a corporation participate in quality improvement activities. Everyone, included the Chairman of the Board to hourly workers to customers to the community.[34]

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[33]Ibid., 6.

[34]Ibid.

In 1959, MIL-Q-9858 was created. This military specification, issued by the Naval Ordnance Systems Command, served as the backbone for quality in the United States for at least ten years. MIL-Q-9858 was revised in December of 1963. Until the Baldridge Award was established, this was the model for American quality.[35]

Modern Quality

By 1970, foreign competition threatened United States companies. The quality of Japanese automobiles and televisions, just to name two items, began to surpass those made in America. Consumers became more sophisticated when making purchases and began to think of quality and price in terms of the life of a product. The combination of increased consumer awareness about quality and offshore competition forced American managers to become more concerned about quality. The late 1970's and 1980's were noted for the striving for quality in all aspects of service organizations and businesses, including finance, sales, personnel, maintenance, management, manufacturing and service.[36] Today, the focus is not just on

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[35]Naval Fleet Missile Systems Analysis and Evaluation Group, Naval Ordnance Systems Command Product Assurance Program Requirements For Production Contracts, January 1969, 1.

[36]Ibid.

manufacturing, but on the entire system. Lagging productivity growth, high costs and strikes caused management to turn to improvement of quality as a means of organizational survival.[37]

Today, many professional societies pursue quality improvement, including JUSE, American Society for Quality Control (ASQC), European Organization for Quality Control (EOQC) and International Academy for Quality (IAQ). Also, several universities have set up research centers to study quality improvement; for example, the University of Wisconsin, the University of Miami, the Massachusetts Institute of Technology Center for Advanced Engineering Study, and Fordham University.[38]

To better understand the contributions of the quality gurus, it is useful to see how their knowledge evolved. W. Edwards Deming has been the most recognized name in the Total Quality Movement since the early 1950's. He is internationally known as the man whose work turned the Japanese economy around. W. Edwards Deming was born in 1900 in rural Wyoming, the son of a lawyer. He earned a bachelor's degree in electrical engineering from the University of Wyoming, a master's degree in physics and math in 1924 from the University of Colorado and a Ph.D. in

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[37]Ibid., 7.

[38]Ibid.

mathematical physics in 1927 from Yale University. He created a list of fourteen points, some of which have also been implemented in American businesses.[39] His Fourteen Points[40] are included because he is among the earliest and best known of the Quality Management Consultants:

1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to provide jobs.
2. Adopt the new philosophy.
3. Cease dependence on mass inspection.
4. End the practice of awarding business on the basis of price tag alone.
5. Improve constantly and forever the system of production and service.
6. Institute training.
7. Adopt and institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations, and targets for the work force.
11. a. Eliminate numerical quotas for the work force.
    b. Eliminate numerical goals for people in management.
12. Remove barriers that rob people of pride of workmanship.
13. Encourage education and self improvement for everyone.
14. Take action to accomplish the transformation.

In 1927, while working at the Department of Agriculture as a statistical researcher, Deming met Walter Shewhart, who in 1925, invented a process control chart used for presenting statistical data controlling processes. Deming often visited Shewhart in his New Jersey home. In 1931, Shewhart

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[39]W. Edwards Deming, Out of the Crisis (Cambridge: Massachusetts Institute of Technology, 1982), vii.

[40]Ibid., 24-86.

published his book Economic Control of Quality Manufactured Product, which today is viewed as a classic on the use of statistics in quality control.[41]

What caused Shewhart to experiment with the use of statistics as a quality control tool was the quality program encountered during the installation of a new design of switching equipment being placed in telephone control offices. The equipment was malfunctioning due to errors made in the manufacturing process. Additionally, the pipeline was filled with substandard quality switching equipment. The cost of repairs and loss of time to correct this material on site seriously affected cut-over and the financial advantage of using this improved switching device.[42]

Shewhart reasoned that the determination of the point at which products had reached the level of satisfactory quality had to be pushed back to the place and point of manufacture. To achieve this determination, Shewhart needed a method that would identify when variations in quality differed significantly from expected quality.[43]

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[41]Charles Jutkiewicz, ed., Total Quality Management (TQM), Research Guide & Sourcebook (Waltham: Timeplace, Inc., 1991), 2-3.

[42]Hardy M. Cook, interviewed by author,2 June 1993, Baltimore, Maryland.

[43]Ibid.

Shewhart began his experiments by creating a bowl of numbered individual chips that formed a normal distribution using the same small sample size. He calculated the sample averages and plotted them on a graph. He repeated this experiment using different sizes of small samples. He found that the sampling distribution parameters of location and spread were related to the sample parameters for the individual unit distribution. Next, Shewhart repeated the experiment, using individual chips that formed a triangular distribution.

Finally, Shewhart performed his experiments with individual chips that formed a rectangular distribution. Again, the sampling distribution was normal. Shewhart concluded that sampling from a unimodal distribution unit would result in a normal distribution regardless of the individual unit distribution. He plotted sample averages on a graph with + or - 3 sigma limits from the grand average, and the control chart was born. Normal distribution theory was used to determine when the quality deviated significantly from expected quality. Therefore, Walter Shewhart is called the Father of Statistical Quality Control.[44]

From talks with Shewhart as well as his own work as a statistical

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[44]Ibid.

researcher, Deming began to understand the powerful and pervasive nature of variation as it related to manufacturing. During World War II, Deming created a curriculum to teach statistical quality control techniques to defense contractors; over 10,000 engineers were trained.[45] Deming was invited to Japan by Kaoru Ishikawa, the leader of Japan's improvement effort through JUSE, the Japan Union of Scientists and Engineers.

In addition to Deming, other well known Quality experts are Joseph M. Juran, an academic like Deming; Armand V. Feigenbaum, a hands-on management consultant; Kaoru Ishikawa, a Japanese businessman; and Philip B. Crosby, an entreprenеurial consultant.[46]

JUSE gives most of the credit for the Japanese quality revolution to Deming, but credit is also given to another American, Joseph M. Juran. In 1954 Juran was invited to speak to JUSE on "Quality as a Management Responsibility."[47]

Joseph M. Juran was born in 1904 in Rumania. His father brought the family to Minnesota in 1912. He earned a degree in engineering from

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[45]Ibid., idem, Jutkiewicz.

[46]William R. Murray, Interview by author, Telephone, 24 February 1992, Baltimore, Maryland.

[47]Ibid.

the University of Minnesota, then joined the inspection department of Bell's Hawthorne Works in 1924. He believed that the discipline of quality management could be traced to Bell's statisticians, most specifically Walter Shewhart. Juran also believed other techniques were just as important as statistics. His process involved components which he compares to financial management.

Quality Process	Financial Terminology
Quality Control	Expense and Inventory Control
Quality Planning	Budgeting, Business Planning
Quality Improvement	Cost Reduction, Profit Improvement

Beginning with quality, he stresses project-by-project improvement. Problems should be identified and scheduled for solution. He used the Pareto Principle to show that solving a few of the major problems dramatically improved a process.[48] The Pareto Principle, according to The Team Handbook, is as follows:

> The principle is sometimes called the 80/20 rule: 80% of the trouble comes from 20% of the problems. Though named for turn-of-the-century economist Vilfredo Pareto, it was Dr. Juran who applied the idea to management.[49]

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[48]Ibid.

[49]Peter R. Scholtes, The Team Handbook (Madison: Joiner Associates, 1991), 2-9.

Juran realized that the 80/20 rule applied to management as well as to economics.[50]

Armand Feigenbaum claims to run the most implementation based quality control consultancy. He is the president of General Systems Company, based in Pittsfield, Massachusetts. Feigenbaum joined General Electric in the 1930's and in 1958 was made an executive of manufacturing, a position he held for ten years. In 1968, he left General Electric to found General Systems. While working at General Electric, he earned his Ph.D. from the Massachusetts Institute of Technology.[51]

Feigenbaum wrote a book entitled Total Quality Control. He was the first author to coin the term "Total Quality Control." He taught that managers should track the costs of a product, which include process failures (including rework in the shop and in customer service), quality appraisal measures (such as inspection systems), and quality prevention measures (such as training). He argued that the sum of these costs consistently represented ten to forty percent of the annual sales of a company. The Cost of Quality Concept motivated managers to improve quality and track their success or

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[50]Dr. Andrew H. West, interview by author, 4 November 1993, Baltimore, Maryland.

[51]Ibid., Idem, Murray.

failure.[52]

Deming, Juran and Feigenbaum are the accepted quality experts as taught by academically oriented thinking. Philip B. Crosby is less known and less widely read in academe but has achieved celebrity status among the general public. His organization is the largest United States-based quality training organization with a world-wide employee network of 250. His book, Quality is Free, became a best seller in 1979.[53]

Crosby was born in Wheeling, West Virginia, son of a Tennessee podiatrist. Even though he graduated from Western Reserve University's Higher College of Podiatric Medicine, he did not like podiatry, so he served briefly as a newspaper reporter, and in 1952, he took a job as a junior technician making radar antennas. He became a reliability engineer and quickly realized that he disagreed with the approach of the quality profession as it then existed.[54]

From Crosby's point of view, management paid very little attention to the issue of quality. He believed managers must recognize that their organizations can produce products that will not fail, include quality as a

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[52]Ibid.

[53]Ibid.

[54]Ibid.

key goal in the existing management system and then make sure the staff receives training to achieve quality. His philosophy and curriculum are based on the idea of zero defects. He set up a Quality College at International Telephone and Telegraph (ITT) to teach employees to do things correctly. In 1979, he founded Philip Crosby Associates, where he teaches the four absolutes in quality as well as zero defects and doing things right the first time in a fourteen step process.[55]

The last Quality leader discussed is Kaoru Ishikawa, who had been the number one leader of Japan's quality renaissance since 1950. He was born in 1915 in Japan. He earned a degree in applied chemistry from the University of Tokyo in 1939. In 1949, he became involved in quality promotion activities with JUSE, where he first read about Deming and Juran, and invited Deming to lecture in Japan.[56]

Even though there are five different leaders in Total Quality, the common theme or thread is the same: doing the right things right the first time. Because Total Quality Management is so flexible, it is possible to take information from all the experts and not stray from the universal principle

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[55]Ibid.

[56]Dr. Kaoru Ishikawa, Guide to Quality Control (New York: Unipub, 1976), 229.

of doing the right things right the first time.

The concept of Total Quality Management requires a transformation in the way a business is operated. An organization must learn how to change. Highly motivated people with positive attitudes can successfully implement such a program. This is not a "quick fix" program because the process of new learning is not short term.[57] Many Americans became interested in quality in 1981 after the classic NBC White Paper entitled "If Japan Can, Why Can't We."[58]

The essence of modern quality science has been captured in the Baldridge Award criteria, which has become a universally recognized model. The federal government created the Baldridge Award in 1987. It has become the highest honor for quality in the United States. This award was established to make America more competitive globally as well as assure our economic survival. The Baldridge was patterned after Japan's Deming Prize and its purpose is to recognize American businesses that offered superior quality.[59] The bill to create the act was reported from the United States

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[57]Ibid., idem, Deming, x.

[58]Andrew H. West, "Quality Control in the United States, A Practitioner's Perspective" (D.B.A. diss., George Washington University, 1987),8.

[59]Ibid., idem, Jutkiewicz.

Science, Space and Technology Committee on May 18, 1987 and then passed by a voice vote in the House on June 8, 1987. Then, between House passage in June, and the Senate report due later that summer, United States Secretary of Commerce Malcolm Baldridge died from injuries suffered when his horse fell on him during rodeo practice. Upon his death on July 25, 1987, he was sixty-four years old and the only one of the three remaining Cabinet Secretaries from President Reagan's first term in office.[60]

In the Senate, the bill was amended to name the National Quality Award after Malcolm Baldridge. The bill was reported from the Senate Commerce, Science and Transportation Committee on August 4, 1987 and passed the full Senate on August 5, 1987. President Reagan signed the bill know known as the Malcolm Baldridge National Quality Improvement Act of 1987 on August 20, 1987.[61]

Education and Total Quality Management

It is clear that the concept of quality is not new in manufacturing; however, in education, its implementation is more recent. A state department of education, with the cooperation of a major electronics firm,

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[60]Ibid.

[61]Ibid.

decided to implement Total Quality Management. In the summer of 1990, the state board of education adopted ten goals that were created as a result of the state superintendent establishing a commission. These goals set clear and measurable outcomes to be achieved by the year 2000. Under the title "Schools for Success," the state adopted the following Goals for Public Education:

1. 95% of the state's students will begin first grade ready to learn.

2. The state will rank in the top five states nationally based on national and international comparisons of student achievement and other measures of student success.

3. 100% of students of the state will be functionally literate in reading, writing, mathematics and citizenship.

4. On state developed assessment measures, 95% of the students will attain satisfactory levels of achievement in mathematics, reading, science, social studies and writing-language-arts.

5. On state developed assessment measures, 50% of the students will attain the level of excellence in mathematics, reading, science, social studies and writing-language arts.

6. The number of students pursuing post-secondary studies in mathematics, science and technology will increase by 50%.

7. 95% of the state's students will earn a high school diploma and will be prepared for post-secondary education, employment, or both.

8. By age twenty-five, 90% of the state's dropouts will have secured a high school diploma.

9. 100% of the state's citizens will be literate.

10. The state's schools will be drug free and alcohol free and will provide a safe environment conducive to learning.[62]

In establishing these ten goals and assuring their implementation, a member of the Commission, an employee of a large electronics firm, which had already adopted Total Quality Management, met with the superintendent. The superintendent knew that accomplishing those above mentioned ten goals would require a change in the way business was done in public education. A decision was made to change to a new management process, Total Quality Management. A partnership developed between the electronics business and the state agency. The leaders of the state agency spent three days at the training institute of the business. The leadership team wanted to make major changes.

In order to understand the interest of the state agency in Total Quality Management, it is necessary to review the history of how the decision was made to use Total Quality Management. In 1988, the state department of education and the electronics business came into contact with each other. The director of education of the business was asked to serve on

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[62]Overview Of The Total Quality Management (TQM) Initiative At The Maryland State Department of Education (Baltimore: MSDE, 1992), 5.

the state agency's Vocational Technical Commission. In 1988, the state agency's superintendent and the Board of Education looked at vocational education and set up a commission. Its charge was to conduct a comprehensive study of Vocational-technical education in Maryland and do four things:

1. Examine the changes in school and workplace, and define the role of vocational-technical education as it relates to the issues of economic productivity and quality of life in Maryland.

2. Develop a vocational-technical education, philosophy statement, a conceptual framework, competencies, delivery system and expected outcomes at all levels.

3. Establish and review the work of four task forces that focused on:

    a. Program operations and development
    b. Program enrollment and related services
    c. Staffing
    d. Partnerships

4. Develop a report for the State Superintendent which includes:

    a. A philosophy statement and conceptual framework for vocational-technical education
    b. Recommendations [63]

The director of education was asked to serve because the state agency wanted a business representative. The state university also had a member

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[63]Ibid.

on the commission. The Productivity and Quality Center of the university was asked to support the commission as facilitator and support staff. The director of the Productivity and Quality Center knew the director of education and asked him to attend.[64]

In 1989, the Commission presented its report, "Fulfilling the Promise," to the state agency's board. This report was put together by the State Commission on Vocational-Technical Education, composed of twenty-one members who came from business, education and the community.[65]

The recommendations from the task force were as follows:

1. Develop a new curriculum framework that will integrate academic and vocational subjects
2. Develop a new management model to administer the new program.
3. Emphasize staff development and revise staff certification.[66]
4. Expand business and education partnerships and involve educators and business at the policy level.
5. Create a flexible and dynamic evaluation mode.

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[64]Charles Zimmerman, interview by author, Personal Interview, Westinghouse, Baltimore, Maryland, May 1993.

[65]Maryland. Fulfilling the Promise: A New Educational Model for Maryland's Changing Workplace (1989)1.

[66]Ibid.,6.

6. Link the model created by the education system to a statewide Human Resources Development Policy.[67]

The Commission also established a philosophy, a mission and goals.

The philosophy was grounded in five basic assumptions:

1. All students have a right to an education that leads to achieving positive outcomes.

2. All students can learn; therefore, conditions must be made to achieve that end.

3. Education must be flexible enough to accommodate the rapidly changing world.

4. Twelve years of education do not exist in isolation; pre-school experiences, society, the family and the home must be figured in.

5. Secondary schooling should prepare students to:

   a. take advantage of opportunities provided by society.
   b. exercise their rights and responsibilities as citizens.
   c. make informed choices to either go to post-secondary education or work that will allow for lifelong economic independence.[68]

The mission developed by the Commission had two components:

1. The mission of secondary education in Maryland is to prepare all students for their transition from school to work, whenever that occurs.

2. The mission of the Maryland Model as it relates to career schooling is to:

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[67]Ibid., 7.

[68]Ibid., 19.

a. provide students with the knowledge, career information and skill necessary to not only choose a career that will provide economic independence but to be successful as well.
b. provide the necessary information if vocational-technical students decide to attend college.
c. send employers and post-secondary educational institutions the kinds of students who have the skills and ability to learn and adapt quickly to the new demands or changes, and respond in an effective manner.[69]

The goals developed by the Commission follow:

By the year 2000, the Maryland Model should produce these educational outcomes:

1. Make sure all students achieve the basic career and academic skills to function effectively in society.

2. Make sure each student has the information and guidance to make informed career and educational decisions.

3. Provide a skilled and flexible workforce to allow Maryland students and their employers to compete in a global economy.

4. Anticipate and plan for environmental changes by establishing policy-level collaborative relationships with the state, counties, employers and other agencies.

5. Avoid unnecessary duplication of programs and facilities through improved coordination among education providers.[70]

One of the recommendations in "Fulfilling the Promise" was to develop a new management model to administer the new program. The

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[69]Ibid., 20.

[70]Ibid., 20.

director of education from the business pushed the commission in the direction of Total Quality Management. The Commission made up of business people and educators, included the superintendent of a nearby county and former president of a community college, and the then assistant superintendent of Vocational Education, who retired right after that. The new assistant superintendent was in charge of vocational education, and asked the State Council of Vocational Education (SCOVE) to serve. The Council was the guiding body and wanted smoothness. The director of education from the business became the liaison as the superintendent moved into her new job. The new appointee started looking at the "Fulfilling the Promise" report to see how it could be implemented. A brainstorming session took place between the director of education and the assistant superintendent of Vocational Education. From this session a plan to change vocational education in the state was developed. The State Superintendent had four Commission reports to consider: The Sondheim report, which was accepted by the Governor; The Task Force on the Middle Learning Years, accepted by the State Superintendent; At Risk Youth; and the Vocational Technical Commission Report. Over a three month period, all these reports came to the state superintendent to become a part of the effort to develop a

strategic plan.[71]

While the director of education was at a SCOVE meeting, the state superintendent came to speak on his vision. In the discussion, the four commission reports were mentioned. The director asked the superintendent how he would integrate the four reports. As a result, the superintendent asked the director for assistance. The director was invited to the headquarters site of the state education department to speak with the superintendent and the department. After a year, with no real plan, the director suggested they do a matrix and look at what the reports had in common. The superintendent realized assistance was needed. The director then became a special assistant to the state superintendent with complete access. The director facilitated all strategic planning meetings.[72]

The four reports were examined and broken down to blend the information. The state department of education had information overload. Some meetings were done off-site, and some in-house.[73]

The CEO of the business supported the director of education being at the state agency. Finally, the director told the superintendent there was too

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[71]Ibid., idem, Zimmerman.

[72]Ibid.

[73]Ibid.

much information. He suggested to the superintendent that he focus on accountability and on where the state agency was going in terms of school reform. At one meeting, the director felt that he was running out of ideas, and the superintendent mentioned that he had scratched out some ideas. The director asked him to write them down. "Schools for Success" was what he wrote. It was a culmination process. The superintendent was in the best position to relate the vision "Schools for Success."

Step two was to sell the vision, "Schools for Success". The goals and strategies came out of this report. At the same time, the superintendent of vocational education was reforming Vocational Technical Education. It became clear that some changes would have to be made as a result of the commission reports. The Open Systems Model was used because the superintendent of vocational education wanted to study her processes. Meanwhile, the director had told the state superintendent a new management process had been looked at that would change the culture and develop a customer friendly posture at the state agency. The superintendent agreed. The director talked to his company, which agreed to help the state agency develop Total Quality Management and allowed twenty-one people from the state agency to go to the company's training headquarters. The group went on the company bus. Upon arrival, they were greeted by the

company leadership. One day was used to spend time at the Productivity Center. The Vice-President of Productivity and Quality spoke. The agenda included senior people on quality in the company. Later, the people of the state agency were exposed to the model of the company, the imperatives and implementation steps. There was more dialogue, as the meetings continued. People from Productivity, superintendent and deputies, and the Executive Assistant to the state superintendent and executive assistant to the state agency had a meeting. After the trip, some personnel changes were made.

With the appointment of a new superintendent, it was inevitable that some personnel changes would be made. A final meeting was held. Two productivity people came to facilitate, and a Total Quality Council was formed at the executive level. It has since changed over time, and now employees are on it, thus giving it a broader perspective. The deputy superintendent sits in on the meetings. The director of education is still an advisor to keep the continuity with the business. During that next year, the state agency received permission to use the business model.

The timing was right. Total Quality Management is well thought out. It is not the idea of the week. The biggest hiccoughs were the word "customer" and the word "process." What process do you use? How do you

identify the customer? K through 12 is the process.[74] The institution and the community are the customer.

A state department of education does not deliver instructional services directly to the students; the Local Educational Agencies (LEA's) assume that function. The state agency saw the need to examine and clearly define the roles and responsibilities in achieving the goals, so the focus turned to the state's primary customers, the LEA's, offering the products and services needed to deliver educational services to the students.

It was hoped that the state agency could model a Total Quality Management approach to be used on the local school level as a prototype for school improvement statewide. Thus, the idea for this dissertation was born.

Statement of the Problem

Statistical control and collecting data are a large part of the Total Quality Management process.[75] Because some educational institutions are implementing Total Quality Management, the assessment of the attitudes of employees toward Total Quality Management is essential to the success of its planned implementation in an organization.

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[74]Ibid.

[75]Ibid., Idem, Scholtes, 2-8.

This study investigated the relationship between the attitudes of employees in a state agency and the impact of those attitudes on the implementation of Total Quality Management. Further, the study hoped to determine how attitudes might be modified to facilitate the implementation of Total Quality Management.

The Problem

The problem may be translated into the following questions:

1. Do the attitudes of employees at a state department of education vary in accordance with their level of education, age, ethnic background, gender, length of employment in the agency, and department in which they work?

2. Can specific attitudes exhibited by resisters and adapters be identified?

Hypothesis

The problem and its sub-related problems are related to the following research hypothesis:

> There is a relationship between certain demographic characteristics of employees and the degree to which they will accept or reject the implementation of Total Quality Management in the organization.

Rationale for Hypothesis

Heretofore, Total Quality Management has been used almost

exclusively in industrial settings. According to the literature, it has only been in the past five years that attempts have been made to implement Total Quality Management in the educational arena. Thus, there are several reasons why it was deemed appropriate to investigate attitudes related to Total Quality Management implementation. The researcher hypothesized that unless attitude was in the adaptive mode, it would be extremely difficult to implement Total Quality Management. A state education agency is a bureaucratic management model. Total Quality Management is participatory. To effect that degree of change in an organization, the role of attitude is key. This study may be an integral part of future implementation and staff development at a state department of education level and local LEA's.

The second reason for the study was that, local LEA's could look to the state as an example of how change can be implemented.

Variables

The independent or predictor variables in this study were level of education, age, ethnic background, sex, length of employment, and department in which the person works.

The dependent variable was the attitude toward the implementation of Total Quality Management, the basis of establishing organizational change

in a state department of education. Survey items that directly solicited employee responses to questions which the literature identified as being indicative of measuring attitude were used to measure this variable.

Definition of Terms

In order to facilitate discussion, an operational definition of the independent variable is as follows: attitude, as used herein, is an organized predisposition to think, feel, perceive and behave in a certain way toward a referent or cognitive object. It is an enduring structure of beliefs that predisposes the individual to behave selectively toward items in a category. A category is defined as a class, or set of phenomena.[76]

Another operational term specific to this study is Total Quality Management. Total Quality Management is performance leadership in meeting customer requirements by doing right things right the first time.[77] Quality, Quality Assurance, Total Quality Management and Continuous Improvement are used interchangeably.

Organizational change and organizational development are used

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[76]Fred M. Kerlinger, Foundations of Behavioral Research (Chicago: Holt, Rinehart and Winston, Inc., 1968), 453.

[77]Lorraine T. Flowers, interview by author, Personal Interview, Maryland State Department of Education, Baltimore, Maryland, February 1992.

interchangeably and are defined as the change that is a part of the process of moving from a bureaucratic to a participatory style of management.

Culture is defined as the way things are done in an organization.

Climate is defined as the atmosphere created by management.

Implementation is defined as putting a process into effect.

State Department of Education is defined as that organization given the authority by the state legislature to carry out a program of public education.

Significance of the Study

This study is significant because the state agency sets educational policy for the local LEA's. No other agency is in the position to serve as a role model this way. Additionally, the implementation of Total Quality Management by a state department of education allows that agency to serve as consultants to other systems struggling with the problem of organizational change. By so doing, the state education department can position itself to be recognized in the national educational community.

Finally, this study documents historically the development of Total Quality Management in a state department of education.

Scope and Delimitations

The study described herein looked at the personnel in a state department of education and their attitudes toward Total Quality Management implementation. Specifically, it focused on the following areas: attitudes as they relate to level of education, age, ethnic group, sex, length of employment and department in which the personnel work. This study also attempted to develop a profile, identifying adapters and resisters. This study is applicable to individual school districts as well as to individual schools. Four hundred people were studied. They comprised a group which has representatives on the Total Quality Council.

The results of this study are applicable to other educational settings in which Total Quality Management may be implemented.

Assumptions for the Study

There are several assumptions that served as the foundation of this study:

1. that Total Quality Management is applicable to a public sector institution, even though it was developed for industry.

2. that resisters are more likely to describe their attitudes as strongly disagree and disagree and that adapters are more likely to describe their attitudes as strongly agree or agree.

3. that a survey can be used to identify adapters and resisters in

relation to the implementation of Total Quality Management.

4. that Total Quality Management is related to the culture of an organization, that is, the formal and informal rules and regulations of an organization. This assumption is further illustrated by Figure 2.

5. that people want to do the right thing.

6. that Total Quality Management can only be successfully implemented when personnel are favorably disposed toward it.

WHAT DOES AN ORGANIZATION WITH HIGH STANDARDS HAVE?

- Dedication to the purposes of the system
- A strong value system and sense of mission
- Visionary leadership
- Accountability
- Motivated and committed workers
- Pride in achievement
- Expectation for success
- Commitment to quality services and outcomes
- Effective channels of communication
- Realistic expectations for clients

Figure 2. Source: George A. Goens and Sharon I. R. Clover, Mastering School Reform. (Boston: Allyn and Bacon, 1991), 39.

Limitations

This study had the following limitations:

1. Although employee attitudes toward Total Quality Management implementation may be a function of factors external to a state department of education setting, this study considers only factors internal to the work site.

2. The attitudes of the personnel in a state educational agency were unknown prior to the administration of the survey instrument.

In the next chapter, the researcher presents the review of related literature. A perusal of the literature has identified that studies have been done on perception as a characteristic of attitude, interaction as a dynamic of attitude, Total Quality Management, the role of leadership and attitude and organizational change. Due to the dearth of studies dealing with attitude toward Total Quality Management implementation, this study was developed to extend the knowledge in this area.

CHAPTER 2

REVIEW OF THE LITERATURE

Introduction

The review of the literature is subdivided into five sections. The first section will discuss the role of leadership. One of the most important things necessary before the decision is made to implement Total Quality Management in an organization is to get the unconditional support of top management. When Total Quality Management "fails" in an organization, according to the literature, one need only look at the lack of top leadership support.[78]

Studies relating to attitude and organizational change will be discussed in the second section. There are those who see Total Quality Management as another wave of organizational change. Earlier waves included bureaucracy, created by Max Weber, and another, scientific

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[78]Stanley M. Cherkasky, "'Quality' Must Put Customers First," The New York Times, 4 April 1993, 13 (F).

management, created by Frederick Winslow Taylor.[79]

Studies relating to interaction of personnel are discussed in the third section. Working on teams and cooperatively is significant to the Total Quality Management Process, and interaction is a part of this.

In the fourth section, studies dealing with perception as a characteristic of attitude will be discussed. Included in this discussion are related studies from areas other than education, since, in the final analysis, human attitudes are similar, no matter what the occupation.

The final section will discuss Total Quality Management. In the past, studies dealing with Total Quality Management dealt with industry, but now there are studies that are applicable to education.

Finally, a critical summary of the major themes of the literature review will be presented.

The Role of Leadership

In much of the reading on Total Quality Management, it is clear that leadership is very important. Some of the characteristics a leader must have include vision, the ability to exhibit various kinds of leadership, the ability

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[79]Kenneth Gray, "Why We Will Lose: Taylorism in America's High Schools," Phi Delta Kappan, January 1993, 370-74.

to take risks and recognize the importance of people.

In Visionary Leadership, Burt Nanus defines vision as a "realistic, credible, attractive future for your organization".[80] The Bible also speaks of the importance of vision. In Proverbs 29:12, it reads thus: "Where there is no vision, the people perish."[81]

James MacGregor Burns, in his classic, Leadership, describes three kinds of leaders: transactional, transformational and moral. The transactional leader exchanges one thing for another. An example of this style of leadership is exchanging jobs for votes. Transforming leaders recognize and exploit a need or demand of a potential follower. But more than recognition and exploitation, the transforming leader looks for potential motives in followers seeking to satisfy higher needs. The results of the transforming leader is a relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents. The moral leaders have a relationship not only of power but of mutual needs, aspirations and values; second, that in responding to leaders, followers have a knowledge of alternate leaders and programs and the

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[80]Burt Nanus, Visionary Leadership (San Francisco: Jossey-Bass, Inc., 1992), 8.

[81]Proverbs, 29:18.

and economic change, they assume leadership to bring about the change. Moral leadership emerges from the basic wants and needs, values and aspirations of the followers. Moral leadership can produce social change that will satisfy followers' authentic needs.[82] Because of the process of change, it would seem that the progression of a transformational leader to a moral leader takes place.

Moments of Truth. New Strategies for Today's Customer-Driven Economy by Jan Carlzon describes flattening a bureaucratic hierarchy in the SAS Airlines industry. When Carlzon took over a branch of SAS, the domestic airline, it was operating in the red. By the time he left three years later, to assume the presidency of SAS, the domestic airline was operating in the black.[83] Carlzon is a leader who understands the need to take risks.

Upon coming to SAS in 1981, he became president of an organization that had losses of thirty million dollars in the previous two years. His leadership is credited with turning that situation around. To effect this kind of change, to operate in the black required revolutionizing the

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[82]James MacGregor Burns, Leadership (New York: Harper and Row Publishers, 1978), 4-5.

[83]Jan Carlzon, Moments of Truth. New Strategies for Today's Customer-Driven Economy (New York: Harper and Row Publishers, 1987), viii.

organization.[84]

The state of Maryland, for the last four years, has been actively involved in building a new system for supporting change, in its public school system. In an effort to deliver a quality education to students in the state, two proposals have been forwarded by the state superintendent. The first, developing high standards for student performance to determine successful and unsuccessful schools, and second, a state regulation requirement that will allow the state department to intervene in the schools that are failing and provide them with new innovative practices and leadership.[85]

A commission on school funding has been established to examine the ways the state funds the local LEA's and recommend ways to assure every Maryland youngster a quality education. These state initiatives mirror the national ones which called for flexibility for change in individual schools and state-wide performance standards. Already, Maryland has school-level accountability and improvement to ensure success for our students.[86]

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[84]Ibid., ix.

[85]Nancy S. Grasmick, "School Reform: Beyond the Bell Curve," The Sun, 30 May 1993, c.

[86]Ibid.

Additionally, Maryland has become the first state to require public or community service as a graduation requirement. The message here is that education is more than preparing one for the world of work, or higher education. Education also prepares one to live in a democratic society. Ultimately, real improvement will come at the local level, but the State Department of Education is starting and leading the process.[87]

David Osborne and Ted Gaebler, authors of Reinventing Government, How the Entrepreneurial Spirit is Transforming the Public Sector, include a chapter discussing how government should treat its customers. Democratic governments exist to serve the citizens and businesses exist to make a profit, yet it is business that consistently looks for new ways to please their customers and the governmental agencies seem to be customer blind.[88]

Because most public agencies are not directly funded by their customers, they can get away with a certain amount of arrogance. On the other hand, if businesses do not please their customers, profits decrease.[89]

In the 1990's, people expect to be treated like valued customers, even

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[87]Ibid.

[88]David Osborne and Ted Gaebler, Reinventing Government, How the Entrepreneurial Spirit is Transforming the Public Sector (New York: Penguin Books, 1993), 166.

[89]Ibid., 167.

by the government. In the 50's, almost two-thirds of employed Americans had jobs that were at the unskilled level; one-third worked with their minds. Today, that ratio has been reversed, therefore the level of expectation is different as well. Many Americans ignore government until it affects them personally, Today's culture is becoming more and more knowledgeable and more diverse and even though traditional public institutions offer one size fits all services, consumers prefer choice and when these consumers come face to face with this, they are beginning to go elsewhere.[90]

To handle these changes, entrepreneurial governments are transforming themselves. They are using customer surveys and other methods of offering their customers choices.[91] Some entrepreneurial governments are now being financed like businesses. In Minnesota, if students leave schools, teachers and administrators are paid differently. If motor vehicle offices were paid based on the number of licenses or registrations they processed, their employees would likely act differently. Some public institutions are responding to the customers. The Duval County School Board surveyed its community and found a real need for before and after school care. As a result, there is a community schools program that

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[90]Ibid., 168.

[91]Ibid., 169.

keeps schools open from 7:00 a.m. to 5:45 p.m. School is free and child care costs twenty dollars a week.[92] In Dallas, the recreation department operates a full-service recreation center twenty-four hours a day. It has shows, concerts and sports around the clock. In addition to serving people who work odd shifts, it has also helped to reduce crime.[93]

In 1984, Joseph Sensenbrenner, mayor of Madison Wisconsin, attended a lecture by W. Edwards Deming. Madison was facing a severe fiscal squeeze. Federal aid had been cut, property tax rates were high. The residents did not want services cut or their taxes raised. Besides, they felt that they were paying more for less already. Deming's method seemed a way to solve the Madison problem of high taxes and reduced services. Deming urged business to ask the customers what they want and shape the entire service and production processes to produce it. Total Quality Management says that the customer is most important element in an organization; those who serve customers directly are next and managers are last. Managers are only there to serve those who serve the customers. This is contrary to most organizational charts. Total Quality Management forces organizations to listen to the customers and it has caused cultural changes in

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[92]Ibid., 170.

[93]Ibid., 171.

some organizations.[94]

According to these authors, there are seven ways to put the customer in the driver's seat: (1) providers must be accountable to the customers[95]; (2) customer-driven systems take the politics out of choice of provider decisions; (3) customer-driven systems stimulate more innovation; (4) customer-driven systems give people choices between different kinds of services[96]; (5) customer-driven systems waste less because they match supply to demand; (6) customer-driven systems empower customers to make choices thereby becoming more committed customers[97]; and finally (7) customer-driven systems create more opportunity for equity.[98] In a world where some cable televisions have seventy channels, and banks let customers transact business by phone, one-size-fits-all government is doomed to failure.[99]

Stanley M. Cherkasky states that quality came late to America, but

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[94]Ibid., 172.

[95]Ibid., 181.

[96]Ibid., 183.

[97]Ibid., 184.

[98]Ibid., 185.

[99]Ibid., 194.

when it did come, it came in a loud and revolutionary way; consultants began selling their services so that quality has now become big business. Total Quality Management is frequently touted to be a management system that promises to cure ailing companies. In some places it has not lived up to expectations. Why? Managers do not understand the process of transforming corporate culture. Total Quality Management is not an overnight phenomenon. It takes a great deal of patience to guide a Total Quality Management program. Managers, in addition to having an understanding of Total Quality and knowing that it takes years to implement, must realize that the customers, not the shareholders and directors, must come first.[100]

In spite of the bad reputation Total Quality Management has received in some circles (according to this author), it has proven itself to be a powerful competitive weapon.[101]

According to Rick Tetzeli, when several CEOs were asked what separates good quality efforts from disastrous ones, one CEO, Dan Ciampa of Roth and Strong, stated that a quality program works when the program

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[100]Stanley M. Cherkasky, "Quality" Must Put Customers First," The New York Times, 4 April 1993, 13 (F).

[101] Ibid.

is visibly backed by the chief executive.[102] This article says there are eight keys to quality. The CEO must:

1. Work with employees to decide what the company should be.
2. Focus quality effort on customer service, not cost cutting.
3. Show a willingness to change everything.
4. Set up pilot programs to let employees learn how to solve problems.
5. Let workers make the changes they suggest.
6. Reward employees when they improve the way customers are served by the company.
7. Keep workers informed on the success or failure of the quality program.
8. Stay actively involved throughout the quality effort.[103]

Team management is the way most companies will be run by the year 2000, some have predicted. However, putting diverse groups of people together, and expecting them to work smoothly, is not a simple task. Aimee L. Stern, suggests some ideas to assist the process:

1. Management must make sure the project's teams are working on a top priority.

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[102]Rick Tetzeli, "Making Quality More Than A Fad," Fortune, 18 October 1992, 12.

[103]Ibid., 13.

2. Choose leaders who build consensus, not autocrats.

3. Provide incentives to promote teamwork.

4. Choose leaders who are flexible.

5. Have teams report to a single manager.

6. Management should promote collaboration between teams.

7. Realize that collaboration must develop over time.[104]

Attitude and Organizational Change

Frederick Winslow Taylor is the man who created scientific management at the end of the nineteenth century. While he said that scientific management required men of brains to organize and direct an organization and that without them, civilization would come crashing down, he also said that dictatorial management methods were inefficient and that the close cooperation between owners and workers would lead to greater profits and less strife among workers. Many people remembered the first part, but they forgot the second part. Those considered brilliant became managers, and the workers became those left over.[105]

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[104]Aimee L. Stern, "Managing by Team is Not Always As Easy As It Looks," The New York Times, 18 July 1993, 5 F.

[105]Kenneth Gray, "Why We Will Lose: Taylorism in America's High Schools," Phi Delta Kappan, January 1993, 370-374.

This paradigm was carried over into schools. Those students deemed most able were tracked into the best classes, which had fewer students and the best teachers. These students also had a higher level of self-esteem, and teachers thought more highly of their abilities than of the abilities of other, less brilliant students.[106]

In today's economic times, in the classroom as well as in the workplace, all brains are needed, even those considered less than the best. By using Total Quality Management in the schools with the team component, educators make it possible for all students to win, not just the few.[107]

Changing this attitude is not going to be an easy task; after all, many educators, as well as parents and students, believe that the present system is fair.[108]

The present system leaves some students with delusions of grandeur and the rest with feelings of inferiority, and is therefore counter-productive.[109]

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[106]Ibid., 372.

[107]Ibid.

[108]Ibid.

[109]Ibid.

Student learning must be measured against a standard, not against other students. A new "team" message must be sent to students. The article by Gray, cites Wayne Gretzky, who stated that the better the team played, the better he was able to play. In a camp that trains future Olympians, a quote from Vince Lombardi is used: "Individual commitment to a group effort: that is what makes a team work, a company work, a society work and a civilization work."[110]

These messages must be conveyed to all students. Because many more students enter the workforce than enter college, students must know that the new economic order will require teamwork. One way to foster teamwork is to make all students feel that they are part of the school. The answer is not necessarily one of having one common curriculum, but creating an opportunity for students in the various programs of study to interact, or making a graduation requirement that all students participate in a team project and that the students must come from all areas of study. In this way students would find the following quote by Rudyard Kipling to be true: 'The strength of the Wolf is in the pack."[111]

Seymour B. Sarason in The Culture of the School and the Problem of

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[110]Ibid., 374.

[111]Ibid.

Change discusses the complexity of effecting change in the school setting. He discusses three points. The first one is the need to understand the role of school personnel, that is, the complexity of each. In the complexity area, one must understand the demands, relationships to other types of roles and built-in conflicts, as well as relationships to the overall system in schools. The second point is crucial in terms of the principle of determining the fate of the change process, and the third point is to control the tendency to criticize while the change is taking place.[112] Making changes or implementing new ideas is not easy, so the change agents must understand the unique nature of schools.

Incredibly American, Releasing the Heart of Quality, discusses why there are differences between what motivates Americans and what motivates people of other cultures as it relates to Total Quality Management. Americans as a group are not motivated by one of the tenets of Total Quality Management, continuous improvement. In the American mind, this connotes achieving perfection and after perfection, what is left? Zuckerman and Hatala discuss the Japanese mind set as well. The idea of continuous improvement seems to be a logical concept. What motivates Americans is

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[112]Seymour B. Sarason, The Culture of the School and the Problem of Change (Boston: Allyn and Bacon, Inc., 1974), 4.

the impossible dream. The book goes on to list ways Americans have come together to achieve a goal that requires overcoming tremendous odds. The American way though is to move on to the next task, not continually working on the same thing. There are further explanations in the figures below. Figure 3, American Quality Archetype, shows the states and actions of an American first learning about quality. The typical American starts in the lower left quadrant, they do not know what others expect or want and they feel bad about it. The diagonal arrow represents a transformation. It points out a change from the time when people move from not doing what other people expect or want and feeling bad, to doing what other people expect and feeling good. This explains why slogans like "do it right the first time" may actually be more debilitating than motivating, unless people know what "doing it right" is.

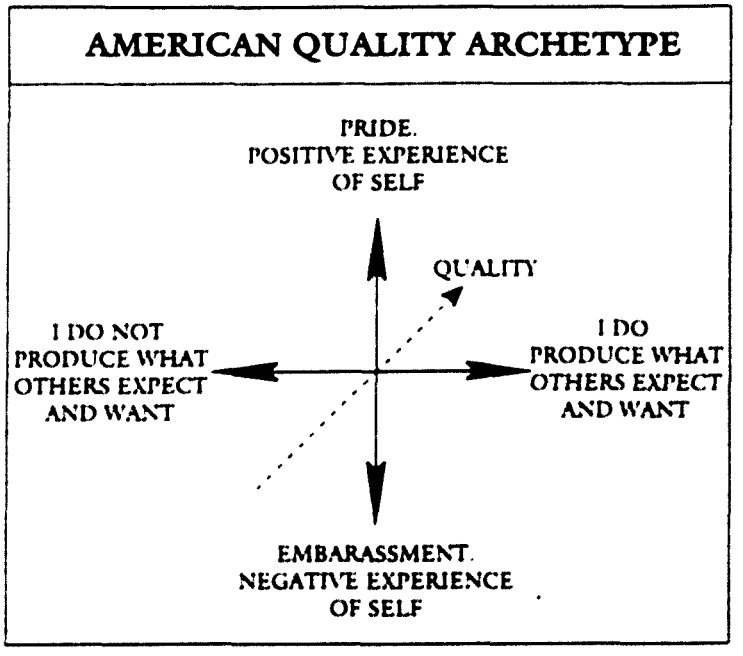

Figure 3. American Quality Archetype.

Source: Marilyn Zuckerman and Lewis Hatala, Incredibly American. Releasing the Heart of Quality. (Milwaukee: ASQC Quality Press, 1992), 50.

Figure 4 shows a quality quaternity. The opposing forces in this figure create tension between failing and succeeding. For Americans, in the beginning, one is not expected to succeed, because one is, after all, only human. If one does succeed in the beginning, there is no reward, and no glory.

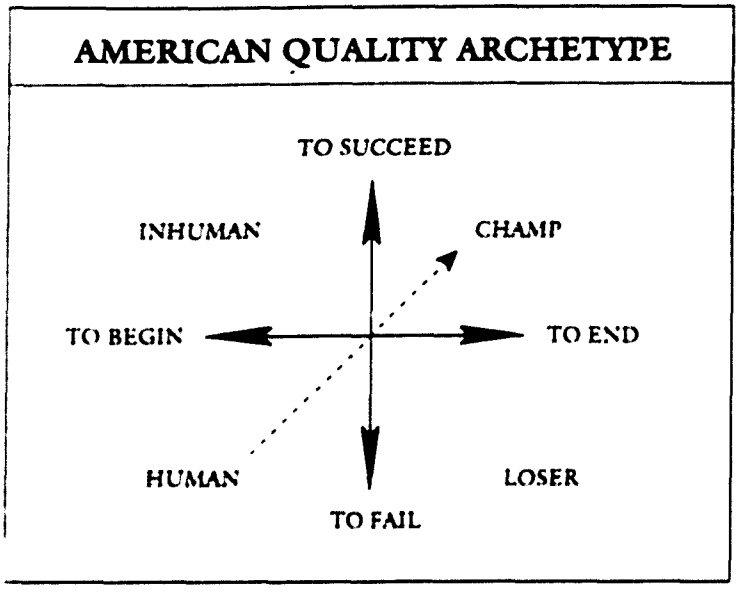

Figure 4. Quality Quaternity.

Source: Marilyn Zuckerman and Lewis Hatala, Incredibly American, Releasing the Heart of Quality, (Milwaukee: ASQC Quality Press, 1992), 52.

The "Q" line represents customer expectations. To Americans, the closer they get to the "Q" line, boredom sets in and the curve falls off because defects multiply. This is shown in Figure 5.

Even when the "Impossible Dream" is added, unless it is the right impossible dream, Americans will not feel the pull to reach the "Q" line (Figure 6). The first dream must be something that is deemed literally impossible but eminently worth striving for, like an Olympic gold medal. Second, the dream must inspire the feeling that even if the dream is impossible, maybe, just maybe, people can do it.

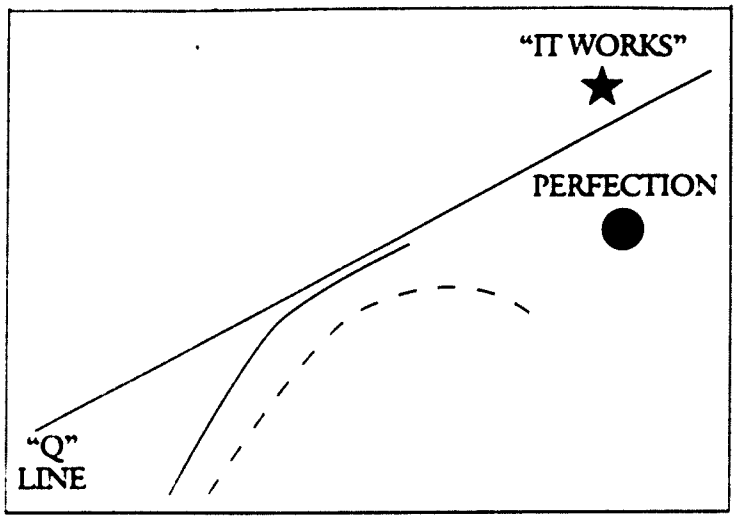

Figure 5. The "Q" Line.

Source: Marilyn Zuckerman and Lewis Hatala, Incredibly American, Releasing the Heart of Quality, (Milwaukee: ASQC Quality Press, 1992), 72.

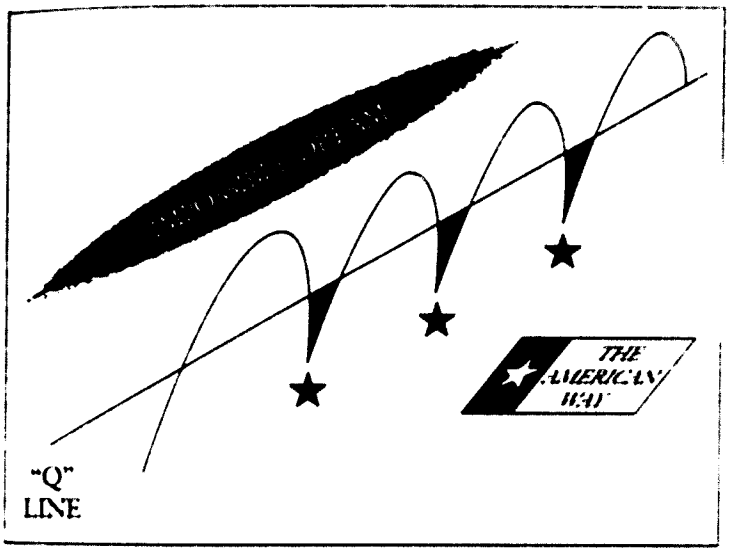

Figure 6. The "Q" Line.

Source: Marilyn Zuckerman and Lewis Hatala, Incredibly American, Releasing the Heart of Quality, (Milwaukee: ASQC Quality Press, 1992), 73.

To survive today, a business cannot depend on a few peak performers. Instead, the creativity and potential of all people in the company and at all levels must be tapped. Today's leader must be a facilitator, an enabler and an effective group member.[113] The book, The One Minute Manager Builds High Performing Teams, provides a map for making the journey to a more productive team. The characteristics of high performing teams are, purpose, empowerment, communication, relationships, flexibility, optimal performance, recognition, appreciation and morale.[114] The eight qualities to observe in groups are: communication and participation, decision making, conflict, leadership, goals and roles, group norms, problem solving and climate/tone.[115]

This book also lists the four stages of group development. Stage one is orientation, stage two is dissatisfaction, stage four is production and stage three is resolution. The characteristics of each stage will be listed below. (The order is taken from the original work.)

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[113]Kenneth Blanchard, Donald Carew and Eunice Parisi-Carew, The One Minute Manager Builds High Performing Teams (New York: William Morrow and Company, Inc., 1990), 6.

[114]Ibid., 21.

[115]Ibid., 32.

Stage I - Orientation

1. Feeling somewhat eager with high expectations.
2. Feeling some anxiety.
3. Testing the situation as well as central figures.
4. Depending on authority and hierarchy.
5. Needing to find a place and establish oneself.[116]

Stage II - Dissatisfaction

1. Feeling a discrepancy between hopes and reality.
2. Feeling dissatisfied for having to depend on authority.
3. Feeling frustrated.
4. Feeling confused and incompetent.
5. Reacting negatively toward leaders and other team members.
6. Competing for power and/or attention.
7. Experiencing extremes, dependence/independence.[117]

Stage IV - Production

1. Feeling excited about participating in team activities.
2. Working collaboratively as well as interdependently with sub-groups and whole-groups.
3. Feeling team strength.
4. Showing high confidence in accomplishing tasks.
5. Sharing leadership.
6. Feeling positive about task successes.
7. Performing at high levels.[118]

Stage III - Resolution

1. Decreasing dissatisfaction.
2. Resolving discrepancies between expectations and reality.

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[116]Ibid., 39.

[117]Ibid., 46.

[118]Ibid., 57.

3. Resolving polarities and animosities.
4. Developing harmony, trust, support, and respect.
5. Developing self-esteem and confidence.
7. Being more open and giving more feedback.
8. Sharing responsibility.
9. Using team language.[119]

Zapp! is a book about an imaginary company and it discusses the process of empowering employees and supervisors. It serves as a guide through changing the culture of an organization, and illustrates the effectiveness of empowering employees. The most important parts of the Zapp fable are listed below:

1. Constant performance feedback relative to goals to keep the level of Zapp high.
2. Whenever possible, allow workers to manage their own feedback system.
3. Changing goals and measurements Zapps people in new directions.
4. To get maximum Zapp, many workers need to be coached.
5. People learn faster from successes than failure.
6. Learning more about your job boosts Zapp.
7. Zapped people need direction (Key result areas, goals and measurements).
8. Knowledge means skills, training, information and goals.
9. Resources mean tools, materials, facilities and money.
10. Support means approval, coaching, feedback and encouragement.

The key character in the book is named Joe. Joe also noted a few things to remember for Zapp Teams:

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119 [119]Ibid., 64.

1. Creating teams spreads Zapp.
2. A Zapped team is more productive than Zapped individuals.
3. A team that makes many decisions has more Zapp than teams that cannot make decisions.

To increase team Zapp:

1. Allow the team to choose their own members.
2. Establish the team's mission.
3. Provide the time and facility for the team to meet.
4. Provide technical training as needed.
5. Develop interacting skills, decision-making and problem solving skills.

How is the determination of how sapped or zapped an employee is?

1. The person's immediate supervisor or group leader.
2. Other people who affect the person's job.
3. Higher management.
4. The organization.

Joe also learned that management had a role in spreading Zapp:

1. To protect people from being Sapped by the company while supporting and encouraging the Zapping things the company can offer.
2. Make sure managers have the necessary skills to Zapp, if not provide training.
3. Model Zapp.
4. Coach subordinate managers in the use and improvement of their Zapp skills.
5. To reward performance that is a direct result of Zapp.
6. Create an environment where Zapp can happen.

Joe looked over his notes and decided upon a three-step action plan for Zapp Rookies:

1. Read and re-read the notebook.

2. Get training in Zapp.
3. Do not stop learning.[120]

David A. Garvin, the Robert and Jane Cizik Professor of Business Administration at the Harvard Business School, states in his article entitled "Building a Learning Organization" that many continuous improvement (Total Quality Management) programs are growing, but many of them are failing. Why? Many companies have not understood that any organization committed to continuous improvement must also be committed to learning.[121]

He suggests that the three ingredients necessary for a learning organization are meaning, management and measurement. First, the organization needs to establish what a learning organization means to them. Secondly, management needs clearer guidelines with operational advice, and third, measurement must be done to assess the rate and the level of the organization's learning to determine if, in fact, gains have been made.[122] This groundwork must be laid, to firmly launch a learning organization that

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[120]William C. Byham, Ph.D. and Jeff Cox, Zapp! The Lightning of Empowerment (New York: Fawcett Columbine, 1988), 112-190.

[121]David A Garvin, "Building A Learning Organization," Harvard Business Review, July-August 1993, 78.

[122]Ibid., 79.

will be successful. A learning organization, as defined by Garvin, "is an organization skilled at creating, acquiring, and transferring knowledge, and at modifying its behavior to reflect new knowledge and insights." Further, without changes in the way work gets done, in addition to the aforementioned definition, only the potential for improvement exists.[123]

Meaning, management and measurement form the framework for defining the five activities for which learning organizations are skilled. The five activities are: systematic problem solving, experimentation with new approaches, learning from their own experiences and the past, learning from the experiences and best practices of others and transferring knowledge quickly and efficiently throughout the organization.[124]

The author goes on to elaborate on the five activities. Systematic problem solving includes relying on the scientific method rather than guesswork for diagnosing problems. One method might be the Deming Plan, Do, Check, Act cycle. The second component of systematic problem solving is insisting on data, or fact-based management. The third component of systematic problem solving is the use of simple statistical tools such as Pareto charts, histograms and cause-and-effect diagrams. These tools are

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[123]Ibid., 80.

[124]Ibid., 81.

employed to not only organize the data, but to draw inferences from it as well.[125]

The second activity is experimentation. Experimentation is usually motivated by opportunity and expanding horizons. Current difficulties should not be a part of this process. There are two kinds of experiments, ongoing programs and one-of-a-kind demonstration projects. Ongoing programs involve small experiments designed to provide incremental knowledge gains. They serve the purpose of ensuring a steady flow of new ideas.[126] These programs require incentives that make them worth the risk to employees; otherwise the chance that employees may not participate is high. Ongoing programs need managers and employees who are skilled at performing and evaluating experiments.[127]

Demonstration projects often mean starting from scratch or a clean slate. These projects usually share the following characteristics:

1. These are usually the first projects to embody the principles and approaches of what the organization hopes to adopt.
2. They establish policy guidelines for later projects.

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[125]Ibid.

[126]Ibid., 82.

[127]Ibid., 83.

3. They ofttimes encounter severe tests of commitment on the part of workers to see if indeed the rules have changed.

4. They are usually developed by strong multifunctional and or multilevel teams.

5. They have limited impact on the rest of the organization if there are no strategies put in place for transferring learning.[128]

The third activity is learning from past experiences. Organizations must review past successes and failures, assess them and then record them in a form open and accessible to employees. The fourth activity is learning from others. The goal here is to study the practices from the way the work gets done, rather than the results, some call this benchmarking. The last activity is transferring knowledge. Knowledge must be spread quickly and efficiently throughout an organization to have the greatest impact.[129]

Organizational learning can be traced through three stages that overlap. The first step is cognitive, the second is behavioral and the third is performance improvement. Because cognitive and behavioral changes generally come before performance improvement, any learning audit, considered complete, must include all three.[130] Surveys, questionnaires and

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[128]Ibid.

[129]Ibid., 87.

[130]Ibid., 90.

interviews are the measuring tools. At the cognitive level, they would focus on attitudes and depth of understanding. Direct observation, in addition to surveys and questionnaires can be used to assess behavioral changes.[131] The final thing measured by a comprehensive learning audit is performance. Any organization that wishes to become a learning organization need only to begin by following these steps:

1. foster an environment conducive to learning.
2. open up boundaries to stimulate the flow of ideas.
3. create learning forums.
4. realize that these changes will not happen overnight.[132]

Interaction as a Dynamic of Attitude

Interaction as a dynamic of attitude is a part of teambuilding. There has been significant study on team interaction.

According to House and Price, the more teams understand each other, the better they understand each other's work and interrelationship.[133] When considering all functions, they are more likely to make intelligent

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[131]Ibid.

[132]Ibid., 91.

[133]Charles H. House and Raymond L. Price, "The Return Map: Tracking Product Teams," Harvard Business Review 69 (January-February 1991), 92-100.

decisions.

Dyer states that there are all kinds of teams: professional and amateur sports teams, family teams, and church teams. An effective team building process focuses as much on interpersonal relations as on completing work. Social and task processes are important to team success. All teams need good coaching or management. Problems between team members must be resolved; unclear issues must be clearly understood. Good teams stop, evaluate their performance, diagnose the problems and then prepare to play the game again.[134]

Brokaw writes about interaction through the use of books. The Web Converting Company is located in the suburb of Cedar Hill, Texas. Its employees are given the opportunity to read on company time. Every Thursday at 4:00 p.m., machine operators and production workers step away from their machines and read aloud. At first, employees felt weird reading aloud, but they grew used to it. James Willian was a machine operator who discussed a book, Leadership is an Art by Max De Pree, with thirteen of his denim-clad colleagues. He concluded that maybe it was better to be a part of a team of outstanding individuals than part of an outstanding team.

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[134]William G. Dyer, Teambuilding Issues and Alternatives, 2d ed. (Massachusetts: Addison-Wesley Press, 1987), 5-6.

Many of his colleagues agreed, but one who did not, said people lost too much peripheral vision if they were not focused on becoming an outstanding group. One point raised was that everyone had the right and duty to influence decision making. In discussing the books, workers expressed good ideas, and some workers felt the discussion helped relationships. The workers felt reading made the atmosphere different, better. In most companies, the Chief Executive Officers (CEO's) passed the book around in an attempt to help locate customers or to unite a management team. At most companies, when the books were read, they were simply placed on the shelf. At Web, the books were read and used to build the team.[135]

The Par Group, an organization in Atlanta Georgia, that works with organizations interested in implementing Total Quality Management, feels that listening is the key to teamwork. When people really listen to each other, they know if they are being taken seriously. It is very difficult to get people to work together when they do not take the time to listen to each other and do not take each other seriously.[136]

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[135]Leslie Brokaw, "Books That Transform Companies, Why the Crew at Web Converting — From Top Managers to Shift Workers — Is Meeting for an Hour Every Week Just to Read," Inc., 13 (July 1991), 30-40.

[136]The Par Group, Quality Performance, (Tucker, Ga: The Par Group, 1991), 4.

Xerox, winner of the Baldridge National Quality Award, has six Principles of Quality. The second one is that success depends upon the involvement and empowerment of trained and highly motivated Xerox people (teams).[137]

In an effort to know one another better, a group of males, some friends and some enemies, set out on a trip. The article "Where the Dangers Aren't Make-Believe," by Anne Thompson, discusses the four day white-water rafting trip on the Colorado River. Twenty-two men set out on the journey to get to know each other and themselves better by tackling a treacherous task as a team.[138]

Six of the men had taken such a trip before; some had very little experience, and some had none. All those who were interviewed at the end of the trip stated that they would do it again and that the trip had a positive effect on their lives. The men reported a closeness, even the men who had viewed each other as rivals before the trip.[139]

During the trip, fifteen of the men were thrown from the boat and

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[137]Paul Allaire, "Quality Improvement: A Never Ending Journey," The Journal for Quality and Participation, March 1990, 69.

[138]Anne Thompson, "Where the Dangers Aren't Make-Believe," The New York Times,, 26 September 1993, 23 (F).

[139]Ibid.

had to rely on each other. In the boat, unlike their everyday lives, there was no pecking order; each man was equally important. The river had no concern for who they were. Some found that the shared experiences helped them reveal more of themselves. The shared and sometimes frightening experience brought these men closer together.[140]

In "Where the Cubicle is Dead," by John Markoff, the discussion centers on the Apple computer company. Apple computer was having problems getting its computer designers to come to work. The designers stated that they were unable to concentrate in the modern office. Most modern offices are small cubicles in large rooms. Apple executives felt that the best ideas come from a feeling of community, so they changed the configuration of one of their offices in Silicon Valley. The new office had private space for each researcher and designer plus a common area for informal meetings. Apple's employees consider the plan a success. They can now go off in private and create, and if they need to interact as a team, they have space in which to do so.[141]

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[140]Ibid.

[141]John Markoff, "Where the Cubicle is Dead," The New York Times, 25 April 1993, 7 (F).

Perception as a Characteristic of Attitude

As indicated in the operational definition, perception is a characteristic used to describe attitude. It has been noted that perception is a highly correlated characteristic of attitude phenomena.

Sherman Ross' study concerns the relationship of teacher participation in Quality Circles to teacher satisfaction. The results do not conclusively support a relationship between meeting an individual's self-esteem needs and Quality Circle participation, but participants felt they derived personal benefits, and the opportunity to participate in decisions directly affected them. If given the opportunity, they would participate in another Quality Circle. Ross concludes that Quality Circles alone will not create employee satisfaction, but that they can be a useful strategy.[142]

Debra J. Cohen notes that employees are more likely to participate in training programs if they feel supervisory or management support is there. If managers support the training process, employees are more likely to be highly motivated and set goals.[143] Honeycutt's study examines the key to

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[142]Sherman Ross, "The Relationship Between Quality Circles and Teacher Satisfaction," Educational Research Quarterly 14 (1990), 53-56.

[143]Debra J. Cohen, "What Motivates Trainees?" Training and Development Journal 44 (November 1990), 91-93.

effective Quality Circles. While management support is important, training is more significant. Through training, members perceive themselves as being effective; therefore, they are. The training gives them the confidence to function as an effective Quality Circle or team.[144]

Dr. Brian Lockard, assistant superintendent of Carroll County Public Schools, relates that perception had a role in that county deciding to implement Total Quality Management. The Carroll County Quality effort began in 1989. In 1987, the county had hired a new superintendent who suggested that the county develop a long range plan. The continuous improvement plan had many of the components of Total Quality Management, but because many people perceived Total Quality Management as one strictly for business, possibly creating a tremendous amount of resistance, the plan was introduced as Continuous Improvement.[145]

According to Mary Ann Maskery, author of "Two Views of Service, Japan Wins," people may argue over the price of an item, or even the job, but future customer purchases are often determined by the attitude of the

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[144]Alan Honeycutt, "The Key to Effective Quality Circles," Training and Development Journal 43 (May 1989), 81-84.

[145] Brian Lockard, Ph.D. "Quality in Education," Speech at ASQC meeting. Location, 17 Mar. 1993.

people the customers deal with, in other words, how they perceive they are treated. A survey was conducted by an import car company in Japan, and the surprising conclusion was that customers were more loyal to the dealership than to the actual brand of the automobile. If, in other words, the dealer were to switch brands, the customer would come back.

The author goes on to describe two different experiences in two automobile dealerships. One dealership was in Japan, the other in Detroit. Ms. Maskery took her 1987 Oldsmobile to several dealers in the Detroit area to have a rear view mirror replaced. She called the nearest dealer and received two different answers to the question of when she could bring the car in. One person said bring the car in the next day; another person at the same dealership told her to bring it in later that week. The author decided to drive over to the dealership to see if the car could be left overnight to be worked on the next day. Someone at the dealership told her she could not leave the car and to try the glass company up the street. By the time she got there, the glass company was closed.[146]

The author went home and decided to call the car dealership manager to see what later in the week meant. He was the first polite person she had

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[146]Mary Ann Maskery, "Two Views of Service - Japan Wins," Automotive News, 6 September 1993, 14.

talked to up to this point. He told her to bring the car the next day. She drove over, and the car was taken right away. There was no place for customers to sit, so she wandered around and occasionally leaned against the wall. The work took about forty minutes to complete, and cost thirty eight dollars and ninety-nine cents, and the mirror continued to stick.[147]

Two weeks later, the author returned to Japan. A warning signal started to sound in her year old Japanese-made car. The next day was Saturday, and she drove it to a Nissan dealership. This was not the one where the car was purchased, nor did she have an appointment. The service chief came out to greet her and spent five minutes looking over the car. Because it was hot and humid, he suggested that she wait in the air conditioned waiting room. There were magazines to read, and a young woman working at the front desk brought over a cool drink of coffee. In about twenty minutes, the service chief returned, bowed politely and asked if she would wait another twenty minutes. He returned, described the problem and said it would be a complicated repair. He asked if she would leave the car over the weekend. A young man from the dealership drove her home. When the car was ready to be picked up, the exterior of the car

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[147]Ibid.

had been washed and the interior had been cleaned. There was no extra charge for the cleaning. As the customer was leaving the business establishment, the owner stood in the street to direct the traffic so that she could leave. The author feels that the fifteen years she has spent in Japan have ruined her. Those years in Japan made her forget how gruff some Americans can be in business settings. The official politeness in Japan had hardly been noticeable to her before. The two interactions were different and, as a result, affected the attitude and perception of the writer. Clearly, she perceived the Japanese way of doing business good business sense.[148]

Total Quality Management

To become more effective economically, many states are creating awards that encourage schools to pursue Total Quality Management techniques.[149]

Total Quality Management combines a focus on customer satisfaction, statistical tools, and decision making techniques that allow everyone in the organization to constantly improve the processes or work in which they are

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[148]Ibid.

[149]Lynn Olson, "Quality Management Movement Spurs Interest in New Awards for Education," Education Week, 18 March 1992, 8-9.

involved.[150]

Since the creation of the Baldridge Award in 1987, it has been hotly debated. There are those who say the award has acted as the catalyst that has transformed America's business, while others say it has made the pursuit of quality trivial.[151]

In spite of this controversy, twenty states have created awards modeled on the Baldridge Award. On the national level, there is talk of allowing schools to apply for the Baldridge. In fact, seven school districts applied for the award in 1992. However, expanding the actual Baldridge to include education will require an act of Congress.[152]

There are many organizations working to translate quality principles for the schools:

The National Alliance of Business
American Society for Quality Control
National Education Quality Initiative (Network of Colleges and Universities trying to translate ISO 9000)
International Organization For Standardization ISO 9000 Series for schools.

The ISO 9000 organization is based in Geneva, Switzerland, and

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[150]Ibid.

[151]Ibid.

[152]Ibid

creates the standards for ninety-one countries. These standards are designed to establish a quality system that will have worldwide acceptance and acknowledgement.[153]

A part of Total Quality Management is empowering employees. In the article by David Holzman, "When Workers Run the Show," there is a discussion about several companies that have allowed workers to have decision-making authority. At Rosenbluth International, decision-making has become decentralized. As a result, this company is ranked among the top ten companies in the 1993 version of The 100 Best Companies To Work For in America. Employees at Rosenbluth report a high level of job satisfaction. Employees new to the company receive several days of training to understand the goals, values and the philosophy of the company. When training is over, they work under their own authority with minimal supervision. Workers become responsible for the welfare of the company.[154]

Other companies who have empowered their employees at varying levels include Federal Express, Motorola, Xerox, Nordstrom, Walmart, as well

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[153]Ibid.

[154]David Holzman, "When Workers Run the Show," Working Woman, August 1993, 38.

as the Federal Bureau of Investigation. Saturn cars, a subsidiary of General Motors, has also led the way in employee empowerment. Proctor and Gamble has adopted universities, and their professors are teaching the new methods to employees.[155]

Empowerment gives workers the training and authority they need to manage their own jobs in the following ways: daily decision-making all the way to determining long range changes to result in better performance as well as the power and authority for making these changes. Additionally, workers are taught to work and function in teams. Besides, who knows better how to improve the work in the company than the workers themselves?

When there are fewer layers of hierarchy, change can be adopted more quickly, and managers are left to anticipate the future as workers handle the present. According to Dr. Mitchell Rabkin, president and CEO of Boston's Beth Israel Hospital, most people want to do well.[156]

It has been determined, according to this article, that self managed workers have to know how a company works. There are also more advancement opportunities. There are several components that assist in the

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[155]Ibid.

[156]Ibid., 40.

success of empowerment implementation. First, managers must gain the trust of employees by being open, honest, and having integrity. On the other hand, employees must feel their jobs are not in jeopardy if they make decisions.[157]

Leadership, or the lack of leadership, can kill an empowerment plan. A manager sends his troops into battle; a leader leads his troops into battle. These are the words of Anna Ver Steeg, president of a consulting firm that specializes in worker management.[158]

One thing that keeps a company on the empowerment track is vision. A vision should inspire and motivate people. Beth Israel Hospital in Boston uses these four principles:

1. Identity: everyone in the company must understand the business, its goals and the need to be profitable.
2. Participation: everyone in the company must have the opportunity to influence decisions.
3. Competence: each person must continue to improve his or her abilities.
4. Equity: returns should be shared with employees, investors and customers on a fair basis.[159]

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[157]Ibid.

[158]Ibid.

[159]Ibid., 73.

The article goes on to discuss the Saturn car company model of empowerment. First the division represents a partnership between the United Auto Workers and Saturn. Step two involves managerial positions. Managerial positions are shared by a United Auto Worker representative and Saturn workers. Third, workers are divided into teams, each of which builds a piece of a major system of the car. Teams are responsible for the product, the budget, its accounting and the process of doing business with other teams. Teams are also responsible for hiring workers after they have screened candidates. To assist in these efforts, new employees receive ninety-two hours of training.[160]

According to Timeplace:

> Total Quality Management is a management philosophy. It is a way of doing business based on continuous quality improvement and the belief that meeting or exceeding customer requirements starts a positive chain reaction that leads directly to improved competitive position and profitability.[161]

Timeplace goes on to further discuss the concept of Total Quality Management. Total Quality Management involves accepting the major premise that quality is defined by the customer. Real quality is achieved when the employees are involved in defining it, producing it and delivering

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[160]Ibid., 72.

[161]Ibid., idem, Jutkiewicz.

it to the customer. Quality improvement must be supported by senior management and additionally, management must be committed to instilling clear quality values into the way the business operates. Total Quality Management is a process that requires long-term commitment and involvement from top management. To convert an organization to the continuous improvement process requires action plans based on facts, collection of data on a continued basis and an analysis of data from the process as performance indicators.[162]

In the Timeplace article, five steps are advanced for implementing Total Quality Management:

1. Get knowledge, read everything you have time to read.
2. Get the assistance you need.
3. Get started.
4. You need early progress.
5. For implementation to work, you need measurable improvement in the first year. This success will reduce skepticism, morale will soar and people will believe in the process[163]

To implement Total Quality Management, one must use quality tools, techniques and methods. The tools of Total Quality Management include

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[162]Ibid., 2-1.

[163]Ibid.

process flow diagrams, methods engineering, applied statistics and measurement, problem solving methods, group behavior factors and quality techniques, like those developed by the Japanese over the last twenty-five years.[164]

Some popular quality concepts used today include employee involvement, work teams, quality circles, management commitment, statistical process control and continuous improvement. Employee involvement recognizes that real quality can only be achieved with employees. Employees know what steps are necessary to improve processes. Additionally, involvement brings ownership. This is the foundation of Total Quality Management. A second step involves self-directed/empowered work teams. Employee involvement has some limitations according to this author. For real progress, the teams need empowerment to know how to take corrective actions to solve day-to-day challenges. The self-directed team is able to make the day-to-day planning for production, continuous quality improvement, customer satisfaction and planning. The third step involves quality circle activity. This kind of training started in the United States in the 1980's. Most Quality Circles have evolved into multifunctional quality

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[164]Ibid.

improvement teams. A fourth step is management commitment. If management does not commit to quality, no one else will either. Without constant top management involvement, Total Quality Management simply will not succeed. Step five is statistical process control. This has been the principal aspect of the success of Japan's Total Quality Program. Deming's approach, based on the Statistical Control of Quality, led to a new way of managing a business. This process can be used to differentiate between those problems employees can solve and those that only management can solve. The final step is continuous improvement. In Japan, this concept is called Kaizen. This provides the underpinning of almost all of the quality improvement techniques seen today. Gradual but unending improvement to set and achieve higher standards, requires a long-term commitment to the continuous improvement process.

According to Gitlow, author of Planning for Quality, Productivity and Competitive Position, "Quality is a judgement by customers or users of a product or service; it is the extent to which the customers or users feel the product or service surpasses their needs and expectations."[165]

The Delphi process was used to gain information about the Total

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[165]Ibid., idem, Gitlow.

Quality Management process. In the Delphi method, one speaks to a number of experts on a particular subject.[166] The information taken from interviews with experts or people involved in the Total Quality Process are included in the appendix. In summary, the experts, Alma Roberts, Vice President of Corporate Affairs and Suzanne Q. Hoffman, Vice President of Human Resources of Liberty Medical Center; John Edler, Supervisor, Corporate Performance Analysis Unit of the Baltimore Gas and Electric Company; Marcia Van Sumeren, Total Quality Management Coordinator, Midland Michigan Regional Hospital Center; Marvin Jones, Vice President, Human Resources, Westinghouse Electronics Corporation, Electronics Systems Group, agreed on the following points as they relate to Total Quality Management and implementation:

1. The vision comes from the leader. The leader must walk the talk.
2. Training is very important.
3. Working in teams is very important.
4. Knowledge of Total Quality Management is important.
5. Processes must be measured.

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[166]James Lewis Jr., Long Range and Short-Range Planning for Educational Administrators (Boston: Allyn and Bacon Inc., 1983), 89.

6. Goal setting is important.

7. The organization must know what the customer/s want.

According to Charles Zimmerman, former Director of Education at Westinghouse Electronics Corporation, Electronics Systems Group, and now Director of Ethics, here is one way to implement Total Quality Management:

1. Lay out a sensible plan and stick to it.

2. Meet with the leadership first. Take a look at the school ten years from now (or the business). What would you like for it to look like?

3. What is your vision?

4. Put the vision on a flow chart.

5. What is the mission? Purpose? Philosophy? How will we (the people in the school) manage?

6. Sit down and determine long-range goals and strategies.

7. What do we have to do? Do not get stuck in details.

8. To meet these strategies, what do you do this year? In three to five years?

9. How do you do it? You do the basics.

10. What are common denominators in school?

    a. Report card for every school — this is how you are doing.
    b. School improvement plan
    c. School improvement team
       Ask yourself the question, "Why are we not doing well?"
       School improvement is the main strategy, continuous improvement = quality improvement, if done correctly.

11. Look at who the improvement leader is in the school. It is the principal. The principal is the leader of the School improvement Team and has to arrange to train the School improvement Team in school improvement and Total Quality. Get some money for the School Improvement Teams. Use team processes to get things done. Take the report card and pick three to four areas to work on. An example would be attendance. Use the entire School Improvement Team to examine the attendance process. What are the steps? Who is involved? What are inputs? Outputs?

12. Focus on the teams first.

13. Start with two or three teams, no more. You want success. People would be empowered. Do not burst their bubble and do not talk about Total Quality.

14. Use process improvement.

15. Empower your people and improve communication.[167]

There is also a people side to quality. In the book, Quality is Personal. A Foundation for Total Quality Management, Harry V. Roberts and Bernard F. Sergesketter say that "personal quality weakens the resistance to

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[167]Ibid., idem, Zimmerman.

change."[168] These authors provide a checklist that assist with that process of developing quality on a personal level.

Defect Category	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Total
Late for meeting or appointment								
Search for something misplaced or lost								
Delayed return of phone call or reply to letter								
Putting a small task in a "Hold pile"								
Failure to discard incoming junk promptly								
Missing a chance to clean up junk in office								
Unnecessary inspection								
Total								

Figure 7. Personal Quality Checklist.

Source: Harry V. Roberts and Bernard F. Sergesketter, Quality is Personal. A Foundation For Total Quality Management. (New York: The Free Press, 1993), 28-29.

Critical Summary

In summary, the review of the literature enables one to generate the following conclusions related to Total Quality Management. First, quality is

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[168]Harry V. Roberts and Bernard F. Sergesketter, Quality is Personal. A Foundation For Total Quality Management (New York: The Free Press, 1993), 125.

not a new concept. Second, the quality gurus and the people involved in quality share similar ideas. Third, Total Quality Management requires leadership. Fourth, teamwork is an integral part of Total Quality Management. Fifth, attitude is an important component of teamwork as it relates to Total Quality Management. Sixth, attitude is also important in a changing organization. Seventh, perception is an important dynamic of attitude as it relates to Total Quality Management. As one reflects on the seven themes shown to be important to Total Quality Management, the importance of attitude stands out. However, very little is reflected in the literature as it relates to attitude toward implementation.

When the NBC White Paper entitled "If Japan Can, Why Can't We" was aired in 1981, featuring W. Edwards Deming, many Americans heard of Total Quality Management for the first time. It probably would have surprised them to know that the history of quality is represented in literature as far back as the Egyptians, the Chinese and the Code of Hammurabi.

As old as quality is, there are five names that are linked to twentieth century quality. Those names include W. Edwards Deming, Joseph M. Juran, Armand Feigenbaum, Philip Crosby, and Kaoru Ishikawa. These five are often referred to as the gurus of quality. Lesser known to the general

public, but well known to quality practitioners are Walter Shewhart, George Edwards and Acheson Duncan. These men hold some similar ideas in terms of quality:

1. Variation is the opposite of quality.
2. Management must support the quality process.
3. Leadership is essential.
4. Statistics are critical to the quality process.
5. Know who your customers are.

One of the points the known quality practitioners agree on is leadership. A leader, according to Burt Nanus must have vision. The Bible discusses the importance of vision in Proverbs. George MacGregor Burns describes three kinds of leaders; transactional, transformational and moral. In his discussion, a Total Quality Management leader would fit the description of the transformational leader. The transformational leader stimulates and elevates followers into leaders. This is empowerment, an important component of Total Quality Management. Leaders must also be able to take risks. That is what Jan Carlzon did in Moments of Truth. While the discussion on leadership has centered on individuals, government, whether it be on the local, state or federal level, can serve in the leadership position. The literature discussed leadership initiatives taken by the city of Madison, Wisconsin, the state of Maryland and the United States government. Madison has become more customer-focused. Maryland is

leading the way for the local LEA's for school-level accountability and success for all students. On the federal level, there is now a reinventing process going on as cited in Reinventing Government. How the Entrepreneurial Spirit is Transforming the Public Sector. The final characteristic leaders must lend to Total Quality Management, is their support. This theme runs through much of the literature, including "Making Quality More Than a Fad," by Rick Tetzeli of Fortune magazine and "Managing by Team is Not Always as Easy as it Looks," by Aimee Stern.

Once the leader is in place, the astute leader will understand how attitude can affect organizational change. Implementing Total Quality Management requires an organizational change. Frederick Winslow Taylor, known as the father of scientific management, suggested changes in the organization, however, many people used some of his methods and not all and never understood the value of everyone in the organization. This led to the notion that managers were to use their brains and workers their brawn and that workers and managers hold unsubstantiated attitudes about each other. These attitudes have carried over to the school system in the form of tracking. Seymour B. Sarason points out in his definitive work, the complexity of effecting change in the school system. Even though his book The Culture of the School and the Problem of Change focuses on school, its

application is more universal. One of the few works that discusses attitude and Total Quality Management, is Incredibly American, Releasing the Heart of Quality. This book describes the difficulty of implementing Total Quality Management because of the "American " attitude.

Teambuilding is important to Total Quality Management process. One way to foster team attitude, according to the literature is through interaction. House and Price, authors of "The Return Map: Tracking Product Teams," assert that the more teams understand each other, the better they understand each other's work and interrelationship and make intelligent decisions. Dyer points out in Teambuilding, Issues and Alternatives, that effective teambuilding focuses as much on interpersonal relations as much as completing the work. Other authors, such as Brokaw, The Par Group, Paul Allaire, Anne Thompson and John Markoff concur.

To further promote the attitude needed for Total Quality Management, perception is discussed in the literature as a highly correlated characteristic of attitude phenomena. In the Sherman Ross study, teacher participants perceived their importance as participants in a particular project, therefore their level of satisfaction was greater. Debra J. Cohen notes that workers are more apt to participate in training programs if they perceive management support. In an article about two car service dealerships, one in

America and one in Japan, Japanese perceive the dealership as more important than the actual brand of automobile sold.

It is clear from the literature that certain themes are repeated over and over and are well supported. However, the paucity of information on attitude toward Total Quality Management implementation adds further credibility to this study.

In Chapter Three, the researcher will present the methodology used to conduct this study. The methodology chapter will discuss the population, sample, research design, instrumentation, procedures and statistical analysis of the study.

CHAPTER 3

METHODOLOGY

This quantitative descriptive study, which employed the causal comparative analysis, attempted to identify those who had attitudes that would either facilitate or hinder the implementation of Total Quality Management in a state agency. This section describes how this task was accomplished.

The Population for the Study

The accessible population for this study was comprised of the four hundred people employed by a state department of education at its headquarters site.

Sample

The target or sample population utilized to test the hypothesis included one hundred percent of the members of a department of education who work at the headquarters site. The sample included departments who had representatives on the Total Quality Council. These ten departments

were represented by the Total Quality Council:

- ☐ Office of the State Superintendent (Audit Office, School and Community Outreach, School Performance and Total Quality Service)
- ☐ Division of Business Services
- ☐ Division of Planning, Results and Information Management
- ☐ The School Improvement Services Office
- ☐ Division of Instruction
- ☐ Division of Special Education
- ☐ Division of Career, Technology and Adult Learning
- ☐ Division of Compensatory Education and Support Services
- ☐ Division of Certification and Accreditation
- ☐ Division of Library Development and Services

Variables

Independent Variables

The independent variables in this study were levels of education, age, ethnic background, sex, length of employment and department of the personnel.

Dependent Variables

The dependent variable was attitude toward the implementation of Total Quality Management, in a state agency.

Research Design

This study was a quantitative, descriptive study, which used the causal comparative analysis. According to Borg and Gall, the causal

comparative studies causes after they have exerted their effect.[169] The causal comparative method was used to identify those who had attitudes that either facilitated or hindered the implementation of Total Quality Management in a state agency.

Measures

A questionnaire was developed to identify adapters and resisters. The items of the questionnaire were related to the four broad areas of the twelve Conditions of Excellence pyramid. Those four areas were: Customer Orientation, which included Customer Orientation; Human Resource Excellence, which included Participation, Development and Motivation; Product/Process Leadership, which included Products/Services, Processes/Procedures, Information and Suppliers; and Management Leadership, which included Culture, Planning, Communications and Accountability.

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[169]Walter R. Borg and Meredith D. Gall, Educational Research, An Introduction, 5th ed. (White Plains: Longman, 1989), 537.

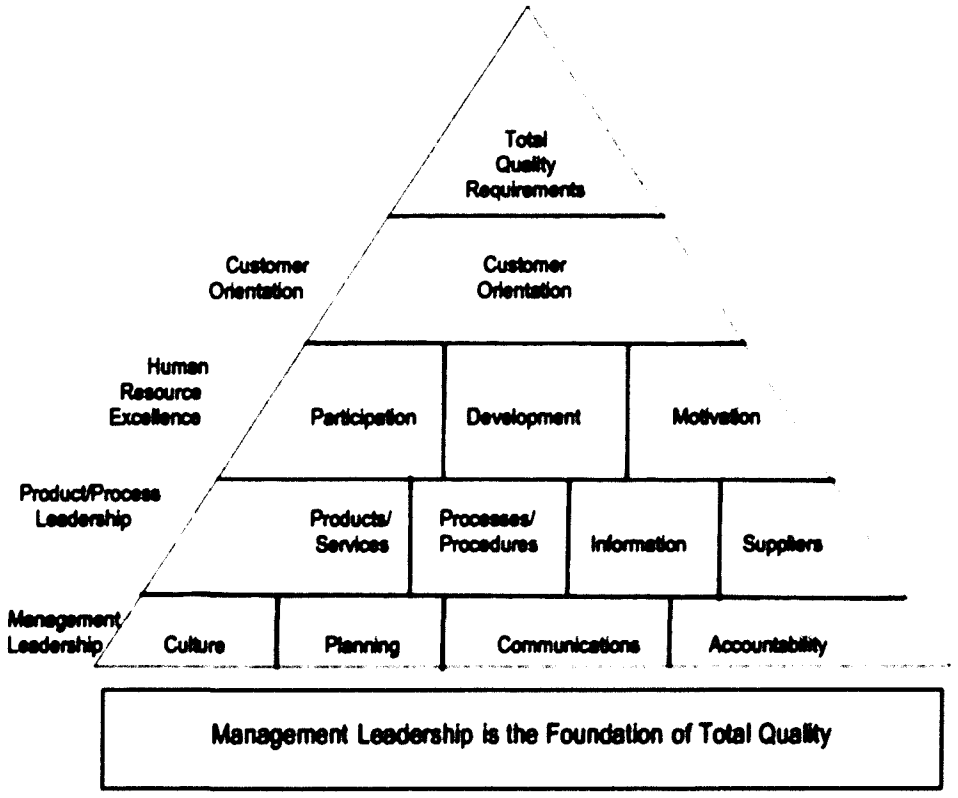

Figure 8. Conditions of Excellence for Total Quality.

Source: Overview of the Total Quality Management (TQM) Initiative At The Maryland State Department of Education (Baltimore: MSDE, 1995), Attachment II.

Each of the Twelve Conditions of Excellence had three questions that addressed those specific areas. This information was collected from the personnel in the departments represented on the Total Quality Council:

- ☐ Office of the State Superintendent (Audit Office, School and Community Outreach, School Performance and Total Quality Services

- ☐ Division of Business Services
- ☐ Division of Planning, Results and Information Management
- ☐ The School Improvement Services Office
- ☐ Division of Instruction
- ☐ Division of Special Education
- ☐ Division of Career, Technology and Adult Learning
- ☐ Division of Compensatory Education and Support Services
- ☐ Division of Certification and Accreditation
- ☐ Division of Library Development and Services

Demographic data on the respondents, such as age, sex, ethnic background, years of employment at the state agency, department in which the employee worked and the highest level of education were collected.

Procedures

Approval to conduct the study was obtained from the Total Quality Council of the state department of education under study. The following procedures were followed in order to obtain this permission. A phone call was made to the state superintendent to discuss the concept of Total Quality Management in the county where he was currently superintendent and the possibility of using it in a possible study. Because his county had just begun the process of Total Quality Management implementation, he suggested that the researcher go to the state level because they were well into the process. He called the Deputy Superintendent of the state and told her of the desire of the researcher to study attitudes of personnel toward

Total Quality Management implementation at the central office level. The researcher then contacted the Deputy Superintendent and made an appointment. The researcher discussed the idea with the Deputy Superintendent and she agreed to discuss this with the Total Quality Council. The Council represented the ten departments housed in the headquarters site, and covered the four hundred employees therein.

The researcher made a presentation to the Total Quality Council and agreed to the following:

1. Document the state agency's Total Quality Management history.
2. Analyze the Total Quality Management training needs by determining the adapters and resisters.

The benefits were also outlined:

1. Establish the state agency in the forefront of Total Quality Management in education.
2. The state agency could consult other state agencies that had a similar desire to implement Total Quality Management.
3. There would be a documented model of organizational change at the state level.
4. Possible recognition in the national educational community.
5. Provide a model for Educational/Business partnerships.
6. Produce a published model.

The project requirements were listed:

1. Access for interviews and a survey.

2. All paperwork on Total Quality Management.

3. Access to people with Total Quality Management history.

Finally, the project methodology was detailed:

1. Develop and validate a survey.

2. Collect data.

3. Analyze data.

4. Full dissertation study.

The Council asked questions and the questions were answered to their satisfaction by the researcher. The Council then voted its approval to proceed with the study. A letter citing this approval and its entry in the minutes was mailed to the researcher. (See Appendix A.)

The researcher then set out to find an instrument that was already made that addressed the Twelve Conditions of Excellence, including one by the "Joiner Group" and "Hershey and Blanchard." These instruments, while excellent, did not quite capture those conditions, so the decision was made to create one. The Baldridge criteria were examined as well as the "Westinghouse Fitness Review Criteria." After extensive reading on the

survey process, the writing of the survey began.[170]

The first survey consisted of sixty-one questions that addressed the Conditions of Excellence as well as demographics. The choices included strongly disagree, disagree, neutral, agree and strongly agree. The Likert scale was used. The questionnaire questions were designed to measure employee attitude in the four general areas: Customer Orientation, Human Resource Excellence, Product/Process Leadership and Management Leadership, encompassing the Twelve Conditions of Excellence.

Statistical Analysis

A questionnaire was developed that addressed the areas of Customer Orientation, Human Resource Excellence, Product/Process Leadership, and Management Leadership. The instrument had at least two questions for each area of the twelve Conditions of Excellence. This instrument was administered to the four hundred employees of a state department of education. The statistical analysis that was used was an analysis of variance of the five age groups designated, the six ethnic backgrounds identified, the gender, and the years of employment. Other demographic factors used

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[170]Seymour Sudman and Norman M. Bradburn, Asking Questions. A Practical Guide to Questionnaire Design (San Francisco: Jossey-Bass Inc., 1982).

included the highest level of education attained and the department where the employee worked. This analysis of variance was completed for each of the four broad areas that comprised the twelve Conditions of Excellence. Where there were significant differences, independent tests were conducted. Finally the researcher computed a complete intercorrelation matrix across the four scales based on the demographic data collected. The level of significance was .05.

Pilot Study

A pilot study was conducted with thirty-three graduate students. A test/pretest was used to test the reliability. According to Seymour Sudman and Norman M. Bradburn, a reliability check measures the degree to which multiple measures of the same attitude or behavior agree.[171] The survey was administered twice, one week apart. According to Seymour Sudman and Norman M. Bradburn, the purpose of a pilot test/pretest is to have a small field test of the questionnaire or survey before the main study is conducted. Pilot studies usually have small samples (ten to fifty cases) and are designed to alert the researcher to any difficulties that may have been

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[171]Ibid., 301.

overlooked when planning the study.[172]

Face and content validity were established by having the survey reviewed by seven experts. According to Seymour Sudman and Norman M. Bradburn, a valid measure is one that measures what it claims to and not something else. Their vitae are included in the appendices. These seven people were considered experts because of their experience and involvement in Total Quality Management. In terms of typographical and grammatical errors, there were no substantive comments or complaints. These persons reviewed the survey and determined which questions fit the twelve designated categories. The questions were ultimately reduced from sixty-one to thirty-nine, with three questions being used in two or more areas. Percents were computed. Seventy-five percent was set as an original target for agreement, then the decision was made to lower it to forty-three percent. The threshold of agreement was forty-three percent. Again, this established face and content validity. The results are recorded in the following table:

[172]Ibid., 298.

Table 1

AGREEMENT OF EXPERTS ON SURVEY QUESTIONS

Q	Hober	Alexander	Cook	Murray	West	Cullen	Shilling	%
1	1	1	1	1	1	1	1	100
2	1	1	1	1	1	11	1	86
3	1	1	1	1,9	-	9	1	83
4	1	1	1	1,11	1	3	1	86
5	1	4,11	1	1	1	4	1,5	71
6	1,7	-	9	11	9	11	4	33
7	9	-	9	11	9	2	2,4	50
8	9	-	9	11	9	2	4	50
9	9	-	9	11	10	-	4	40
10	11	1	9	10,11	10	4	10	43
11	10	6	10	10	11	3,11	2,4	43
12	10	6	10	6,10	6	10	1,2,11	57
13	10	10	10	6,10	10	3	4,6,10	86
14	11	10	10	10	10	7	10	71
15	7	3	3	2	3	3	3	71
16	7	-	6	-	12	10	9,12	33
17	12	-	6	3,6	12	12	7,12	67
18	4	2	4	2	9	3	9	29
19	9	2	4	2	9	2	9	43
20	4	4,11	11	2	11	9	9,11	57
21	4	11	11	9	11	11	11	71
22	4	2,11	11	9	11	9	2,11	57
23	4	2,3,11	4	9	11	2	9	29
24	4,	2,11	4	2,9	11	11	9,11	57
25	4	2	4	2	11	2	8,9,11	43
26	4	11	7	2	4	6	11	29
27	4	2,9,10	7	9,11	2	9	9,10	57
28	4	2,6,11	2	2	2	11	6	57
29	4	2	2	2	2	3	9	57

Q	Hober	Alexander	Cook	Murray	West	Cullen	Shilling	%
30	9	2	2	3	2	2	9,11	57
31	4	-	6	3	9	2	9,11	33
32	4	-	11	3,9	9	12	9	50
33	2	9	2	3	2	3	2	57
34	2,11	9	2	3	2,7	3	2,11	57
35	-	9	6	3	7	2	2,11	33
36	9	7	6	3	7	10	7	43
37	2	2	2	2	2	4	2	86
38	2	2	6	2	2	4	7,11	57
39	4	9,11	7	2	9	2	7	29
40	4	11	11	2	11	9	11	57
41	11	11	11	3,11	11	4	11	86
42	4	6	2	3	6	3	6	43
43	4	7	6	3	6	4	7	29
44	11	6	6	3,6	5	10	6	57
45	9	-	12	3,6	5	10	6,7	33
46	9	6	12	5,6	5	3	6,7	43
47	11	6	12	6	-	11	11	50
48	3	5	5	5	5	10	5,6	71
49	-	5,8	5	5	6	5	6	67
50	-	8	8	8	8	8	8	100
51	1	8	8	8	8	10	5	57
52	5	8	8	5,8	5	10	6	43
53	3	-	3	3	3	2	3	83
54	7	7	7	7	11	3	7,11	71
55	4	12	12	9	4	12	9	43

The instrument was then recreated and sent back to the experts for one more look. (The original survey is in Appendix B.) The document was approved and sent to the state agency. (The final survey is in Appendix D.)

Then the four hundred surveys, along with a self-addressed stamped envelope for each, were delivered to the state agency. A cover letter, written by the Total Quality Coordinator, accompanied the survey (see Appendix C). The surveys were distributed through inter-departmental mail and were returned directly to the researcher through the United States mail. To maximize response, notices concerning the survey were placed throughout the state agency building.

Reliability

The reliability of the State Department of Education Total Quality Management Implementation Survey was established using the test-retest method. This technique was used to establish the reliability for each of the twelve sub-components of the instrument as well as the total score. Table 2 presents the reliability coefficients and their statistical probabilities. The highest reliability coefficient is .86 for Motivation; the lowest is .58 for Processes/Procedures. The reliability coefficient for the total instrument is .85. All of the reliability coefficients are statistically significant at <.001. These data indicate that the State Department of Education Total Quality Management Implementation Survey is very reliable.

TABLE 2

STATE DEPARTMENT OF EDUCATION TOTAL QUALITY MANAGEMENT IMPLEMENTATION SURVEY RELIABILITY RESULTS

Name of Subtest	Number of Subjects	Reliability Coefficient	Statistical Significance
Customer Orientation	33	.79	.001
Participation	33	.62	.001
Development	33	.77	.001
Motivation	33	.86	.001
Product/Services	33	.66	.001
Processes/Procedures	33	.58	.001
Information	33	.70	.001
Suppliers	33	.85	.001
Culture	33	.81	.001
Planning	33	.67	.001
Communication	33	.70	.001
Accountability	33	.72	.001

TABLE 3

CORRELATION OF EXPERT RESPONSES TO THE TWELVE CONDITIONS OF EXCELLENCE

Category		Questions to Be Used
I.	Customer Orientation	1,2,4
II.	Participation	28,33,37
III.	Development	15,34,53
IV.	Motivation	24,32,40
V.	Products/Services	48,49,52
VI.	Processes/Procedures	12,44,46
VII.	Information	36,43,54
VIII.	Suppliers	50,51,52

Category		Questions to Be Used
IX.	Culture	7,27,32
X.	Planning	12,13,14
XI.	Communication	21,22,41
XII.	Accountability	16,17,55

The questionnaire that was reconstructed based on the expert comments, that was sent to the state department of education follows:

TABLE 4

RECONSTRUCTED QUESTIONNAIRE BASED ON EXPERT COMMENTS

Category		Questions that Correlate
I.	Customer Orientation	1,2,3
II.	Participation	15,17,20
III.	Development	8,18,31
IV.	Motivation	13,16,21
V.	Products/Service	26,27,30
VI.	Processes/Procedures	5,24,25
VII.	Information	19,23,32
VIII.	Suppliers	28,29,30
IX.	Culture	4,14,16
X.	Planning	5,6,7
XI.	Communication	11,12,33
XII.	Accountability	9,10,33

CHAPTER 4

DATA ANALYSIS AND INTERPRETATION

Data generated from this study will be presented, analyzed and interpreted in this chapter. This study was undertaken for two basic purposes. The first was to determine if attitudes of employees at a state department of education varied in accordance with their level of education, age, ethnic background, gender, length of employment in the agency and the department in which they work. The second reason was to determine if specific attitudes exhibited by resisters and adapters could be identified.

The Model for the Study

This study is based on a model entitled "The Twelve Conditions of Excellence for Total Quality." (See Figure 8.) It was upon these conditions that the survey questions that generated the data were based. The purpose of the survey was to measure attitudes of people employed at the state department of education.

To help the reader understand the Twelve Conditions, key terms will be explained herein:

Customer Orientation: Satisfying customers through meeting their requirements and value expectations is the primary task of every employee.

Participation: All employees participate in establishing and achieving Total Quality improvement goals.

Development: People are recognized as key strategic resources. Development opportunities are provided to assure that each employee understands, supports and contributes to achieving Total Quality.

Motivation: Employees are motivated to achieve Total Quality through trust, respect and recognition.

Products/Services: Products and services are appropriately innovative and are reviewed, verified, produced and controlled to meet customer requirements.

Processes/Procedures: Processes and procedures used throughout the organization to create and deliver products and services are developed as an integrated, verified and statistically controlled system using appropriate technology and tools.

Information: Required information is clear, complete, accurate, timely, useful, accessible and integrated with products, services, processes and procedures.

Suppliers: Supplied products and services, supplier contributions and supply processes meet all Total Quality requirements and enhance competitive advantage.

Culture: Management has established a value system in which individual and group actions reflect a "Total Quality First" and appropriately innovative attitude and direction to meet established world-class requirements.

Planning: Strategic business and financial planning recognize Total Quality as a primary business objective.

Communication: Verbal and non-verbal communications are two-way, clear, consistent and forceful.

Accountability: Accountability measures for Total Quality are established, reported, analyzed and effectively used.

Source: Westinghouse.

Data Analysis

Analysis of the variance, t-tests and correlation were used to analyze the data. See Appendix G for statistical considerations. Each null hypothesis will be discussed with a summary following each one.

Null Hypothesis 1

Hypothesis 1, expressed operationally, is there is no significant difference in the means of the twelve categories and the total score based on level of education as measured by a survey instrument on Total Quality Management (TQM).

The data in Tables 5 through 17 indicate whether the null hypotheses should be accepted or rejected. When it is rejected, the tables show between which sets of means the differences exist.

TABLE 5

Customer Orientation Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	16.85	4.21	1.27	.29
Within groups	164	545.55	3.33		
Total	168	562.40			

* < .05 ** < .01

There is no statistically significant difference in the means of the customer orientation category based on educational level as shown in Table 5. Therefore, the null hypothesis is accepted.

TABLE 6

Perception Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	34.76	8.69	2.28	.06
Within groups	169	643.22	3.81		
Total	173	677.98			

* < .05 ** < .01

There is no statistically significant difference in the means of the participation category based on educational level as shown in Table 6.

Therefore, the null hypothesis is accepted.

TABLE 7

Development Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	28.83	7.21	2.02	.09
Within groups	166	591.46	3.56		
Total	170	620.29			

* < .05 ** < .01

There is no statistically significant difference in the means of the development category based on educational level as shown in Table 7. Therefore, the null hypothesis is accepted.

TABLE 8

Motivation Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	27.24	6.81	1.81	.13
Within groups	165	621.11	3.76		
Total	169	648.35			

* < .05 ** < .01

There is no statistically significant difference in the means of the

motivation category based on educational level as shown in Table 8. Therefore, the null hypothesis is accepted.

TABLE 9

Products/Services Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	42.56	10.64	2.54	.04*
Within groups	152	635.81	4.18		
Total	156	678.37			

Mean	Educational Level
6.25	Some college
6.71	Master's
6.84	Doctorate
7.00	Bachelor's
7.93	High School*

* < .05 ** < .01

There is a statistically significant difference in the means of the products/services category based on educational level as shown in Table 9. Therefore, the null hypothesis is rejected.

TABLE 10

Processes/Procedures Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	43.93	10.98	3.02	.02*
Within groups	153	556.57	3.64		
Total	157	600.61			

Mean	Educational Level
6.03	Some college
6.17	Doctorate
6.77	Bachelor's
6.82	Master's
7.63	High School*

* < .05 ** < .01

There is a statistically significant difference in the means of the processes/procedures category based on educational level as shown in Table 10. Therefore, the null hypothesis is rejected.

TABLE 11

Information Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	32.49	8.12	2.44	.05*
Within groups	163	542.63	3.33		
Total	167	575.12			

Mean	Educational Level
5.66	Some college
6.27	Bachelor's
6.32	Master's
6.52	Doctorate
7.14	High School*

* < .05 ** < .01

There is a statistically significant difference in the means of the information category based on educational level as shown in Table 11. Therefore, the null hypothesis is rejected.

TABLE 12

Suppliers Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	59.91	14.98	3.89	.01**
Within groups	149	573.94	3.85		
Total	153	633.85			

Mean	Educational Level
5.81	Some college
5.91	Master's
6.20	Bachelor's
6.33	Doctorate
7.62	High School**

* < .05 ** < .01

There is a statistically significant difference in the means of the

suppliers category based on educational level as shown in Table 12. Therefore, the null hypothesis is rejected.

TABLE 13

Culture Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	40.19	10.05	5.63	.01**
Within groups	165	294.68	1.79		
Total	169	334.88			

Mean	Educational Level
6.13	Some college
6.96	Bachelor's
7.33	Master's
7.37	High School**
7.59	Doctorate**

* < .05 ** < .01

There is a statistically significant difference in the means of the culture category based on educational level as shown in Table 13. Therefore, the null hypothesis is rejected.

TABLE 14

Planning Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	34.56	8.64	1.78	.14
Within groups	149	722.48	4.85		
Total	153	757.04			

* < .05 ** < .01

There is no statistically significant difference in the means of the planning category based on educational level as shown in Table 14. Therefore, the null hypothesis is accepted.

TABLE 15

Communication Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	14.33	3.58	1.70	.15
Within groups	166	350.38	2.11		
Total	170	364.71			

* < .05 ** < .01

There is no statistically significant difference in the means of the communication category based on educational level as shown in Table 15.

Therefore, the null hypothesis is accepted.

TABLE 16

Accountability Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	67.05	16.76	4.22	.01**
Within groups	166	659.58	3.97		
Total	170	726.63			

Mean	Educational Level
5.69	Some college
6.58	Bachelor's
6.70	Doctorate
7.10	High School
7.48	Master's**

* < .05 ** < .01

There is a statistically significant difference in the means of the accountability category based on educational level as shown in Table 16. Therefore, the null hypothesis is rejected.

TABLE 17

Total Based on Educational Level

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	4308.36	1077.09	4.14	.01**
Within groups	115	29893.56	259.94		
Total	119	34201.93			

Mean	Educational Level
62.25	Some college
73.00	Doctorate
74.44	Master's
76.28	Bachelor's
82.68	High School**

* < .05 ** < .01

There is a statistically significant difference in the means of the total category based on educational level as shown in Table 17. Therefore, the null hypothesis is rejected.

Summary

Inspection of Tables 5 through 17 indicates that the null hypothesis of no difference was accepted for categories based on educational level: customer orientation, participation, development, motivation, planning, and communication. For the following categories, the null hypothesis for no difference was rejected and the alternative hypothesis across these categories

was accepted thereby indicating there were differences. Those categories are products/services, processes/procedures, information, suppliers, culture, accountability, and total.

Where the null hypothesis was rejected, the significant differences will be discussed herein. In the products/services category, the significant difference lay between High School and all other levels of education (Bachelor's, Doctorate, Master's, and Some College). In the processes/ procedures category, the significant difference lay between High School and all other levels of education (Master's, Bachelor's, Doctorate, and Some College). In the information category, the significant difference lay between High School and all other levels of education (Doctorate, Master's, Bachelor's, and Some College). In the suppliers category, the significant difference lay between High School and all other levels of education (Doctorate, Bachelor's, Master's, and Some College). In the culture category, there were significant differences between Doctorate, High School, and Master's against Bachelor's and Some College. In the accountability category, the significant difference lay between Master's and all other levels of education (High School, Doctorate, Bachelor's, and Some College). In the total category, the significant difference lay between High School and all other levels of education (Bachelor's, Master's, Doctorate, and Some College).

Null Hypothesis 2

Hypothesis 2, expressed operationally, is there is no significant difference in the means of the twelve categories and the total score based on age as measured by a survey instrument on Total Quality Management (TQM).

The data in Tables 18 through 30 indicate whether the null hypothesis should be accepted or rejected. Where it is rejected, the tables show between which sets of means the differences exist.

TABLE 18

Customer Orientation Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	4.27	1.07	.30	.88
Within groups	161	567.16	3.52		
Total	165	571.43			

* < .05 ** < .01

There is no statistically significant difference in the means of the customer orientation category based on age as shown in Table 18. Therefore, the null hypothesis is accepted.

TABLE 19

Participation Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	45.45	11.36	3.05	.02*
Within groups	166	619.27	3.73		
Total	170	664.71			

Mean	Age
5.30	39 - 45
5.79	32 - 38
6.36	25 - 31
6.40	Over 52
6.56	46 - 52*

* < .05 ** < .01

There is a statistically significant difference in the means of the participation category based on age as shown in Table 19. Therefore, the null hypothesis is rejected.

TABLE 20

Development Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	28.79	7.20	2.07	.09
Within groups	163	565.87	3.47		
Total	167	594.66			

* < .05 ** < .01

There is no statistically significant difference in the means of the development category based on age as shown in Table 20. Therefore, the null hypothesis is accepted.

TABLE 21

Motivation Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	49.37	12.34	3.43	.01**
Within groups	162	582.38	3.59		
Total	166	631.75			

Mean	Age
5.75	39 - 45
6.16	32 - 38
6.93	25 - 31
6.98	46 - 52**
7.00	Over 52

* < .05 ** < .01

There is a statistically significant difference in the means of the motivation category based on age as shown in Table 21. Therefore, the null hypothesis is rejected.

TABLE 22

Products/Services Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	3.39	.85	.19	.94
Within groups	148	643.08	4.35		
Total	152	646.47			

* < .05 ** < .01

There is no statistically significant difference in the means of the products/services category based on age as shown in Table 22. Therefore, the null hypothesis is accepted.

TABLE 23

Processes/Procedures Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	15.03	3.76	.98	.42
Within groups	152	585.07	3.85		
Total	156	600.10			

* < .05 ** < .01

There is no statistically significant difference in the means of the processes/procedures category based on age as shown in Table 23. Therefore, the null hypothesis is accepted.

TABLE 24

Information Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	6.79	1.70	.50	.74
Within groups	162	552.20	3.41		
Total	166	558.98			

* < .05 ** < .01

There is no statistically significant difference in the means of the information category based on age as shown in Table 24. Therefore, the null hypothesis is accepted.

TABLE 25

Suppliers Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	17.25	4.31	1.06	.38
Within groups	145	591.39	4.08		
Total	149	608.64			

* < .05 ** < .01

There is no statistically significant difference in the means of the suppliers category based on age as shown in Table 25. Therefore, the null hypothesis is accepted.

TABLE 26

Culture Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	10.33	2.58	1.24	.30
Within groups	163	340.95	2.09		
Total	167	351.28			

* < .05 ** < .01

There is no statistically significant difference in the means of the culture category based on age as shown in Table 26. Therefore, the null hypothesis is accepted.

TABLE 27

Planning Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	9.62	2.40	.48	.75
Within groups	163	340.95	2.09		
Total	167	351.28			

* < .05 ** < .01

There is no statistically significant difference in the means of the planning category based on age as shown in Table 27. Therefore, the null hypothesis is accepted.

TABLE 28

Communication Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	12.38	3.09	1.45	.22
Within groups	163	347.53	2.13		
Total	167	359.90			

* < .05 ** < .01

There is no statistically significant difference in the means of the communication category based on age as shown in Table 28. Therefore, the null hypothesis is accepted.

TABLE 29

Accountability Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	20.08	5.02	1.22	.30
Within groups	163	669.20	4.11		
Total	167	689.28			

* < .05 ** < .01

There is no statistically significant difference in the means of the accountability category based on age as shown in Table 29. Therefore, the null hypothesis is accepted.

TABLE 30

Total Based on Age

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	1336.92	334.23	1.13	.34
Within groups	113	33352.51	295.15		
Total	117	34689.42			

* < .05 ** < .01

There is no statistically significant difference in the means of the total category based on age as shown in Table 30. Therefore, the null hypothesis is accepted.

Summary

Inspection of Tables 18 through 30 indicates that the null hypotheses of no difference were accepted for categories based on age: customer orientation, development, products/services, processes/procedures, information, suppliers, culture, planning, communication, accountability and total.

Where the null hypothesis was rejected, the significant differences will be discussed herein. In the participation category, the significant difference lay between the 46-52 age group and all other age groups (over 52; 25-31; 32-

38, and 39-45). In the motivation category, the significant difference lay between the 46-52 age group and all other age groups (over 52; 25-31; 32-38; and 39-45).

Null Hypothesis 3

Hypothesis 3, expressed operationally, is there is no significant difference in the means of the twelve categories and the total score based on ethnicity as measured by a survey instrument on Total Quality Management (TQM).

The data in Tables 31 through 43 indicate whether the null hypothesis should be accepted or rejected. Where it is rejected, the tables show between which sets of means the differences exist.

TABLE 31

Independent T-Test of Customer Orientation Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	41	7.39	-.92	157	.36
Caucasian	118	7.69			

* < .05 ** < .01

There is no statistically significant difference in the means of the

customer orientation category based on ethnicity as shown in Table 31. Therefore, the null hypothesis is accepted.

TABLE 32

Independent T-Test of Participation Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	45	5.33	-2.76	161	.01**
Caucasian	118	6.23			

* < .05 ** < .01

There is a statistically significant difference in the means of the participation category based on ethnicity as shown in Table 32. Therefore, the null hypothesis is rejected.

TABLE 33

Independent T-Test of Development Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	44	5.70	-2.87	159	.01**
Caucasian	117	6.62			

* < .05 ** < .01

There is a statistically significant difference in the means of the

development category based on ethnicity as shown in Table 33. Therefore, the null hypothesis is rejected.

TABLE 34

Independent T-Test of Motivation Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	43	5.91	-2.18	157	.03*
Caucasian	116	6.63			

* < .05 ** < .01

There is a statistically significant difference in the means of the motivation category based on ethnicity as shown in Table 34. Therefore, the null hypothesis is rejected.

TABLE 35

Independent T-Test of Products/Services Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	42	6.64	-.71	63.08	.48
Caucasian	103	6.93			

* < .05 ** < .01

There is no statistically significant difference in the means of the

products/services category based on ethnicity as shown in Table 35. Therefore, the null hypothesis is accepted.

TABLE 36

Independent T-Test of Processes/Procedures Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	42	6.43	-1.04	147	.30
Caucasian	107	6.79			

* < .05 ** < .01

There is no statistically significant difference in the means of the processes/procedures category based on ethnicity as shown in Table 36. Therefore, the null hypothesis is accepted.

TABLE 37

Independent T-Test of Information Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	43	5.84	-2.18	157	.03*
Caucasian	116	6.52			

* < .05 ** < .01

There is a statistically significant difference in the means of the

information category based on ethnicity as shown in Table 37. Therefore, the null hypothesis is rejected.

TABLE 38

Independent T-Test of Suppliers Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	41	5.98	-.91	141	.36
Caucasian	102	6.30			

* < .05 ** < .01

There is no statistically significant difference in the means of the suppliers category based on ethnicity as shown in Table 38. Therefore, the null hypothesis is accepted.

TABLE 39

Independent T-Test of Culture Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	45	6.44	-3.48	61.74	.01**
Caucasian	115	7.39			

* < .05 ** < .01

There is a statistically significant difference in the means of the

culture category based on ethnicity as shown in Table 39. Therefore, the null hypothesis is rejected.

TABLE 40

Independent T-Test of Planning Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	38	6.47	-.56	143	.58
Caucasian	107	6.70			

* < .05 ** < .01

There is no statistically significant difference in the means of the planning category based on ethnicity as shown in Table 40. Therefore, the null hypothesis is accepted.

TABLE 41

Independent T-Test of Communication Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	44	6.00	-2.59	158	.01**
Caucasian	116	6.64			

* < .05 ** < .01

There is a statistically significant difference in the means of the

communication category based on ethnicity as shown in Table 41. Therefore, the null hypothesis is rejected.

TABLE 42

Independent T-Test of Accountability Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	43	6.35	-1.91	158	.06
Caucasian	117	7.03			

* < .05 ** < .01

There is no statistically significant difference in the means of the accountability category based on ethnicity as shown in Table 42. Therefore, the null hypothesis is accepted.

TABLE 43

Independent T-Test of Total Based on Ethnicity

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
African-American	31	69.39	-1.34	43	.19
Caucasian	81	74.48			

* < .05 ** < .01

There is no statistically significant difference in the means of the total

category based on ethnicity as shown in Table 43. Therefore, the null hypothesis is accepted.

Summary

Inspection of Tables 31 through 43 indicates the null hypothesis of no difference was accepted for categories based on ethnicity: customer orientation; products/services; processes/procedures; suppliers; planning; accountability, and total.

Where the null hypothesis was rejected, the significant differences will be discussed herein. In the participation category, the caucasian mean was higher. In the development category, the caucasian mean was higher. In the motivation category, the caucasian mean was higher. In the information category, the caucasian mean was higher. In the culture category, the caucasian mean was higher. In the communication category, the caucasian mean was higher.

Null Hypothesis 4

Hypothesis 4, expressed operationally, is there is no significant difference in the means of the twelve categories and the total score based on gender (sex) as measured by a survey instrument on Total Quality Management (TQM).

The data in Tables 44 through 56 indicate whether the null hypothesis should be accepted or rejected. Where it is rejected, the tables show between which sets of means the differences exist.

TABLE 44

Independent T-Test of Customer Orientation Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	45	7.24	-1.89	166	.06
Female	123	7.85			

* < .05 ** < .01

There is no statistically significant difference in the means of the customer orientation category based on gender as shown in Table 44. Therefore, the null hypothesis is accepted.

TABLE 45

Independent T-Test of Participation Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	45	7.24	-1.89	166	.06
Female	123	7.85			

* < .05 ** < .01

There is no statistically significant difference in the means of the participation category based on gender as shown in Table 45. Therefore, the null hypothesis is accepted.

TABLE 46

Independent T-Test of Development Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	45	6.49	.39	168	.70
Female	125	6.36			

* < .05 ** < .01

There is no statistically significant difference in the means of the development category based on gender as shown in Table 46. Therefore, the null hypothesis is accepted.

TABLE 47

Independent T-Test of Motivation Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	43	6.47	-.08	167	.94
Female	126	6.49			

* < .05 ** < .01

There is no statistically significant difference in the means of the motivation category based on gender as shown in Table 47. Therefore, the null hypothesis is accepted.

TABLE 48

Independent T-Test of Products/Services Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	45	6.76	-.62	154	.54
Female	111	6.98			

* < .05 ** < .01

There is no statistically significant difference in the means of the products/services category based on gender as shown in Table 48. Therefore, the null hypothesis is accepted.

TABLE 49

Independent T-Test of Processes/Procedures Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	41	6.61	-.45	157	.65
Female	118	6.77			

* < .05 ** < .01

There is no statistically significant difference in the means of the processes/procedures category based on gender as shown in Table 49. Therefore, the null hypothesis is accepted.

TABLE 50

Independent T-Test of Information Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	44	6.20	-.78	167	.44
Female	125	6.46			

* < .05 ** < .01

There is no statistically significant difference in the means of the information category based on gender as shown in Table 50. Therefore, the null hypothesis is accepted.

TABLE 51

Independent T-Test of Suppliers Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	43	6.12	-.67	151	.50
Female	110	6.36			

* < .05 ** < .01

There is no statistically significant difference in the means of the suppliers category based on gender as shown in Table 51. Therefore, the null hypothesis is accepted.

TABLE 52

Independent T-Test of Culture Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	44	7.11	.01	168	.99
Female	126	7.11			

* < .05 ** < .01

There is no statistically significant difference in the means of the culture category based on gender as shown in Table 52. Therefore, the null hypothesis is accepted.

TABLE 53

Independent T-Test of Planning Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	42	6.98	.86	151	.39
Female	111	6.63			

* < .05 ** < .01

There is no statistically significant difference in the means of the planning category based on gender as shown in Table 53. Therefore, the null hypothesis is accepted.

TABLE 54

Independent T-Test of Communication Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	44	6.23	-1.43	168	.16
Female	126	6.60			

* < .05 ** < .01

There is no statistically significant difference in the means of the communication category based on gender as shown in Table 54. Therefore, the null hypothesis is accepted.

TABLE 55

Independent T-Test of Accountability Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	45	6.76	-.39	168	.70
Female	125	6.90			

* < .05 ** < .01

There is no statistically significant difference in the means of the accountability category based on gender as shown in Table 55. Therefore, the null hypothesis is accepted.

TABLE 56

Independent T-Test of Total Based on Gender

VARIABLE	# OF CASES	MEAN	T VALUE	DF	SIG
Male	36	72.64	-.47	118	.64
Female	84	74.24			

* < .05 ** < .01

There is no statistically significant difference in the means of the total category based on gender as shown in Table 56. Therefore, the null hypothesis is accepted.

Summary

Inspection of Tables 44 through 56 indicates the null hypothesis of no difference was accepted for categories based on gender: customer orientation; participation; development; motivation; products/services; processes/ procedures; information; suppliers; culture; planning; communication; accountability, and total.

Null Hypothesis 5

Hypothesis 5, expressed operationally, is there is no significant difference in the means of the twelve categories and the total scored based on length of service (for how long have you worked at the headquarters site?) as measured by a survey instrument on Total Quality Management (TQM).

The data in Tables 57 through 69 indicate whether the null hypothesis should be accepted or rejected. Where it is rejected, the tables show between which sets of means the differences exist.

TABLE 57

Customer Orientation Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	7.64	1.91	.55	.70
Within groups	163	569.36	3.49		
Total	167	576.99			

* < .05 ** < .01

There is no statistically significant difference in the means of the customer orientation category based on length of service as shown in Table 57. Therefore, the null hypothesis is accepted.

TABLE 58

Participation Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	18.86	4.71	1.22	.31
Within groups	168	650.57	3.87		
Total	172	669.42			

* < .05 ** < .01

There is no statistically significant difference in the means of the participation category based on length of service as shown in Table 58. Therefore, the null hypothesis is accepted.

TABLE 59

Development Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	8.71	2.18	.61	.65
Within groups	165	586.95	3.56		
Total	169	595.66			

* < .05 ** < .01

There is no statistically significant difference in the means of the development category based on length of service as shown in Table 59.

Therefore, the null hypothesis is accepted.

TABLE 60

Motivation Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	21.30	5.33	1.42	.23
Within groups	164	614.91	3.75		
Total	168	636.21			

* < .05 ** < .01

There is no statistically significant difference in the means of the motivation category based on length of service as shown in Table 60. Therefore, the null hypothesis is accepted.

TABLE 61

Products/Services Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	19.66	4.91	1.16	.33
Within groups	150	634.82	4.23		
Total	154	654.48			

* < .05 ** < .01

There is no statistically significant difference in the means of the

products/services category based on length of service as shown in Table 61. Therefore, the null hypothesis is accepted.

TABLE 62

Processes/Procedures Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	14.53	3.63	.95	.44
Within groups	154	590.84	3.84		
Total	158	605.37			

* < .05 ** < .01

There is no statistically significant difference in the means of the processes/procedures category based on length of service as shown in Table 62. Therefore, the null hypothesis is accepted.

TABLE 63

Information Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	12.66	3.16	.93	.45
Within groups	164	559.57	3.41		
Total	168	572.22			

* < .05 ** < .01

There is no statistically significant difference in the means of the information category based on length of service as shown in Table 63. Therefore, the null hypothesis is accepted.

TABLE 64

Suppliers Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	23.22	5.81	1.42	.23
Within groups	147	599.62	4.08		
Total	151	622.84			

* < .05 ** < .01

There is no statistically significant difference in the means of the suppliers category based on length of service as shown in Table 64. Therefore, the null hypothesis is accepted.

TABLE 65

Culture Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	6.89	1.73	.82	.51
Within groups	165	345.20	2.09		
Total	169	352.09			

* < .05 ** < .01

There is no statistically significant difference in the means of the culture category based on length of service as shown in Table 65. Therefore, the null hypothesis is accepted.

TABLE 66

Planning Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	13.43	3.36	.68	.61
Within groups	148	733.49	4.96		
Total	152	746.92			

* < .05 ** < .01

There is no statistically significant difference in the means of the planning category based on length of service as shown in Table 66. Therefore, the null hypothesis is accepted.

TABLE 67

Communication Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	10.83	2.71	1.27	.28
Within groups	165	351.62	2.13		
Total	169	362.45			

* < .05 ** < .01

There is no statistically significant difference in the means of the communication category based on length of service as shown in Table 67. Therefore, the null hypothesis is accepted.

TABLE 68

Accountability Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	14.36	3.59	.85	.50
Within groups	165	696.52	4.22		
Total	169	710.88			

* < .05 ** < .01

There is no statistically significant difference in the means of the accountability category based on length of service as shown in Table 68. Therefore, the null hypothesis is accepted.

TABLE 69

Total Based on Length of Service

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	4	755.63	188.91	.63	.64
Within groups	115	32249.36	297.82		
Total	119	35004.99			

* < .05 ** < .01

There is no statistically significant difference in the means of the total category based on length of service as shown in Table 69. Therefore, the null hypothesis is accepted.

Summary

Inspection of Tables 57 through 69 indicates the null hypothesis of no difference was accepted for categories based on length of service: customer orientation; participation; development; motivation; products/services; processes/procedures; information; suppliers; culture; planning; communication; accountability, and total.

Null Hypothesis 6

Hypothesis 6, expressed operationally, is there is no significant difference in the means of the twelve categories and the total score based on department in which the individual is employed as measured by a survey instrument on Total Quality Management (TQM).

The data in Tables 70 through 82 indicate the null hypothesis should be accepted or rejected. Where it is rejected, the tables show between which sets of means the differences exist.

TABLE 70

Customer Orientation Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	59.25	8.46	2.63	.01**
Within groups	138	442.58	3.21		
Total	145	501.84			

Mean	Department
6.33	C. Division of Planning, Results and Information Management
7.47	G. Division of Career, Technology and Adult Learning
7.54	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
7.65	A. Office of the Superintendent
7.91	B. Division of Business Services
8.45	E. Division of Instruction
8.67	J. Division of Library Development and Services
8.72**	I. Division of Certification and Accreditation

* < .05 ** < .01

There is a statistically significant difference in the means of the customer orientation category based on department of employment as shown in Table 70. Therefore, the null hypothesis is rejected.

TABLE 71

Participation Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	81.05	11.58	3.30	.01**
Within groups	141	495.23	3.51		
Total	148	576.28			

Mean	Department
5.07	C. Division of Planning, Results and Information Management
5.78	B. Division of Business Services
5.82	G. Division of Career, Technology and Adult Learning
5.92	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
6.10	A. Office of the Superintendent
6.67	E. Division of Instruction
7.09	J. Division of Library Development and Services
8.09**	I. Division of Certification and Accreditation

* < .05 ** < .01

There is a statistically significant difference in the means of the participation category based on department of employment as shown in Table 71. Therefore, the null hypothesis is rejected.

TABLE 72

Development Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	74.10	10.59	3.52	.01**
Within groups	137	411.65	3.00		
Total	144	485.75			

Mean	Department
5.33	C. Division of Planning, Results and Information Management
5.92	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
6.06	G. Division of Career, Technology and Adult Learning
6.19	B. Division of Business Services
6.55	A. Office of the Superintendent
7.40	I. Division of Certification and Accreditation
7.42	E. Division of Instruction
7.92**	J. Division of Library Development and Services

* < .05 ** < .01

There is a statistically significant difference in the means of the development category based on department of employment as shown in Table 72. Therefore, the null hypothesis is rejected.

TABLE 73

Motivation Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	48.61	6.94	2.00	.06
Within groups	137	475.02	3.47		
Total	144	523.63			

* < .05 ** < .01

There is no statistically significant difference in the means of the motivation category based on department of employment as shown in Table 73. Therefore, the null hypothesis is accepted.

TABLE 74

Products/Services Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	39.64	5.66	1.35	.23
Within groups	124	518.33	4.18		
Total	131	557.97			

* < .05 ** < .01

There is no statistically significant difference in the means of the products/services category based on department of employment as shown in Table 74. Therefore, the null hypothesis is accepted.

TABLE 75

Processes/Procedures Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	54.86	7.84	2.18	.04*
Within groups	128	461.07	3.60		
Total	135	515.93			

Mean	Department
5.50	C. Division of Planning, Results and Information Management
6.26	A. Office of the Superintendent
6.75	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
6.90	B. Division of Business Services
6.93	G. Division of Career, Technology and Adult Learning
7.00	J. Division of Library Development and Services
7.00	E. Division of Instruction
8.44*	I. Division of Certification and Accreditation

* < .05 ** < .01

There is a statistically significant difference in the means of the processes/procedures category based on department of employment as shown in Table 75. Therefore, the null hypothesis is rejected.

TABLE 76

Information Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	28.31	4.04	1.32	.24
Within groups	135	412.52	3.06		
Total	142	440.83			

* < .05 ** < .01

There is no statistically significant difference in the means of the information category based on department of employment as shown in Table 76. Therefore, the null hypothesis is accepted.

TABLE 77

Suppliers Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	39.11	5.59	1.51	.17
Within groups	122	450.46	3.69		
Total	129	489.57			

* < .05 ** < .01

There is no statistically significant difference in the means of the suppliers category based on department of employment as shown in Table 77. Therefore, the null hypothesis is accepted.

TABLE 78

Culture Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	55.70	7.96	4.54	.01**
Within groups	138	242.08	1.75		
Total	145	297.78			

Mean	Department
5.70	C. Division of Planning, Results and Information Management
6.80	B. Division of Business Services
7.06	G. Division of Career, Technology and Adult Learning
7.42	E. Division of Instruction
7.58	J. Division of Library Development and Services
7.70**	A. Office of the Superintendent
7.75**	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
8.00**	I. Division of Certification and Accreditation

* < .05 ** < .01

There is a statistically significant difference in the means of the culture category based on department of employment as shown in Table 78. Therefore, the null hypothesis is rejected.

TABLE 79

Planning Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	62.58	8.94	1.89	.08
Within groups	123	581.47	4.73		
Total	130	644.05			

* < .05 ** < .01

There is no statistically significant difference in the means of the planning category based on department of employment as shown in Table 79. Therefore, the null hypothesis is accepted.

TABLE 80

Communication Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	16.45	2.35	1.11	.36
Within groups	138	292.07	2.12		
Total	145	308.52			

* < .05 ** < .01

There is no statistically significant difference in the means of the communication category based on department of employment as shown in Table 80. Therefore, the null hypothesis is accepted.

TABLE 81

Accountability Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	82.14	11.73	3.06	.01**
Within groups	137	525.83	3.84		
Total	144	607.97			

Mean	Department
5.80	C. Division of Planning, Results and Information Management
6.85	A. Office of the Superintendent
6.72	B. Division of Business Services
6.94	G. Division of Career, Technology and Adult Learning
7.23	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
7.41	J. Division of Library Development and Services
7.91	E. Division of Instruction
9.00**	L. Division of Certification and Accreditation

* < .05 ** < .01

There is a statistically significant difference in the means of the accountability category based on department of employment as shown in Table 81. Therefore, the null hypothesis is rejected.

TABLE 82

Total Based on Department of Employment

SOURCE	D.F.	SUM OF SQUARES	MEAN SQUARES	F RATIO	F PROB.
Between groups	7	4673.48	667.64	2.54	.02*
Within groups	95	25008.50	263.25		
Total	102	29681.98			

Mean	Department
61.83	C. Division of Planning, Results and Information Management
71.07	A. Office of the Superintendent
72.50	G. Division of Career, Technology and Adult Learning
73.77	B. Division of Business Services
76.10	Special (School Improvement Services Office, Division of Special Education, Division of Compensatory Education and Support Services)
80.50	J. Division of Library Development and Services
82.17	E. Division of Instruction
89.75**	I. Division of Certification and Accreditation

* < .05 ** < .01

There is a statistically significant difference in the means of the total category based on department of employment as shown in Table 82. Therefore, the null hypothesis is rejected.

Summary

Inspection of Tables 70 through 82 indicates the null hypothesis of no difference was accepted for categories based on department of employment: motivation; products/services; information; suppliers; planning, and

communication.

Where the null hypothesis was rejected, the significant differences will be discussed herein. In the customer orientation category, the significant difference lay between the Division of Certification and Accreditation and all other departments: Division of Library Development and Services; Division of Instruction; Division of Business Services; Office of the Superintendent; Special (School Improvement Services Office; Division of Special Education; Division of Compensatory Education and Support Services); Division of Career Technology and Adult Learning; and Division of Planning, Results and Information Management. In the participation category, the significant difference lay between the Division of Certification and Accreditation and all other departments: Division of Library Development and Services; Division of Instruction; Office of the Superintendent; Division of Career Technology and Adult Learning; Division of Business Services; and Division of Planning, Results and Information Management. In the development category, the significant difference lay between the Division of Library Development and Services and all other departments: Division of Instruction; Office of the Superintendent; Division of Planning, Results and Information Management; Special (School Improvement Services Office; Division of Special Education; Division of Compensatory Education and Support Services); Division of

Career Technology and Adult Learning; Division of Business Services; and Division of Certification and Accreditation. In the processes/procedures category, the significant difference lay between the Division of Certification and Accreditation and all other departments: Division of Instruction; Division of Library Development and Services; Division of Career Technology and Adult Learning; Division of Business Services; Special (School Improvement Services Office; Division of Special Education; Division of Compensatory Education and Support Services); Division of Planning, Results and Information Management; and the Office of the Superintendent. In the culture category, the significant differences lay between the Division of Certification and Accreditation, Special (School Improvement Services Office; Division of Special Education; Division of Compensatory Education and Support Services) and the Office of the Superintendent and all other departments: Division of Library Development and Services; Division of Instruction; Division of Career Technology and Adult Learning; Division of Business Services; and the Division of Planning, Results and Information Management. In the accountability category, the significant difference lay between the Division of Certification and Accreditation and all other departments: Division of Instruction; Division of Library Development and Services; Special (School Improvement Services Office; Division of Special

Education; Division of Compensatory Education and Support Services); Division of Career Technology and Adult Learning; Division of Business Services; the Office of the Superintendent; and the Division of Planning, Results and Information Management. In the total category, the significant difference lay between the Division of Certification and Accreditation and all other departments: the Division of Instruction; Division of Library Development and Services; Special (School Improvement Services Office; Division of Special Education; Division of Compensatory Education and Support Services); Division of Business Services; Division of Career Technology and Adult Learning; the Office of the Superintendent; and the Division of Planning, Results and Information Management.

Null Hypothesis 7

Hypothesis 7, expressed operationally, is there is no significant correlation between any of the twelve process variables being studied. The data in Table 83 indicate this null hypothesis should be rejected since most of the correlations in that table are statistically significant at less than the .05 level.

TABLE 83
Correlation Coefficients

	PA	DT	MO	PS	PP	IN	SU	CU	PL	COM	AC	TOTAL
CO	.4751 (173) P= .000*	.5077 (171) P= .000*	.4114 (170) P= .000*	.6196 (154) P= .000*	.5898 (158) P= .000*	.4853 (167) P= .000*	.6286 (153) P= .000*	.4201 (170) P= .000*	.6444 (158) P= .000*	.3739 (170) P= .000*	.5548 (170) P= .000*	.7194 (125) P= .000*
PA		.7288 (178) P= .000*	.7808 (174) P= .000*	.6502 (160) P= .000*	.6839 (164) P= .000*	.7273 (172) P= .000*	.5882 (158) P= .000*	.4921 (175) P= .000*	.5583 (160) P= .000*	.5923 (176) P= .000*	.6832 (175) P= .000*	.8497 (125) P= .000*
DT			.6154 (172) P= .000*	.6024 (161) P= .000*	.6005 (163) P= .000*	.6080 (173) P= .000*	.5585 (159) P= .000*	.4135 (173) P= .000*	.5858 (160) P= .000*	.4633 (173) P= .000*	.6135 (175) P= .000*	.7913 (125) P= .000*
MO				.6414 (158) P= .000*	.5886 (160) P= .000*	.6733 (169) P= .000*	.5812 (153) P= .000*	.5899 (174) P= .000*	.4205 (158) P= .000*	.6191 (172) P= .000*	.6457 (172) P= .000*	.7919 (125) P= .000*
PS					.7522 (153) P= .000*	.8293 (158) P= .000*	.8547 (155) P= .000*	.4726 (158) P= .000*	.5844 (149) P= .000*	.5525 (157) P= .000*	.5841 (158) P= .000*	.8700 (125) P= .000*
PP						.7974 (162) P= .000*	.8523 (152) P= .000*	.4576 (161) P= .000*	.7153 (156) P= .000*	.5359 (161) P= .000*	.6281 (161) P= .000*	.8635 (125) P= .000*
IN							.7309 (159) P= .000*	.4829 (169) P= .000*	.5638 (156) P= .000*	.5808 (170) P= .000*	.6157 (170) P= .000*	.8045 (125) P= .000*
SU								.4315 (154) P= .000*	.5539 (146) P= .000*	.5590 (156) P= .000*	.5505 (156) P= .000*	.8379 (125) P= .000*
CU									.3883 (156) P= .000*	.3585 (174) P= .000*	.4846 (172) P= .000*	.6191 (125) P= .000*
PL										.4325 (157) P= .000*	.5087 (157) P= .000*	.7320 (125) P= .000*
COM											.4917 (173) P= .000*	.7148 (125) P= .000*
AC												.8090 (125) P= .000*

KEY: CO=Customer Orientation, PA=Participation, DT=Development, MO=Motivation, PS=Products/Services, PP=Processes/procedures, IN=Information, SU=Supplies, CU=Culture, PL=Planning, COM=Communication, AC=Accountability, TOTAL

*< .05 **< .01

Inspection of Table 83 indicates that the null hypothesis of no difference was rejected and accepted the alternative hypothesis across all categories at less than the .05 level.

Discussion of Data

Among the variables chosen for the study (level of education, age, ethnic background, gender, length of employment/service, and department of employment), there was no consistency across the Twelve Conditions of Excellence. No differences were found in the variables of gender and length of service; varying differences were found in the variables of level of education, age, ethnic group and department of employment.

From the data, a profile of specific attitudes exhibited by resisters and adapters is identified. Resisters are defined as having attitudes in the strongly disagree and disagree areas. The mean for this group is lower than that of the adapters. The adapters are defined as having a mean higher than the resisters and attitudes in the agree and strongly agree areas.

TABLE 84

Adapters/Resisters

CATEGORY	ADAPTERS	RESISTERS
Educational Level:		
Customer Orientation	N/A	N/A
Participation	N/A	N/A
Development	N/A	N/A
Motivation	N/A	N/A
Products/Services	High School	Bachelor's Doctorate Master's Some College (lowest mean)
Processes/Procedures	High School	Master's Bachelor's Doctorate Some College (lowest mean)
Information	High School	Doctorate Master's Bachelor's Some College (lowest mean)
Suppliers	High School	Doctorate Bachelor's Master's Some College (lowest mean)
Culture	Doctorate High School Master's	Bachelor's Some College (lowest mean)
Communication	N/A	N/A
Planning	N/A	N/A

TABLE 84 (continued)

CATEGORY	ADAPTERS	RESISTERS
Accountability	Master's	High School Doctorate Bachelor's Some College (lowest mean)
Total	High School	Bachelor's Master's Doctorate Some College (lowest mean)
Age:		
Customer Orientation	N/A	N/A
Participation	46-52	Over 52 25-31 32-38 39-45 (lowest mean)
Development	N/A	N/A
Motivation	46-52	Over 52 25-31 32-38 39-45 (lowest mean)
Products/Services	N/A	N/A
Processes/Procedures	N/A	N/A
Information	N/A	N/A
Suppliers	N/A	N/A
Culture	N/A	N/A
Planning	N/A	N/A
Communication	N/A	N/A
Accountability	N/A	N/A
Total	N/A	N/A

TABLE 84 (continued)

CATEGORY	ADAPTERS	RESISTERS
Ethnicity:		
Customer Orientation	N/A	N/A
Participation	Caucasian	African-American
Development	Caucasian	African-American
Motivation	Caucasian	African-American
Products/Services	N/A	N/A
Processes/Procedures	N/A	N/A
Information	Caucasian	African-American
Suppliers	N/A	N/A
Culture	Caucasian	African-American
Planning	N/A	N/A
Communication	Caucasian	African-American
Accountability	N/A	N/A
Total	N/A	N/A
Gender:		
Customer Orientation	N/A	N/A
Participation	N/A	N/A
Development	N/A	N/A
Motivation	N/A	N/A
Products/Services	N/A	N/A
Processes/Procedures	N/A	N/A
Information	N/A	N/A

TABLE 84 (continued)

CATEGORY	ADAPTERS	RESISTERS
Suppliers	N/A	N/A
Culture	N/A	N/A
Planning	N/A	N/A
Communication	N/A	N/A
Accountability	N/A	N/A
Total	N/A	N/A
Length of Service:		
Customer Orientation	N/A	N/A
Participation	N/A	N/A
Development	N/A	N/A
Motivation	N/A	N/A
Products/Services	N/A	N/A
Processes/Procedures	N/A	N/A
Information	N/A	N/A
Suppliers	N/A	N/A
Culture	N/A	N/A
Planning	N/A	N/A
Communication	N/A	N/A
Accountability	N/A	N/A
Total	N/A	N/A

TABLE 84 (continued)

CATEGORY	ADAPTERS	RESISTERS
Department:		
Customer Orientation	Div. of Certification & Accreditation	Div. of Library Dev. & Services Div. of Instruction Div. of Business Services Office of Superintendent Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed. & Support Services) Div. of Career Tech. & Adult Learning Div. of Planning, Results & Info. Mgmt. (lowest mean)
Participation	Div. of Certification & Accreditation	Div. of Library Dev. & Services Div. of Instruction Office of Superintendent Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed. & Support Services) Div. of Career Tech. & Adult Learning Div. of Business Services Div. of Planning, Results & Info. Mgmt. (lowest mean)
Development	Div. of Library Dev. & Services	Div. of Instruction Div. of Certification & Accreditation Office of Superintendent Div. of Business Services Div. of Career Tech. & Adult Learning Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed. & Support Services) Div. of Planning, Results & Info. Mgmt. (lowest mean)
Motivation	N/A	N/A

TABLE 84 (continued)

CATEGORY	ADAPTERS	RESISTERS
Products/Services	N/A	N/A
Processes/Procedures	Div. of Certification & Accreditation	Div. of Instruction Div. of Library Dev. & Services Div. of Career Tech. & Adult Learning Div. of Business Services Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed. & Support Services) Office of Superintendent Div. of Planning, Results & Info. Mgmt. (lowest mean)
Information	N/A	N/A
Suppliers	N/A	N/A
Culture	Div. of Certification & Accreditation Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed., & Support Services) Office of Superintendent	Div. of Instruction Div. of Library Dev. & Services Div. of Career Tech. & Adult Learning Div. of Business Services Div. of Planning, Results & Info. Mgmt. (lowest mean)
Planning	N/A	N/A
Communication	N/A	N/A
Accountability	Div. of Certification & Accreditation	Div. of Instruction Div. of Library Dev. & Services Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed. & Support Services) Div. of Career Tech. & Adult Learning Div. of Business Services Office of Superintendent Div. of Planning, Results & Info. Mgmt. (lowest mean)

TABLE 84 (continued)

CATEGORY	ADAPTERS	RESISTERS
Total	Div. of Certification & Accreditation	Div. of Instruction Div. of Library Dev. & Services Special (School Impr. Services Off., Div. of Spec. Ed., Div. of Compensatory Ed., & Support Services) Div. of Business Services Div. of Career Tech & Adult Learning Office of Superintendent Div. of Planning, Results & Info. Mgmt. (lowest mean)

In terms of education, the Some College group (less than two years of college or no AA degree, more than two years of college but no Bachelor's degree) consistently had the lowest means, placing them in the strongly disagree and disagree area. Most agreement was found among the high school graduates. This could be attributed to the idea that the more education one has, the more likely one will have less hesitation about expressing thoughts and ideas. There may also be the possibility of high school graduates wanting to fit into an organization with a large number of educated people.

In terms of age, where there was significance, the 46-52 age group was the most adaptable, placing them in the agree/strongly agree area. This could be attributed to the notion that this group is closer to retirement than the 39-45 age group, which registered the lowest mean in the two areas of

significance.

Ethnic differences were significant in the categories of participation, development, motivation, information, culture, and communication. When one looks back at the definition of these categories, it seems that African-Americans do not feel that they are a part of the organization in half of the key components of the conditions of excellence. This suggests the need for sensitivity training or multicultural development. In addition, an effort should be made to hire a more diverse workforce.

When the department of employment was considered, Division of Certification and Accreditation registered higher means in most areas of significance, while the Division of Planning, Results and Information Management consistently registered in the lowest mean area in categories of significance. This points out the difference in supervision or management style and suggests that stronger leadership should be exerted in the other departments.

Education, age, department of employment and ethnicity were the most significant demographic factors. Based on the Twelve Conditions of Excellence, the state agency may want to ascertain why the resisters responded as they did. Moreover, the leadership at the state agency may want to give serious thought to examining the organizational culture to

determine how to decrease the amount of resistance to Total Quality Management implementation.

CHAPTER 5

SUMMARY AND CONCLUSIONS

The purpose of this study was to investigate the relationship between the attitudes of employees in a state agency and the impact of those attitudes on the implementation of Total Quality Management. Further, the study hoped to determine how attitudes might be modified to facilitate the implementation of Total Quality Management. A purposeful sample of the four hundred employees at the state agency was selected for the study. This chapter will provide the reader with a concise summary of the study.

Summary

Seven hypotheses were tested at the .05 alpha level. The data were analyzed using analysis of the variance, t-tests and correlation. The variables chosen for study were level of education, age, ethnic background, gender, length of employment, and the department of employment. Each of these variables was analyzed in terms of the Twelve Conditions of Excellence and in no case was there consistency across the Twelve Conditions of Excellence.

Conclusions

Several conclusions were generated from this study. These conclusions were:

1. That based on educational level, there were no differences in the categories of customer orientation, participation, development, motivation, planning and communications.

2. That based on education, there were significant differences in the processes/procedures category. The differences lay between high school and all other levels of education from high to low (Doctorate, Master's, Bachelor's, Some College).

3. That based on education, there were significant differences in the products/services category. The differences lay between high school and all other levels of education (Doctorate, Master's, Bachelor's, Some College).

4. That based on education, there were significant differences in the information category. The differences lay between high school and all other levels of education (Doctorate, Master's, Bachelor's, Some College).

5. That based on education, there were significant differences in the suppliers category. The differences lay between high school and all other levels of education (Doctorate, Master's, Bachelor's, Some College).

6. That based on education, there were significant differences in the culture category. The differences lay between the Doctorate and high school and a Master's and the remaining two levels of education, Bachelor's and Some College.

7. That based on education, there were significant differences in the accountability category. The differences lay between the Master's and other levels of education (high school, Doctorate, Bachelor's and Some College).

8. That based on education, there were significant differences in the total category. The differences lay between high school and all other levels of education (Bachelor's, Master's, Doctorate and Some College). That means they were more likely to

strongly disagree or disagree. Most agreeability was found among the high school graduates. The two exceptions were the culture category, with the Doctorate group having the agree/strongly agree, and accountability, which showed the Master's degree holders were more likely to agree/strongly agree.

9. That based on age, there were no differences in the categories of customer orientation, development, products/services, processes/ procedures, information, suppliers, culture, planning, communication, accountability, and total.

10. That based on age, there were significant differences in the participation category. The differences lay between the 46-52 age group and all others (over 52; 25-31; 32-38; and 39-45).

11. That based on age, there were significant differences in the motivation category. The differences lay between the 46-52 age group and all others (over 52; 25-31; 32-38; and 39-45).

12. That based on ethnicity, there were no differences in the categories of customer orientation, products/services, processes/procedures, suppliers, planning, accountability, and total.

13. That based on ethnicity, there were significant differences in the category of participation. The caucasian mean was higher.

14. That based on ethnicity, there were significant differences in the category of development. The caucasian mean was higher.

15. That based on ethnicity, there were significant differences in the category of motivation. The caucasian mean was higher.

16. That based on ethnicity, there were significant differences in the category of information. The caucasian mean was higher.

17. That based on ethnicity, there were significant differences in the category of culture. The caucasian mean was higher.

18. That based on ethnicity, there were significant differences in the category of communication. The caucasian mean was higher.

19. That based on gender, there were no statistically significant differences in any of the thirteen categories.

20. That based on length of service, there were no statistically significant differences in any of the thirteen categories.

21. That based on department of employment, there were no statistically significant differences in the categories of motivation, products/services, information, suppliers, planning, and communication.

22. That based on department of employment, there were significant differences in the customer orientation category. The differences lay between the Division of Certification and Accreditation and all other departments.

23. That based on department of employment, there were significant differences in the category of participation. The differences lay between the Division of Certification and Accreditation and all other departments.

24. That based on department of employment, there were significant differences in the category of development. The differences lay between the Division of Library Development and Services and all other departments.

25. That based on department of employment, there were significant differences in the processes/procedures category. The differences lay between the Division of Certification and Accreditation and all other departments.

26. That based on department of employment, there were significant differences in the culture category. The differences lay between the Division of Certification and Accreditation and all other departments.

27. That based on department of employment, there were significant differences in the accountability category. The differences lay between the Division of Certification and Accreditation and all other departments.

28. That based on department of employment, there were significant differences in the total category. The

differences lay between the Division of Certification and Accreditation and all other departments.

29. That based on the process variables that were studied, the null hypothesis should be rejected since most (all) of the correlations were statistically significant at less than the .05 level.

Implications

As noted in Chapter 4, education, age, departmental affiliation and ethnicity were the significant demographic factors. That is, the significant differences in means distinguishing resisters from adapters were found in these variables. These differences were statistically significant, the .05 level being the criterion of significance. It is clear that the means for these variables were significant statistically. Whether or not they are organizationally significant is a matter for further study.

The profile of resisters was evident where the variables of education, age, departmental affiliation and ethnicity were examined. It may be that the term "resisters" is not an appropriate one. The reluctance that this group of individuals displayed towards Total Quality Management may be an indication that they are more cautious about an innovation or more prone to defer judgement before making a commitment. Whatever the reason, the state agency being studied may want to examine the organizational climate of the agency to determine why the resisters feel as they do

concerning the implications of Total Quality Management.

If the state agency expects to be successful in its implementation of Total Quality Management, it is evident that some self-examination must be made. This study has shown that not all departments within the state agency are of the same level of readiness for implementation of change.

Particularly significant was the finding that African-Americans were prominent as "resisters", especially since an African-American heads an important division of the state agency. This finding may motivate the agency to re-examine its sensitivity to the importance of a culturally diverse workplace.

Age was significant in the profile of resisters with those in the middle age group (46-52) being outstanding with respect to their motivation. This finding may indicate that as this group nears retirement, it may have lost its desires to be involved in change or innovation. For them, the present situation is a "safe harbor" and one which they have no desire to change.

Recommendations

As a result of the above study, the following recommendations for further study are generated:

1. Determine how attitudes affect organizational change, by conducting a study to measure attitude before, during, and at the end of the implementation process.

2. Study the leaders and their strategies to assist them in moving their departments toward the implementation of Total Quality Management.

3. Study other state education agencies that have implemented TQM and compare them to agencies that do not have this management style.

4. Study the employment patterns at the state agency involved in this study.

5. Re-examine the organizational culture at the state agency and determine what fundamental changes, if any, need to be made to decrease resistance to Total Quality Management; for example, is the state agency under study willing to eliminate performance evaluations of its personnel?

6. Implement comprehensive agency-wide staff development, which incorporates the Twelve Conditions of Excellence. Consider the engagement of an outside consultant to develop the improved staff development plan.

APPENDIX A

APPROVAL FOR STUDY

State Department of
EDUCATION

Schools for Success

State Superintendent of Schools

September 15, 1992

Ms. Jacqueline Frierson
1544 Lochwood Road
Baltimore MD 21218

Dear Ms. Frierson,

We are happy to have you take part in our next Total Quality Council meeting. We are scheduled to meet on September 24, 9:30 - 11:30 a.m. at the State Education Building, address above, in the 7th Floor Board Room. I have attached a copy of the agenda for your information. A parking facility is located adjacent to the building.

We look forward to your presentation.

Sincerely,

Management Associate

MEMORANDUM

TO: Total Quality Council

FROM:

DATE: September 16, 1992

RE: Agenda - September 24 Meeting -
9:30 - 11:30 a.m.
7th Floor Board Room

The agenda includes -

I. Department Correspondence Process -
Evaluation Report/Next Steps

II. PAT - Equity in Employment

III. Proposal from Jacqueline Frierson, Graduate Student, Morgan State University, Re: MSDE Progress with TQ

IV. Bulletin - TQ Articles -

V. Future Meeting Schedule (bring calendars)

State Department of
EDUCATION

Schools for Success [195]

State Superintendent of Schools

October 14, 1992

Ms. Jacqueline Frierson
1544 Lochwood Road
Baltimore MD 21218

Dear Ms. Frierson:

The Council was very pleased with your proposal. Attached are the minutes which confirm our agreement to participate in the study. We're looking forward to working with you to our mutual benefit.

Sincerely,

Lorraine Flowers

Lorraine Flowers
Total Quality Coordinator

LF:emp

Enclosure

State Department of
EDUCATION
Schools for Success [196]

State Superintendent of Schools

MEMORANDUM

TO: Total Quality Council

FROM: Edith Parker

DATE: October 14, 1992

RE: September 24 Meeting Minutes

Introductions

Those in attendance at the September 24 meeting were Gaye Brown, Ray Brown, Bonnie Copeland, Lorraine Flowers, Sandra Frazier, Monroe Fuller, Jim Jeffers, John Linton, Tyrone Parrish, and Skipp Sanders. Guests present were Jacqueline Frierson, Graduate Student, Morgan State University and Assistant Principal, Dunbar High School; and Scott Chapman, Westinghouse Electronics Corporation.

Lorraine Flowers introduced Sandy Frazier from the new Office of Total Quality and Staff Development Services. She will be replacing Edith Parker in the support role.

Department Correspondence Process

Edith Parker discussed the latest report from the pilot of the Department correspondence process. The report showed much improvement over the cycle time originally determined by the Correspondence Process Action Team. Overall the report proved TQ at work in MSDE.

Equity in Employment Process Action Team

Lorraine Flowers discussed the new process action team appointed by the Leadership Team to study and examine how we are delivering the training entitled "Equity in Employment." The team is chaired by Michelle Pointer and is scheduled to report results to the Leadership Team by October 19.

[197]

Comparative Analysis of TQM: Public and Private Sectors

Jacqueline Frierson presented a proposal request on a Comparative Analysis of TQM: Public and Private Sectors (see attached copy for those not present at the meeting). Jackie intends to survey and interview approximately 30-40 staff people within the Department. The purpose of the interviews would be to discuss the survey instrument and fine tune it for future use. The council's consensus was that this would be a very positive move for MSDE and agreed to have Ms. Frierson begin her work.

TQ Council Charter

Lorraine suggested that the Council consider creating a charter. She explained that we have been in operation for approximately a year. It is time to examine the constitution of the group, the terms of office and the ground rules.

Meeting Schedule

A preliminary schedule of upcoming council meetings was set for the balance of 92 and 1993 (see attached). The 1993 meetings are scheduled monthly, the 3rd Thursday of the month beginning in January.

State TQ Council - Agency Coordinators Training

On October 14 and 16 Alethea Frazier, Total Quality and Staff Development Services Office; and Lorraine Flowers will be training the State Total Quality coordinators from other State agencies. MSDE is noted as one of the pioneers for Total Quality and is being recognized by virtue of the assistance we're offering. The Council feels this is noteworthy and should be placed in the Bulletin. Lorraine Flowers will see to this.

min0924

TOTAL QUALITY COUNCIL

[198]

MEETING SCHEDULE
1992-93

(all meetings will be held at 9:30 - 11:30 a.m. - locations to be determined if not listed)

October 22, 1992
7th Floor Board Room

November 19, 1992
7th Floor Board Room

December 17, 1992
7th Floor Board Room

January 21, 1993

February 18, 1993

March 18, 1993

April 15, 1993

May 20, 1993

June 17, 1993

July 15, 1993

August 19, 1993

September 16, 1993

October 21, 1993

November 18, 1993

December 16, 1993

APPENDIX B

SURVEY

STATE DEPARTMENT OF EDUCATION
TOTAL QUALITY MANAGEMENT IMPLEMENTATION SURVEY

Directions: Read the statements and circle the number you feel is most appropriate.

SD = strongly disagree D = disagree A = agree SA = strongly agree

		SD 1	D 2	A 3	SA 4
1.	Total Quality Management changed whom I perceive as my customers.	1	2	3	4
2.	I know what my customers' requirements are.	1	2	3	4
3.	Meeting customer requirements is the primary goal of all employees.	1	2	3	4
4.	MSDE actively seeks ways to make all employees aware of customers and their needs.	1	2	3	4
5.	Data concerning customers' views are communicated and used for improvement.	1	2	3	4
6.	I know what MSDE's mission is.	1	2	3	4
7.	People at MSDE agree on the mission.	1	2	3	4
8.	People at MSDE see the mission as workable.	1	2	3	4
9.	People at MSDE have a clear vision and can work steadily toward the goals.	1	2	3	4
10.	People at MSDE are clear about project goals.	1	2	3	4
11.	There is clarity concerning the purpose of individual steps, meetings, discussions and decisions.	1	2	3	4
12.	There is a flowchart describing project steps.	1	2	3	4
13.	There is an improvement plan.	1	2	3	4
14.	Planning documents are referred to when discussions concern what directions to take next.	1	2	3	4
15.	I know what resources and training are needed throughout any given project.	1	2	3	4

(over)

		SD 1	D 2	A 3	SA 4
16.	I have formally assigned roles.	1	2	3	4
17.	I understand which roles belong to one person and which are shared, and how roles are switched.	1	2	3	4
18.	People at MSDE work well together.	1	2	3	4
19.	I often feel part of MSDE.	1	2	3	4
20.	MSDE employees speak with clarity and directness.	1	2	3	4
21.	MSDE employees listen to each other actively.	1	2	3	4
22.	MSDE employees interrupt and talk when others are speaking.	1	2	3	4
23.	I can say exactly what I think.	1	2	3	4
24.	People openly express their opinions.	1	2	3	4
25.	Each employee has the opportunity to initiate discussion.	1	2	3	4
26.	Employees seek information and opinions.	1	2	3	4
27.	Our planning and the way we operate are largely influenced by one or two members.	1	2	3	4
28.	Each employee suggests procedures for reaching goals.	1	2	3	4
29.	Each employee has the opportunity to clarify, summarize or elaborate on ideas.	1	2	3	4
30.	We are able to reach consensus at MSDE.	1	2	3	4
31.	Differences are resolved creatively.	1	2	3	4
32.	MSDE employees praise and correct each other with equal fairness.	1	2	3	4
33.	At MSDE, everyone participates in decision making.	1	2	3	4
34.	At MSDE, we discuss how decisions will be made.	1	2	3	4
35.	At MSDE, we explore important issues by polling.	1	2	3	4
36.	At MSDE, we use data as the basis for decisions.	1	2	3	4
37.	We have reasonably balanced participation.	1	2	3	4
38.	We have open discussions regarding ground rules.	1	2	3	4

(over)

		SD 1	D 2	A 3	SA 4
39.	We openly state or acknowledge norms.	1	2	3	4
40.	We are sensitive to nonverbal communication.	1	2	3	4
41.	Communication flows freely in all directions.	1	2	3	4
42.	We contribute equally to group process and meeting content.	1	2	3	4
43.	We demand to see data before making decisions and question anyone who tries to act on hunches alone.	1	2	3	4
44.	We use basic statistical tools to investigate problems and to gather and analyze data.	1	2	3	4
45.	We dig for root causes of problems.	1	2	3	4
46.	We seek permanent solutions rather than rely on quick fixes.	1	2	3	4
47.	We comment and intervene to correct group process problems.	1	2	3	4
48.	On-going programs exist to improve products and services through measurement and analysis.	1	2	3	4
49.	Services are verified before delivery.	1	2	3	4
50.	Supply requirements are mutually established with all internal groups actively participating.	1	2	3	4
51.	Purchased products and/or services meet all Total Quality requirements.	1	2	3	4
52.	Total Quality of supplied products and services is measured, and performance is continuously improved.	1	2	3	4
53.	I have sufficient opportunities for continuing education and training.	1	2	3	4
54.	Information flows freely and accurately in all directions.	1	2	3	4
55.	Management treats all employees equally (consistency in words and actions).	1	2	3	4

(over)

56. What is your highest level of education?

A. High School B. Some College C. A.A. Degree
D. Bachelor's Degree E. Master's Degree F. Doctorate Degree
G. Other. Please describe:

57. What is your age?

A. 18-24 B. 25-31 C. 32-38 D. 39-45
E. 46-52 F. Over 52

58. What is your ethnic background?

A. African-American B. Asian/Pacific Isle C. Hispanic
D. Native American E. Caucasian F. Other

59. What is your sex?

A. Male B. Female

60. For how long have you worked at MSDE?

A. 0-5 years B. 6-10 years C. 11-15 years
D. 16-20 years E. Over 21 years

61. In what department do you work?

A. Office of the Superintendent
B. Total Quality and Staff Development Services
C. Administration and Finance
D. Bureau of Educational Development
E. Career and Technology Education
F. Compensatory Education and Support Services
G. Rehabilitation Services
H. Correctional Education
I. Certification and Accreditation
J. Library Development and Services

APPENDIX C

COVER LETTER FOR SURVEY

State Department of
EDUCATION

[2051]

Schools for Success

State Superintendent of Schools

TO:

FROM:

DATE: September 20, 1993

SUBJECT: Total Quality Implementation Survey

Your help is needed to complete a survey on total quality. It will take less than ten minutes of your time. Jacqueline L. Frierson, a doctoral student at Morgan State University, with the permission of the MSDE Total Quality Council is conducting a survey to determine how the implementation of Total Quality at is progressing. Your participation in this confidential and anonymous survey will be greatly appreciated. Your opinions are important to this study in the following ways: analyzing training needs, determining attitudes toward organizational change and determining what can be done to improve the process.

Please mail your completed survey in the enclosed, stamped envelope to Mrs. Frierson by Tuesday,October 4,1993. If you have any questions, feel free to contact Mrs. Frierson at (410) 396-9478 or 9479 between the hours of 8 a.m., and 4 p.m. or at home,(410) 435-4534.

Thank you for taking the time to respond to this important survey.

APPENDIX D

FINAL FORM OF SURVEY

STATE DEPARTMENT OF EDUCATION
TOTAL QUALITY MANAGEMENT IMPLEMENTATION SURVEY

Directions: Read the statements and circle the number you feel is most appropriate.

SD = strongly disagree D = disagree A = agree SA = strongly agree

		SD 1	D 2	A 3	SA 4
1.	Total Quality Management changed whom I perceive as my customers.	1	2	3	4
2.	I know what my customers' requirements are.	1	2	3	4
3.	MSDE actively seeks ways to make all employees aware of customers and their needs.	1	2	3	4
4.	People at MSDE agree on the mission.	1	2	3	4
5.	There is a flowchart describing project steps.	1	2	3	4
6.	There is an improvement plan.	1	2	3	4
7.	Planning documents are referred to when discussions concern what directions to take next.	1	2	3	4
8.	I know what resources and training are needed throughout any given project.	1	2	3	4
9.	I have formally assigned roles.	1	2	3	4
10.	I understand which roles belong to one person and which are shared, and how roles are switched.	1	2	3	4
11.	MSDE employees listen to each other actively.	1	2	3	4
12.	MSDE employees interrupt and talk when others are speaking.	1	2	3	4
13.	People openly express their opinions.	1	2	3	4
14.	Our planning and the way we operate are largely influenced by one or two members.	1	2	3	4
15.	Each employee suggests procedures for reaching goals.	1	2	3	4
16.	MSDE employees praise and correct each other with equal fairness.	1	2	3	4
17.	At MSDE, everyone participates in decision making.	1	2	3	4

	SD 1	D 2	A 3	SA 4
18. At MSDE, we discuss how decisions will be made.	1	2	3	4
19. At MSDE, we use data as the basis for decisions.	1	2	3	4
20. We have reasonably balanced participation.	1	2	3	4
21. We are sensitive to nonverbal communication.	1	2	3	4
22. Communication flows freely in all directions.	1	2	3	4
23. We demand to see data before making decisions and question anyone who tries to act on hunches alone.	1	2	3	4
24. We use basic statistical tools to investigate problems and to gather and analyze data.	1	2	3	4
25. We seek permanent solutions rather than rely on quick fixes.	1	2	3	4
26. On-going programs exist to improve products and services through measurement and analysis.	1	2	3	4
27. Services are verified before delivery.	1	2	3	4
28. Supply requirements are mutually established with all internal groups actively participating.	1	2	3	4
29. Purchased products and/or services meet all Total Quality requirements.	1	2	3	4
30. Total Quality of supplied products and services is measured and performance is continuously improved.	1	2	3	4
31. I have sufficient opportunities for continuing education and training.	1	2	3	4
32. Information flows freely and accurately in all directions.	1	2	3	4
33. Management treats all employees equally (consistency in words and actions).	1	2	3	4

34. What is your highest level of education?

A. High School B. Some College C. A.A. Degree
D. Bachelor's Degree E. Master's Degree F. Doctorate Degree
G. Other. Please describe: _____

35. What is your age?

A. 18-24 B. 25-31 C. 32-38 D. 39-45
E. 46-52 F. Over 52

36. What is your ethnic background?

A. African-American B. Asian/Pacific Isle C. Hispanic
D. Native American E. Caucasian F. Other

37. What is your sex?

A. Male B. Female

38. For how long have you worked at MSDE?

A. 0-5 years B. 6-10 years C. 11-15 years
D. 16-20 years E. Over 21 years

39. In what department do you work?

A. Office of the State Superintendent (Audit Office, School and Community Outreach, School Performance and Total Quality Services)
B. Division of Business Services
C. Division of Planning, Results and Information Management
D. The School Improvement Services Office
E. Division of Instruction
F. Division of Special Education
G. Division of Career, Technology and Adult Learning
H. Division of Compensatory Education and Support Services
I. Division of Certification and Accreditation
J. Division of Library Development and Services

APPENDIX E

VITAE FOR TOTAL QUALITY MANAGEMENT EXPERTS

VITA

Hardy M. Cook
6506 Beechwood Road
Baltimore, Maryland 21239

Telephone: (410) 377-5890 Date of Birth: July 20, 1916

EDUCATION

B.S. in Administrative Mechanical Engineering, Cornell University, 1940
Elementary Industrial Statistics, Western Electric Evening School, Baltimore Works, 1948
Advanced Industrial Statistics and Quality Control, Johns Hopkins University, 1953-54

PUBLICATIONS

Contributing author, Quality Control Handbook, 3d edition, Juran, Editor-in-chief
Contributing author, Handbook of Modern Manufacturing Management, Maynard, Editor

WORK EXPERIENCE

1981-present Quality Consultant

1990-present Adjunct Professor, Catonsville Community College

1981-1982 Adjunct Professor, Loyola College

1946-1981 Western Electric, Baltimore Works (now AT&T)

A. Twelve years manufacturing engineer includes 10 years statistical and quality control consultant for 36 manufacturing engineers
B. One year: Quality Control Engineer, full time
C. Three years: Organized and headed the Statistical Quality Control Engineering Department
D. Twenty years: Resident Head of Quality Assurance Department

1963-1984 Johns Hopkins University (evenings): Taught Quality Control and Industrial Statistics course

1959-1963 University of Baltimore: Taught various statistical and quality control courses

TECHNICAL SOCIETIES

American Society for Quality Control (ASQC)

1958-present: Fellow Member; Certified Quality Engineer (CQE)
Two years: National Treasurer
Four years: Director-at-Large
Five years: General Technical Council Officer
Past Chairman: Inspection Division
Past Chairman: Baltimore Section
1985-present: Member of ASQC Standards Committee
1987: Received Inspection Division Harry J. Lessig Medal
1987-present: Judge, McDermond Award/Division Management Award

American Statistical Association (ASA)

1991-present: Member

ADDITIONAL INFORMATION

1969: Invited speaker, 1st International Quality Control Conference, Tokyo, Japan
1985: Member of Cultural and Technical Interchange on Quality Team to Mainland China
1980-1991: Member, ANSI Z1 subcommittee on statistical methods in standards
1992-present: Member, Editorial Board of "Quality Engineering Magazine"

MELVIN T. ALEXANDER, Statistical Qualitist

CERTIFICATIONS: ASQC Certified Quality Engineer (CQE) No. 17202

EDUCATION AND TRAINING:

BS (Mathematics), NC A & T State University, 1972
MSPH (Biostatistics), University of NC-Chapel Hill, 1979

PROFESSIONAL AFFILIATIONS:

American Society for Quality Control (ASQC), Senior Member; Chair, Baltimore Section: 1992-1993; Vice Chair, 1991-1992; Secretary, 1990-1991

American Statistical Association (ASA), Member

SAS Users Group International (SUGI), Section Chair at annual conferences, 1988-1993

PROFESSIONAL EXPERIENCE:

1992-present: Senior Manufacturing Engineer, Integrated Product Development, Westinghouse Electronic Systems Group (ESG), Baltimore, MD. Statistical Design and Analysis support for Variability Reduction in Hybrids Manufacturing and the Advanced Ceramics Facility.

1990-present: Adjunct Lecturer, Quality Management & Technology and Career Programs (Continuing Education and Community Services), Catonsville Community College, Catonsville, MD. Lecturing in ASQC CQE Review and Statistical Quality Control courses.

1990-1992: Senior Quality Engineer, Quality Engineering Dept., Westinghouse ESG. Development of metrics to monitor performance of Design and Producibility Engineering PAT's efforts to reduce the number and periods of late engineering materials ordered; Development of Statistical Process Control (SPC) and reduced inspection systems in wire-wrap assembly

areas; Instruction in statistics, Statistical Quality Control, and Experimental Design techniques.

1982-1990: Senior Quality Engineer, Procurement Quality Engineering Dept., Westinghouse ESG. Development and maintenance of the Field Activity Communication System (FACS) system used to report activities of field quality engineers working outside the Baltimore site; Development of short term forecasting models of engineering production demand; coordination and training of SPC and the use of portable computers for report generation and data transmission over telephones.

1980-1982: Project Statistician, UNC-Chapel Hill. consulting and statistical data analysis for researchers in the Depts. of Biostatistics, Ophthalmology, Health Education, and Education.

1975-1977: Instructor, Mathematics Dept., NC A&T University, Greensboro, NC. Teaching Algebra and Computer Programming (FORTRAN) courses.

REVIEW ACTIVITIES:

Manuscript Reviewer, Corporate & Professional Publishing Group, Addison-Wesley Publishing Company, Book Reviewer, Technometrics (ASA/ASQC); Referee, The APL Technical Digest (The Johns Hopkins University Applied Physics Laboratory), Quality Progress (ASQC), and the Journal of Official Statistics (Statistics Sweden).

PROFESSIONAL CONFERENCES:

Conference Planner/Session Moderator, Annual Quality Conference (Maryland Center for Quality & Productivity/ASQC-Baltimore Section); Session chair/Organizer, 1992 Winter ASA Conference; Section Chair, SUGI 13-17 Annual Conferences.

PROFESSIONAL PAPERS AND PRESENTATIONS:

Ten published papers in conference Proceedings of SUGI (5), ASQC Annual Quality Congresses (2), International Society for Hybrid Microelectronics (1), Flexible Automation and Information Management (1), ASA Section on Statistical Education (1); Given 20 other contributed and invited presentations at the Westinghouse Corporate Quality Symposia (2), Westinghouse Annual ESG Statistics Symposia (5), Mid-Atlantic Probability and Statistics Day (2), ASA Maryland chapter monthly meeting (1), Loyola College's Mathematical Sciences Dept. faculty/student lecture series (2), Association for Quality and Participation-Chesapeake chapter (1), Baltimore ASQC section monthly meeting (1), Rochester ASQC Section Conference (1)

ABOUT THE PRESIDENT OF WORKFORCE 2000, INC.

NICHOLAS HOBAR

Nick Hobar is president and senior partner of WORKFORCE 20000, INC. — a company dedicated to improving learning and productivity in schools, higher education, and workplaces preparing for the 21st century.

He received his baccalaureate degree from California State College. He taught in the public schools before receiving his masters and doctorate degrees at The Pennsylvania State University. He then taught in higher education and directed West Virginia Department of Education statewide systems for improving learning.

From 1985 to 1992 he was the Assistant State Superintendent of Instruction, Maryland State Department of Education. In Maryland, he implemented early, middle, high school, and adult instructional programs; a state plan for ending adult illiteracy; computer-based learning and training delivery systems; workplace basics programs; school improvement models; total quality management strategies; and large scale assessment programs. He also supported programs for special populations, such as prekindergarten children, gifted and talented, and non/limited English speaking students.

He has developed articles, monographs, and training manuals concerning outcome-based education and school improvement, integrating technology in education, and adapting total quality management to education. In 1992, he co-authored *The Total Quality Educator*, a publication for helping educators to consider total quality as a strategy for accomplishing school improvement goals. Recently, the Association of Supervision and Curriculum Development (ASCD) contracted with Nick to deliver a national training institute on applying total quality in education. In the summer of 1993 he will teach a class at the Johns Hopkins University that focuses on total quality in education.

He was recognized by the Governor of Maryland for his leadership, dedicated service, and innovation related to instruction, technology, and early childhood development programs.

As a senior partner of *WORKFORCE 2000, INC.*, he works directly with corporations, agencies, and institutions to create caring and technology-based solutions to meet workforce development needs. *WORKFORCE 2000, INC.* assisted the Florida, New Hampshire, Ohio, Texas, and Washington State Departments of Education and the Georgia Professional Standards Commission with their education reform initiatives; helped to design world class professional development systems via

partnerships between colleges and public schools; assisted *Teach for America* to redefine its summer institute in an outcome-based format; and developed outcome-based standards for teacher education and certification that were adopted by the 50 states membership of the National Association of State Directors of Teacher Education and Certification.

Currently, *WORKFORCE 2000, INC.* is planning world class child care centers; marketing its personalized Learning and Career Enhancement Sites — PLACES — with business and industry; and providing consulting services to national organizations, state departments of education, schools, and institutions of higher education.

Resume of Dr. Andrew H. (Jack) West

1000 Bell Avenue
Glen Burnie, MD 21060

Evening Phone: (410) 760-6734
Day Phone: (410) 765-4064

Born: November 30, 1942 in Greensburg, Pennsylvania

Height: 6'0" Weight: 165 Health: Excellent SS No: 161-32-5952

Employment Objective:

To manage the most efficient and effective Total Quality process in the world.

Qualifications:

Over twenty years experience managing the quality of design, production and support of military and commercial electronics, including the development, management and evaluation of Mil-Q-9858-A compliant quality systems. Doctorate in Business Administration, President Elect of the American Society for Quality Control, thorough knowledge of the theory and practice of management systems and the Total Quality process.

Education:

Institution	Degree	Major	Minor	Date
Washington Township HS.	Diploma	College Preparation		1960
Marion College	BS	Chemistry	Education	1965
George Washington University	MSA	Management of Science, Technology and Innovation		1973
George Washington University	DBA	Management of Science, Technology and Innovation		1986

Major field: Management of Science, Technology and Innovation
Supporting field: The Relations of Government to Business
Dissertation title: *Quality Control in the U.S. - A Practitioner's Perspective -*

Experience:

1988 - Present Manager, Management Systems Assessments
Reports solid line to the Vice President of Total Quality and dotted line to the President of the Westinghouse Electronic Systems Group (ESG)

Responsible for the assessment of all management systems to verify that they: are properly documented, satisfy all requirements, are complied with, and that the desired results are obtained. Assessments are performed of all ESG sites, and major programs.

Leads the performance of Total Quality Fitness Review teams that evaluate the maturity of Total Quality implementation and make recommendations for improvement in various divisions of ESG.

Leader of the ESG Total Quality Implementation Committee.

1981 - 1988 Quality Assurance Manager for Westinghouse Command and Control Divisions (CCD).

Primary customers: DoD, FAA, and foreign military sales; $800 million annual billing.

Reported solid line to the Vice President of Total Quality, and dotted line to the Vice President and General Manager of CCD.

Responsibility for all quality assurance activities in CCD including: 1) policy formulation 2) quality planning 3) customer interface 4) quality engineering 5) inspection 6) non conforming material disposition 7) test verification 8) software quality assurance 8) product acceptance 9) corrective action boards 10) participation in design reviews.

Shared responsibility for: 1) maintenance of a compliant quality management system 2) quality of procured materials 3) system hardware and software audits.

1983-1984 Taught Production and Operations Management at George Washington University (part time)

1979 -1981 Quality and Reliability Assurance Manager for the Royal Moroccan Air Defense System

Stationed in Morocco with the total quality management responsibility for all activities associated with the delivery, installation, checkout and acceptance of the country-wide air defense system. The system was comprised of over 100 sites that varied in complexity from microwave repeaters to complete radar facilities, to a complete command and control battle management center that services the entire kingdom of Morocco.

1978 - 1979 Quality Assurance Manager for Multidivision Operations

Responsible for all aspects of quality associated with the production of machined parts, inductive components, printed wiring assemblies, and hybrid circuits. In addition, I was responsible for the quality planning for the Electronic Assembly Plant that was constructed as a part of the USAF Mantech program.

1975 - 1978 Quality and Reliability Assurance Manager AWACS

Responsible for all quality and reliability assurance activities associated with the AWACS program. This included but was not limited to: development of the quality program plan, interface with the customer representatives, failure analysis and corrective action, participation on the configuration control board, hardware and software acceptance, and system performance monitoring.

1973 - 1975 Supervisory Quality Assurance Engineer

Responsible for the management of twenty quality assurance engineers.

Publications:

Transferring Quality Technology to an Developing Nation: *AQC Transactions 1981*

Quality Technology Transferred to a Developing Nation: *AQC Transactions 1982*

Sustaining top Management Commitment to Quality: *AQC Transactions 1983*

The Role of Quality in the Design Process: *AQC Transactions 1984*

Total Quality Fitness Reviews - Lessons Learned: *AQC Transactions 1992*

AQC Survey Respondents Rate Product and Service Quality: *Quality Progress*; October, 1984

Other:

Member of Beta Gamma Sigma (the national honor society in business management).

Vice President of Conferences and Exhibits of the American Society for Quality Control 1990.

Vice President of Professional Development of the American Society for Quality Control 1991.

President Elect of the American Society for Quality Control 1992.

Personal:

I enjoy personal computing, photography, racquetball, nautilus (physical fitness), salt water fishing, and the intellectual stimulation acquired through continued association with academic institutions and professional associations.

VITA OF

JOSEPH L. SHILLING

PERSONAL DATA

Address:	142 Kirwan's Landing Chester, Maryland 21619
Telephone:	Home: (410) 643-4612 Office: (410) 758-2403
Date of birth:	July 25, 1937
Place of birth:	New Windsor, Maryland
Marital status:	Married - Lora Lee
Children:	Seven - Sallyn, Jennifer, Todd, Jhan, Scott, Synthia, Julia

ACADEMIC BACKGROUND

Degrees:

Ph. D.	Educational Policy, Planning and Administration University of Maryland, College Park, Maryland, 1984
M. Ed.	Educational Administration and Supervision University of Maryland, College Park, Maryland, 1965
B. S.	Western Maryland College, Westminster, Maryland, 1960

Other educational experiences:

Johns Hopkins University - Graduate study

Wharton School of Finance - Executive Program in Public Finance

National Academy of School Executives Seminars:
- Program Budgeting
- Planning
- School Law
- Instructional Objectives

CERTIFICATION AND LICENSES

Maryland Advanced Professional Certificate, Superintendent of Schools

HONORS AND CITATIONS

Trustee Alumni Award - Western Maryland College - 1992
Doctor of Humane Letters, honoris causa - Loyola College 1992
Public Affairs Award - Maryland Chamber of Commerce - 1992
Golden Apple Award for Distinguished Service to Public Education - Maryland Congress of Parents and Teachers - 1991
Maryland Association of Non-Public Education Facilities Distinguished Citizens Award - 1990
Maryland Elementary School Administrators Outstanding Educator Award - 1989
Joseph R. Bailer Award in Recognition of a Distinguished Career in Education. Presented by Western Maryland College - 1985
Maryland Association for Supervision and Curriculum Development Research Award - 1983-84
Cambridge Rotary Club Service Above Self Award - 1975

PROFESSIONAL WORK EXPERIENCE

1991 - Present	Superintendent of Schools Queen Anne's County Public Schools, Maryland
1988 - 1991	State Superintendent of Schools State of Maryland
1985 - 1988	Director, Eastern Shore of Maryland Educational Consortium Executive Director, Governor's Commission on School Performance
1977 - 1985	Deputy State Superintendent of Schools State of Maryland
1971 - 1977	Superintendent of Schools Dorchester County Public Schools, Md.
1970 - 1971	Director of Administrative Services Carroll County Public Schools, Md.
1969 - 1970	Graduate Assistant, College of Education University of Maryland
1968 - 1969	Director of Administrative Services Carroll County Public Schools, Md.
1967 - 1968	Supervisor of Personnel Carroll County Public Schools, Md.
1966 - 1967	Administrator of Federal Programs Carroll County Public Schools, Md.
1965 - 1966	Principal Carroll County Public Schools, Md.
1964 - 1965	Assistant Principal Carroll County Public Schools, Md.
1962 - 1964	Pupil Personnel Worker Carroll County Public Schools, Md.

1959 - 1962 Teacher
Carroll County Public Schools, Md.

PROFESSIONAL MEMBERSHIPS (* Office Held)

American Association of School Administrators
American Association of School Business Officials
American Association for Supervision and Curriculum Development
Council of Chief State School Officers
*Council of Chief State School Officers Study Commission
Maryland Association of School Business Officials
Maryland Association for Supervision and Curriculum Development
Maryland Congress of Parents and Teachers
*Public School Superintendents of Maryland

COMMUNITY ACTIVITIES

Member: Christ Episcopal Church, Stevensville, Maryland
Centreville Rotary Club
Queen Anne's County Chamber of Commerce

Past Member: St. John's Episcopal Church - Vestry Member
Board of Directors:
United Fund of Dorchester County
Dorchester County Chamber of Commerce
Dorchester County Parks & Recreation Board
Cambridge Country Club
Dorchester County Economic Development Committee
American Field Services - Cambridge Chapter
Westminster Junior Chamber of Commerce
Westminster Kiwanis Club
Cambridge Rotary Club

PROFESSIONAL SERVICE

National:
Member, State Leadership Policy Committee. Appointed Council of Chief State School Officers, 1979
Chairman, CETA - LEA Coordination Committee. Appointed by Council of Chief State School Officers, 1978
Member, Elementary and Secondary Education Policy Committee. Appointed by Education Commission of the States, 1975

State:

Member, Board of Directors, State of Maryland Retirement Systems, 1988 -1991

Chairman, Commission on School-Based Administration. Appointed by State Superintendent of Schools, 1984

Member, Chancellor's Task Force on School-University Cooperation. Appointed by Chancellor of University of Maryland, 1984

Member, Governor's Commission on Violence and Extremism. Appointed by Governor of Maryland, 1981

Member, Governors Committee on Law Enforcement. Appointed by Governor of Maryland, 1979

Member, Task Force on Professional Development. Appointed by State Superintendent of Schools, 1978

Chairman, Task Force on Pupil Transportation Funding Formula. Appointed by State Superintendent of Schools, 1977

Member, Task Force on Flexible School Year. Appointed by State Superintendent of Schools, 1976

Member, Task Force on the Evaluation of Probationary Teachers. Appointed by State Superintendent of Schools, 1973

Member, Task Force on Programs for Handicapped Youth. Appointed by State Superintendent of Schools, 1972

VITAE

[2251

FRANCIS J. CULLEN

P.O. Box 127
Millersville, Maryland 21108
410-987-4234

EDUCATION

- JOHNS HOPKINS UNIVERSITY- B.S.- 48

- ADVANCED STUDY [at Hopkins]

  Statistics
  Quality Control
  Operations Research
  Industrial Engineering

- MANAGEMENT TRAINING

  University of Michigan
  University of Wisconsin
  Dept. of Agriculture- Graduate School
  U.S.Civil Service Commission

- SPECIALIZED TRAINING

  - Human Factors
  - Quality Circles
  - Safety
  - Relationship with Union
  - Supervision

TEACHING

- LOYOLA COLLEGE - 1949--1984

  Adjunct Associate Professor- [49-74]
  Associate Professor- Full Time [75-84]

- MOUNT VERNON COLLEGE OF COMMERCE AND LAW-[47-48]

- CATONSVILLE COMMUNITY COLLEGE- [68-current]

  Instructor [Intermittent Assignments]

- JOHNS HOPKINS UNIVERSITY- EVERGREEN SOCIETY

  Lecturer- 1987-1991

SUBJECTS TAUGHT [Colleges]

- o Business Mathematics
- o Introductory Statistics
- o Advanced Statistics
- o Statistical Quality Control
- o Sampling Methods
- o Experimental Design
- o Industrial Sampling and Acceptance Sampling
- o Survey of Quality Technology [Winter Term]
- o The Art of Charts [Winter Term]*
- o Survey of Sampling Methods [Winter Term]
- o Statistical Design Seminar for Science Majors
- o Educational Statistics [Graduate Level]
- o Statistics for Decision Making [Graduate Level]
- o Economic Problems
- o Quest for Quality

*Apologies to STU HUNTER for the title.

SUBJECTS TAUGHT [Government and Industry]

- o Quality Control for Supervisors
- o Regional and State Training for Supervisors and Quality Assurance Analysts in Statistical Methods and Quality Assurance [Personnel from Every State]
- o Lecturer in Quality Assurance at University of Tennessee- Graduate Program for State Disability Examiners 72- Sponsored by S.S.A.
- o Lecturer- Industrial Statistics and Experimental Design- NASA Greenbelt- 68-72

- Locke Insulator Company -Baltimore, Md
  - KDI Score- Cockeysville. Md
  - AAI Corporation- Cockeysville, Md.
  - Mrs Filbert's Margarine- Baltimore,Md.
  - Diecraft Division- Bausch and Lomb-Sparks, Md.
  - Crop Genetics International,Inc.- Dorsey, Md
  - Dr.Joseph Shevenell- Dentistry- Annapolis,Md
  - Operations Research Incorporated - Silver Spring,Md
  - U.S Postal Institute- Bethesda, Md
  - Western Union-Washington, D.C
  - White House [Special Assignment]-Washington, D.C.
  - Applied Research Incorporated-Silver Spring,Md.
  - General Physics Corp.-Columbia, Md.
  - Amtek Incorporated - Odenton,Md.
  - Holiday International - Towson, Md.
  - Polyseal Corporation- Baltimore, Md.
  - General Motors Corporation- Broening Hgwy Plant
  - R.J.O. Enterprises,Inc.- Lanham, Md. [Cont'd]
  - Maryland Commission on Human Rights- Balt.Md.
    Consulting on Statistics use in Discrimination cases
  - Lee Nutt, Esquire- Consulting on Discrimination cases
  - Baltimore Speciality Steel Corporation- Balt.Md
    Training and Consulting- Statistical Process Control
  - Beretta USA-Accokeek.Md.
  - Krafkor- Baltimore, Md.
  - Ohmeda,Inc. Columbia, Md
  - Martin-Marietta- Baltimore, Md.
  - EC&G Precision Science- Beltsville, Md.
  - Maryland Department of Legislative Reference-
    Dr.Myron Miller- Chief-Research Division

PUBLISHED PAPERS AND TEXTS

- Statistics for Business and Technical Personnel- Grant of Annapolis- Copyright 1958

- Acceptance Sampling- -Chapter Eight in- Applied Techniques in Statistics for Selected Industries- Edited by H. Earl Hill- 1984- John Wiley & Sons, Inc.

- Plant Manual for Quality Control- National Plastic Products Company- Odenton, Md.

- Quality Control and Reliability of Equipment- Developed for Operations Research Inc. and U. S. Postal Institute, Bethesda, Md. Contract # PSI-69-03

- Clean Room Considerations for Nimbus- Prepared for Goddard Space Flight Center-NASA-Contract NAS-5-3565

- Guidelines for Nimbus Reliability Assurance Program Plan- [with S. Kalin]- NAS- 5- 3657

- Build This Sampling Demonstrator- [with S. Kalin] Industrial Quality Control- November , 1960

- Television Statistics Course- Programmed Text and Lectures on Television- for Division of Training and Career Development- Social Security Administration [with Messrs. Dorsey, Grossman and Schwartz- Office of Research and Statistics]

PAPERS PUBLISHED IN TRANSACTIONS AND CONFERENCE REPORTS [229]

NATIONAL CONFERENCES

- AMERICAN SOCIETY FOR QUALITY CONTROL- ANNUAL CONGRESS
  - 1972- Washington, D. C.

    Developing a Quality Control System in a Nationwide Disability Program
  - 1975- Toronto, Canada

    Quality Control in the Environment of Peripheral Medicine
  - 1981- San Francisco, California

    Good Interviews Get Answers to Quality Problems
  - 1982- Houston, Texas

    Please Don't Squeeze the Statistics

PAPERS DELIVERED AT SEMINARS AND REGIONAL CONFERENCES

- Nov. 1960- Middle Atlantic Conference- ASQC-Balt.Md.
  "Frequency Distribution Analysis"
- Oct.1961- Middle Atlantic Conference- ASQC- Phil.Pa.
  " Starting a Quality Control Program in a Plastics Plant"
- Mar.1962- One Day Seminar- Baltimore Section - ASQC-
  " Attribute Sampling "
- Oct. 1964- Annual Conference- Chemical Division- ASQC-
  Gatlinburg, Tenn.
  " Quality Control of Filament Extrusion "
- March,1975- One Day Seminar- Baltimore Section- ASQC-
  " Small Samples- Take Two and See "
- Oct. 1975- Northeast Regional Conference- ASQC -
  Norwich, Conn.
  " Training Concepts Necessary to Develop the Quality Control Team."

- Oct. 1981- Philadelphia Section- Twenty Fifth Annual Symposium- Phil. Pa.
  " Training Inspectors in Quality Techniques."

- Feb. 1983- 22nd Administrative Applications Division Conference-ASQC- Chicago, Illinois
  "Please Don't Squeeze the Statistics "

- June,1985- First Annual Conference- Inspection Division- ASQC- Chicago, Illinois
  " Sampling Plans- Design and Analysis"

- March 1987- 43rd Annual Quality Conference- Rochester,NY
  "Please Don't Squeeze the Statistics"

- October 1989- 43rd North East Quality Conference- Stamford, Ct.
  "The Anatomy of a Control Chart"

- October 1989- Western Regional Conference"
  Salt Lake City, Utah
  "How to Design a Sampling Plan"

- March 1990- 46th Annual Quality Conference- Rochester Section- ASQC- Rochester, N.Y.
  " A New Role for Inspectors"

- April 1990- Evergreen Society- Johns Hopkins U. Columbia, Md.
  "Getting acquainted with Statistics"

TALKS TO LOCAL SECTIONS- ASQC AND OTHER TECHNICAL SOCIETIES

- Oct. 1956- American Institute of Industrial Engineers Baltimore Section-
  " Acceptance Sampling"

- Nov. 1958- Baltimore Section - ASQC-" Sampling in a Plastics Plant."

- October,1970- South Bend, Indiana Section- ASQC-
  " Quality Control in the Bureau of Disability Insurance"

- November, 1970- Poughkeepsie Section, ASQC-
  " Quality Control in the Bureau of Disability Insurance "

- March, 1971- Springfield Section, Illinois- ASQC-
  " Quality Control in the Bureau of Disability Insurance "

o February, 1973- York, Pennsylvania Section- ASQC-
" Quality Control in the Bureau of Disability Insurance "

o April, 1973- Cumberland, Md. Section- ASQC-
" Quality Control in the Bureau of Disability Insurance"

o September, 1973- Lynchburg,Virginia, Section- ASQC-
" Training for Quality Control "

o October, 1973- Baltimore Section, ASQC-
" Please Don't Squeeze the Statistics "

o May, 1978- Philadelphia Section, ASQC-
" The Quality Professional and ASQC."

o Feb, 1980- Harrisburg Section, ASQC-
" Please Don't Squeeze the Statistics."

o Oct. 1983- York Section, American Society for Metals-
" Statistical Process Control."

o Nov. 1984- Harrisburg Section, ASQC-
' Inspectors Want to Know Everything."

o March,1985 Ashville, N.C. Section- ASQC-
" The Design and Analysis of Experiments."

o April, 1985 Cumberland Section,ASQC
" The Design and Analysis of Experiments"

o March,1986 South Texas Section, Beaumont ,Texas
" Some Thoughts on the Design of Experiments"

o September, 1986 Carolina Lowcountry Section,
Charleston , South Carolina
" How to Design and Analyze an Experiment"

o January 1989 Baltimore Section,ASQC
"Take Two and See"

o March, 1989 Cape Canavaral Section, Melbourne, fl.
"Please Don't Squeeze the Statistics"

o March 1989- Mathematics Teachers Conference-
"Spring Into Mathematics"
Anne Arundel Public School System-
"Getting Acquainted With Statistics"

WORK HISTORY

- At Present- Consultant- F. J. Cullen Associates
  Adjunct Instructor- Catonsville Community College
- 1949- 1975- Adjunct Associate Professor-Loyola College
  1975- 1984- Associate Professor- Loyola College
- 1964- 1975- Social Security Administration-
  Director- Division of Statistics and Quality Assurance
  Bureau of Disability Insurance- SSA- DHEW
- 1962-1964- Industrial Statistician-
  Operations Research Incorporated-Silver Spring,Md.
- 1953-1962- Industrial Statistician-
  National Plastic Products Co.- Odenton, Md.
- 1952-1953- Industrial Engineer
  Chemical Corps Materiel Command- Balt. Md
- 1946-1953- Statistician-
  Division of Program Analysis, Social Security Adm.
  Baltimore, Md.

PROFESSIONAL ACTIVITIES AND HONORS

- Fellow- American Society for Quality Control
- Fellow- American Association for the Advancement of Science
- Certified Quality Engineer- Cert. # 272- ASQC
- Honorary Member- Alpha Sigma Nu- Jesuit Honor Society
- Recipient of First Outstanding Teacher Award - Loyola College -1957
- Recipient of 25 Year Distinguished Service Medal - Loyola College
- Recipient of " Bene Merente" Award- Loyola College
- Member- National Board of Directors- ASQC-[1978-1981-1991-1993]
- Served in all the Chairs- Baltimore Section- ASQC-
  Currently Chairman of Examining Committee

- Past Member- Presidents Advisory Board for Statistics Essex Community College

- Currently Member- Presidents Advisory Board for the Quality Control Program-Catonsville Community College

- Developed the current program in Quality Technology at Catonsville Community College- 1968- [with H.Cook]

- Inspection Division AQC Program Representative[87-93]

- Member-Editorial Board- Quality Engineering Magazine- Published by- Marcel Dekker- New York, N.Y.

- Full Member- Operations Research Society of America

- Member- American Statistical Association

COMMUNITY ACTIVITIES

- Family is active in both Our Lady of the Fields R.C. Church and St. Stephens Episcopal Church.

- Life Member- Holy Trinity Council- K of C.

- Sustaining member- Boy Scouts of America

- American Field Service host family:
  1967-1969- Karl Jordell- Norway
  1970- Wali Abdi- Afghanistan

- Host Family- Johns Hopkins program for students from overseas - 1970- to present- Students from:

  Greece, Japan, India, England, Israel, China [Peoples Republic], Iran,France. Yugoslavia-

- Participate annually in collections for Cancer, Heart and other special drives.

TRAVEL

- MILITARY

  North Africa,Italy-- 1942- 1945

o PLEASURE and PROFESSIONAL [Abroad]

England- Ireland- Scotland- Wales- 1966
Denmark- Norway- Sweden- 1969
Norway- Auto Tour- 1974
Canada- 1976-
France- Italy-Switzerland- 1977
Norway- England- France- 1978
Norway- 1980-[Steamer- Train- Ferry- Bus]
Hawaii- 1981
Egypt- Greece- 1984
China- 1985- [3rd Annual Asia -Pacific Quality Control Conference- First Chinese Quality Control Conference- Beijing]

[Note: visited for talks and discussions- Beijing- Nanjing- Jungzhow-Shanghai]

[Program under the auspices of the Chinese Association of Science and Technology- CAST]

Australia and New Zealand-1986 - QUALCON- Sponsored by Australian Organization for Quality Control - Visited and gave talks on quality in Sydney, Brisbane, Alice Springs, Perth, Melbourne, Christ Church, Hamilton and Aukland.

Soviet Union-1987 [Leningrad,Moscow, Odessa,Kiev], Hungary [Budapest], Bulgaria [Sophia, Rycce], Norway. Gave seminars, attended seminars, consulted, in the Soviet Union, Hungary and Bulgaria- Visited our "Norwegian son" and his family in Oslo and Arendal in Norway.Sponsored by the Soviet quality organization

o BUSINESS AND PLEASURE- [CONTINENTAL U.S.]

All states except Alaska

APPENDIX F

INTERVIEWS WITH PERSONS EXPERIENCED IN TOTAL QUALITY MANAGEMENT

INTERVIEWS

Interview with: *Alma Roberts, Vice President of Corporate Affairs and Suzanne Q. Hoffman, Vice President of Human Resources Liberty Medical Center, Baltimore, Maryland*

Date: *January 16, 1962*

Time: *8:00 a.m.*

Subject: *Work assignment for Intern*

Q. What do you mean by Total Quality Management?

A. It is a new concept for hospitals, quality assurance care has met quality. Total, current and future care, the quality of care, medication and treatment. An ongoing, continuing process, different diagnosis. It does measure ongoing continuous improvement. If you have a high standard, improvement is hard to show. Looking ahead, patients and efficiency are the areas we are interested in. Hospitals are moving toward that. Accreditation wants this. Total Quality has not been looked at before. What are other people doing with it?

Total Quality Management should be applied to all areas, especially in Human Resources, tracking and training, getting people in and out. Record keeping here at Liberty Medical Center is manual and should be automated. We are interested in recommendations and or design the process for analyzing the operations, where improvements can be made. Management by Objectives is a subset of Total Quality Management.

Interview with: John Edler, Supervisor, Corporate Performance Analysis Unit

Date: *March 9, 1992*

Time: *3:30 to 5:30 p.m.*

Subject: *Total Quality Management*

Q. Mr. Edler, what is your title? Are you the Total Quality Manager?

A. My title is Supervisor of Corporate Performance and Analysis Unit, Auditing Department. There is no Total Quality Manager. There should not be. It should be a line function rather than a staff function.

Q. Who is helping Baltimore Gas and Electric develop its Total Quality Program?

A. All kinds of people, Phil Crosby, Juran people (Institute) ODI (Organization Dynamics Incorporated). Ernst and Young Consultants. Ernst and Young are a part of two pilot projects helping to train and facilitate for a strategic management team. The goal, long range goal is to become a world-class company that supplies superior energy and products, like a decathlon, be consistently good.

Q. Which model will be used?

A. The Crosby model will be used, and we will design our own process. Crosby gives you a plan. You develop a model. Zero defects does not equal zero. Crosby gives you step by step. Crosby trains everyone, not just teams.

At Baltimore Gas and Electric, there are twenty-four teams, though not necessarily even. Ten people per team is too many. Six to eight people per team is a better number. The goal is to develop a corporate process. Look at all models, then develop yours. This saves you from buying proprietary materials. It costs twenty-five thousand dollars a day for Crosby to consult. Develop as soon as you can to save consultant costs.

Q. Why is Total Quality just being used in Fossil Fuel?

A. This area was selected because the Vice President of Fossil Fuel attended a Crosby session. It will evolve to other departments as years go on.

Q. In what order will the program be implemented?

A. Management commitment, develop and plan, training and education, develop a good recognition system, develop a communication awareness system is the order.

Q. When you go to implementation, what will the strategy be? Will you redeploy people to implement the model? Who will be responsible for implementation?

A. In Fossil Fuel, an infrastructure was put in. There are six Quality Improvement teams. Each has a manager. They report to a steering committee. Total Quality was put on the existing organization. The people in the line have to be responsible (two improvement teams).

Q. Where will you as a company go with Total Quality Management?

A. We will use Continuous Quality Improvement to become competitive. Deregulation looms large. Example, if Bethlehem Steel wants to buy gas from Louisiana, they can use Baltimore Gas and Electric lines to transport it and pay a fee. Cogeneration Companies come onto your system. If they can prove to the Public Service Commission that they can do it cheaper than Baltimore Gas and Electric, then Baltimore Gas and Electric would be forced to buy it (Perryville-Perryman). There could be ramifications. The telephone company could do what cable companies do. All poles are owned by the gas company. The phone and cable company pay rent.

<u>Fossil Energy-Total Quality Process</u>

1. 1300 in this division
2. Fossil generation plants
3. two people are heading this
4. spent two to three years studying this
5. Crosby and Juran training

6. Crosby has a school in Orlando Florida, Management College
7. The processes were compared for likenesses and differences.
8. Baltimore Gas and Electric Company picked the Crosby process and from this, they will develop a corporate process.
9. Edler is now in auditing-management system changes, to implement Corporate Quality Improvement (CQI)
10. Identify key elements in the process: Mission, vision, corporate values for the company

a. evolve to corporate values or how we work: morale, quality, safety, how you work with employees

b. a good planning and budgeting system. Make sure they link to Quality Improvement goals. budget, then plan. That method strangled the system. The cycle was revised. Planning should lead budgeting.

c. Management/leadership (Commitment) Vice Presidents and CEO's to first line supervisors (foremen, line managers). Management needs to practice leadership styles that reflect corporate values of the organization. Walk the talk. Management sets examples. Use the behavior they want to see.

d. Compensation and rewards-positive recognition. Say thank you. Wrong behaviors were recognized. Recognize people that help manage quality. Change the present model. Place a certain percent of pay at risk and increase the potential to make more. This will take a few years to implement.

Stay away from process improving measures to get a bonus. At first, link bonuses to expectations. Baltimore Gas and Electric will serve as the leading edge for utilities. People will have to be rewarded somehow. Appraisal ratings may be eliminated. The per cent of bonus you get will be your rating. Make it so that eighty per cent qualify. Have group or team measures and individual ones.

Recognition would involve the use of more frequent positive comments. Catch them doing something right.

5. Process improvement-focus on the whole process instead of individual activities. Cross organizational boundaries. Teams depend on each other.

Measurement: Benchmarking is being done on a pilot basis through the Utilities Management Services Group. There is also a system called PACE in Connecticut. The data is about ready to be supplied. Start with Fossil and three other departments. Four areas were needed to enter this association. There is an annual fee. The company spends time and money getting data

together. Issues are different because this is run by the Public Service Commission. You need to know about problems to improve them.

Q. What is important?

A. Customer focus is important. Satisfy customer expectations, internal and external. Focus especially on the internal. We have little contact with external customers. Our external customers are the Public Service Commission, Nuclear Regulatory Commission, Environmental Protection Agency and the people who pay. The people who pay are the residential customers, commercial and industrial customers.

Q. How do you find out what external customers want?

A. They might call. We follow up and call them back and ask if they are satisfied. The Gas Company surveyed thirteen hundred people and asked them thirty-five simple questions. A Crosby survey was used. The survey will be used as a measurement tool. It may be of value two years from now. Get a baseline. Baltimore Gas and Electric did this too late. The trend may be more important than the absolute value.

Q. What other things can an organization do to implement the Total Quality Management process?

A. -To revise and align management systems to support what you want them to through corporate training, hiring, promotions, job appraisals, compensation

-In the Human Resources Department, bring in new people and train them for their jobs, present and future. Use internal and external training and job assignment.

-Focus on work processes instead of functions and activities. It will lead to reorganization in some areas.

-In Human Resources, flow chart and document. The people who are knowledgeable can do it. When you are documenting from input to output, you can measure (statistics). Baltimore Gas and Electric is doing this informally so far.

-Common activities that link the six elements are measurement, communications, employee involvement, feedback mechanisms, self assessment. There is a need to address fear and trust. Some people are

afraid. Some is perception. Encourage prudent risk taking. Loosen up the control. Delegate more.

-Use lots of teams: process and improvement teams and creative action teams. Three Vice Presidents are executive sponsors, three Department Heads are team leaders, and the team consists of middle managers and supervisors. The team and leader go through two days of training, culture change as they need certain pieces, then what they learn will have immediate use. The company facilitators help here.

-It does not always take money to make changes, you eliminate waste.

-Start slowly. Change takes time.

-Address fear of trust. Start at the top. Get instructors from supervisors up. Once they teach it, they set the right examples. At Baltimore Gas and Electric, a Vice President will be the trainer. There has been no commitment yet, but if MRW can be used, we will try to get one or two Vice Presidents to teach. Look at how word spreads. Walk the talk.

Interview with: *Marcia Van Sumeren: Total Quality Management Coordinator, Midland Michigan Regional Hospital Center*

Date: *March 20, 1992*

Time: *3:30 to 4:30 p.m.*

Subject: *Total Quality Management*

Q. How widespread is Total Quality Management in your organization?

A. It is hospital-wide. The CEO and a group started looking. At the beginning was top level support. The steering committee includes a Vice President, Assistant Vice President and a Department Manager. These people oversee the process and keep it going.

Q. What kind of training was used?

A. We attended seminars, the University of Tennessee, Walt Disney World and lots of reading. After gathering information, they said no to a consultant. They started with the Quality Improvement Process (QIP). QIP

is in-house. It began in 1988. The goal was set to do it and that started in 1987. QIP is a two day problem-solving module with eleven steps. When doing this, know your culture, be adaptable and flexible. Every organization has different needs. Ask people, do surveys. At Midland they started with problem solving, them teamwork. They started with the tools first. Needs assessments are hard to do. They did informal things. They brought in a consulting service to do this. The consultants evaluated the needs and trouble areas. You do need to measure where you are.
Q. What about starting the process in some department?

A. Human Resources may start it and then let it spread throughout the hospital.

Q. How many people supervise the Total Quality Process?

A. Midland has nineteen hundred employees and two Total Quality Managers. all trainers volunteer and are employees. Most are management because it is easier for them to get time. The hospital is very supportive. There has only been one addition to the staff. Everything was done with people already there.

Q. Have people lost jobs as a result of this process?

A. There have been no decreases in staff, but department reorganization has occurred. Restructuring has occurred and responsibilities have changed.

Q. Whose process are you using?

A. We are using Deming basically and points from Juran and Crosby. We did not get into zero defects because it is a hospital. We use the fourteen points of Deming. (Marcia has been to a Deming Seminar via teleconference). I have met Juran. Juran's group puts on a yearly conference. They have added a health care tract. The 1992 conference will be held in Chicago November 11-13, 1992. Juran is witty, very soft-spoken and quite dynamic.

Q. To what Quality organization do you belong?

A. I am a member of ASQC, which has several facets.

Q. What is your title?

A. I am the Quality Management Coordinator.

Q. Exactly, how was Total Quality implemented?

A. QIP was first and included several components including problem solving, mission statement, pocket guide, a listing of barriers to the mission statement. A vote was taken to determine the number one priority. The opportunity statement keeps you focused. We used cause and effect diagrams, data collection and an action plan. This was done in two days.

-Everyone has a common language, eliminate barriers.

-All nineteen hundred employees were trained. It has taken two and one half years. Eighty-five per cent have been trained. It is now a part of employee orientation once a month. This takes a lot of support from middle management to get the staff through.

-Human Relations and Communication was purchased from Dr. Kahler. It is called "Process Communication Model." This was personnel related. You learn about yourself. It discusses six personality types, similar to Meyers-Briggs module (Personality Assessment Module). Management and supervisors had three days. People took a test and were given a printout which provides insight. Staff gets one day, called customer relations (customer focused). How do you respond: Forty-five per cent of staff has been through this. The third module was Team Building. Most organizations start here. There is no right way or wrong way. This will start in May. A program was purchased from a consultant. The title of the program is "How to Form High Performance Groups." The fourth step is the Statistical Module, control process and data collection. There are four pieces to this education and training. For every new module, an internal posting is done to get trainers. QIP has a core of twenty trainers. They have a dual function. Process communication has one person. You must be certified. There is a program in Little Rock,Arkansas. Total Quality people share. We will be happy to help.

Keep people excited and enthused through a bulletin board or showcase window. Change the showcase window weekly. Highlight teams. People get recognition, use a color printer and keep it very colorful. October is National Quality Month. At Midland, we have a large celebration. On team day teams set up displays of what they have done. There is an ongoing newsletter. It comes out quarterly. Give out door prizes. Videotape team

day.

Mary Walton's book grounded us in philosophy. Deming's books have also been useful. QITQM is a newsletter, Health Care Executive's Guide to Health Care. It costs over one hundred dollars per year but it is useful. "Hospitals" and "Quality Progress" are magazines. At least one per year is devoted to quality.

Support is at all levels. Each department has a mission statement in line with the hospital one. The mission statement included indicators and thresholds, like objectives.

The University of Michigan Hospital has Total Quality Management and has nine people in its department.

Additional notes:

1. Mrs. Marcia Van Sumeren
   Midland Michigan Regional Medical Center
   4005 Orchard Drive
   Midland Michigan, 48670

2. We do evaluations, but they have been restructured. The Job Performance Review is now a management review. It is a system. You meet several times a year.

3. Customer focused-who is the customer? At Midland, four years ago, they would have said the patients. Now the internal customers are co-workers and other departments. This was a real eye opener. Everyone in the hospital is a customer. People have learned what others do. There is random training so that people can learn from each other. It builds respect. There are pluses in doing it by departments.

4. Specifically identify customers and needs. As an example, OB patients are usually healthy and middle aged (twenty to forty) F One Hundred is Cancer, terminal oncology. Whom are you servicing?

5. The Midland Michigan Human Resources Department has seven people: a secretary, clerk, employment coordinator, and a manager. Employee health has one full time person and two part time ones. The library has one manager and four or five people who come in as needed.

Interview with: *Marvin Jones, Vice President, Human Resources, Westinghouse Electronics Corporation. Electronics Systems Group*

Time: *9:15 to 11:10 a.m.*

Subject: *Total Quality Management*

Q. Do you agree with Deming's philosophy?

A. Some of Westinghouse's people went to Japan in 1978. If people had listened to Deming, we would have been much further ahead. Deming's philosophy gives people power. They will hum like a well-oiled machine. He is the El Cid, the Godfather of his process. People were late listening. I agree wholeheartedly. The person you have to satisfy is the customer who must enjoy the product. Do not treat people like numbers. Make people feel like the business is theirs. I have read Deming's books. Whenever you talk about Total Quality, Deming's name will always surface. The Executive Vice President used to talk about how the Japanese were beating our pants off because they listened to Deming. Had it not been for Deming, the Japanese would not be where they are today. Total Quality Management is an absolute necessity. It is a business imperative. Involve people.

Continuous improvement, too many cannot get it. Employees must be involved and committed. Do not threaten employees. Encourage a partnership. Employees will know when you do not walk the talk.

Westinghouse has come a long way in the last ten years. If they had not gone to Total Quality Management, the organization would be belly-up. Total Quality is a business imperative. The CEO of Westinghouse believes in it.

Charles Zimmerman is an expert. He has been involved since the beginning. He is instructing a state department of education and a city police department.

Q. As a Vice President at Westinghouse, and now a member of the State Board of Education, do you see Total Quality Management as being an integral part of the State's school system?

A. Look at process improvement. Look at students. You had to address the structure. Total Quality was hampered by tenure. We need to clean out the

deadbeats who do not produce. In business, if you do not produce, you are gone. Harry Shapiro is on the State Board of Education. He is a tax lawyer and he agrees with me that there must be a way to get rid of incompetence. Unions protect deadbeats.

Appeals come to the Board. sometimes, we wonder how people like that have stayed around so long. The system has supported this. Westinghouse adopted Harlem Park in 1984. The school was going to be closed. Attendance was the pits, kid did not care. A teacher asked Westinghouse to adopt them. Westinghouse offered technical assistance. They spent time with the teachers and found out what the problems were.

Team building, consensus, is a difficult process. Skill and technique are tools needed to get people singing out of the same hymn book. When you see people banded together, they are hard to beat. If the team is strong enough, there is nothing they cannot do. The person who leads the team has to be able to get everyone's opinion and the clever person (Project Manager) lets the people express themselves. The more you talk, the more you want to be in. When the team is together, they have commonality of purpose. They do this here in Human Resources. There are teams within the functions. You cannot lose your identity. Do not get caught up in NIH, not invented hers.

Q. What is your mission? Your vision?

A. The mission statement sits on the desk. Human Resources has to justify their role to keep people motivated. They support the people who make widgets. Face-to-face communication is key. How often do you talk to people face to face? My new location will be on the fourth floor on Elkridge Landing Road. I have always been close to my people. I know them all. I do not always follow protocol. People must feel that there is someone who will listen to them that they can trust. Do not let cliques form. Be sensitive to internal customers. Ask people for their opinion to make them feel part of the process. Everyone should know everything. Consensus building is a tricky business. There may be questions, but little consensus.

Q. In your opinion, is there any correlation between Total Quality Management and employee creativity?

A. Yes.

Q. How do you plan to use your leadership and organizational skills to have an impact on the education received by Maryland's youngsters?

A. Get rid of the dead weight and clean house.

Interview with: *Charles Zimmerman, Director of Education and Training Services, Westinghouse Electronics Corporation*

Date: *February 21, 1992*

Time: *3:00 to 4:00 p.m.*

Subject: *Total Quality Management*

Total Quality Management is hard to do in just Human Resources. It has to be done overall. What is it you really want to do? Create a vision. Are they afraid to touch the medical profession? In colleges, professors will tell you that Total Quality Management will interfere with academic freedom and tenure, Total Quality is factory, too structured.

They look at Deming. People think about the factory. some look at it as a buzz word. It is slow, takes too many years, but it pays dramatic rewards. It is a participatory process.

Westinghouse had external customers, such as the United States Army and the United States Air Force and internal customers (in house). In school, whoever you hand the kids over to is the customer. Kids are the raw material. K-12 is the process. This is a customer supplier chain. The teacher adds value to the child.

Q. Who is the supplier?

A. Sit back and analyze your situation. Who are you responding to? There are many ways to look at this. Who are the customers are suppliers?

Deming is better known. Look at various theories. The process of Continuous Improvement is the common thread. Look at the processes, not the personalities. For example, in a given department, say billing. How do you get the job done? Process is a noun and a verb. Look at processes. Example, tuition reimbursement role. Whom do we deliver to?

Q. How long does it take?

A. Sit down with customers and ask what they want. Get a clear understanding, then look at the process. Focus groups manage processes. People have to be trained. Set a new goal every year. Something in the environment will change, new technology. Look at your processes continually. Let employees come in and work on it. You can look at jobs.

Technology are things that help or hinder the process. The process is more non-threatening than looking at an individual job, and it is more effective.

How are processes measured? In MSPP, do not let it be the last work, what do you get for perfect attendance? Get consultants, design your model, train everyone, have teams use problem solving.

Q. How long has Westinghouse had Total Quality Management?

A. Westinghouse has had Total Quality Management since the 1980's. It was implemented in 1986. Westinghouse Pittsburgh studied everyone and then designed their own Total Quality Management process.

Q. What is your benchmark?

A. Westinghouse created their own measure. There are no weaknesses, just opportunities. A group identifies the process.

APPENDIX G

STATISTICAL CONSIDERATIONS

Statistical Considerations

The quantitative descriptive study employed the causal comparative analysis method. Borg and Gall, authors of Educational Research. An Introduction, defined the causal comparative as studying causes after they have exerted their effect.[174] The statistics associated with the causal comparative method are the t-test and analysis of the variance.[175] Correlation was also used.

The t-test is used to determine if two means are significantly different at a selected probability level. The t-test for independent samples is used to determine whether there is possibly a significant difference between the means of two independent samples.[176]

The assumptions underlying the t-test are:

1. The distribution of the sample mean differences should be normal.
2. The sampling was purposeful.
3. The two populations from which the samples are selected must

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[174]Ibid., Idem, Borg and Gall.

[175]Ibid.

[176]L.R. Gay, Educational Research. Competencies for Analysis and Application, 4th ed., (New York: MacMillan Publishing Company, 1992), 436-37.

have the same variances.[177]

The formula is:

$$t = \frac{x_1 - x_2}{\sqrt{\frac{ss_1 + ss_2}{n_1+n_2-2}\left(\frac{1}{n_1} + \frac{1}{n_2}\right)}}$$

The formula for degrees of freedom is:

$$n_1 + n_2 - 2$$

If the t value is equal to or greater than the t table value, the null hypothesis is rejected; the means are significantly different at a selected level.[178]

Analysis of the variance is used to determine whether there is a significant difference between two or more means at a selected probability level. The concept underlying anova is that the variance or total variation of scores can be attributed to two sources, variance between groups and variance within groups.[179]

The three main assumptions underlying anova are:

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[177]Frederick J. Gravetter and Larry B. Wallnau, Statistics For the Behavioral Sciences. A First Course For Students of Psychology and Education, 2d ed., (New York: West Publishing Company, 1985), 259.

[178]Ibid, Idem, Gay 471.

[179]Ibid, 438.

1. The observations are random and independent samples from the populations.

2. The distributions of the populations from which the samples are selected are normal.

3. The variances of the distributions in the populations are equal.[180]

The formula are:

$$SS_{total} = SS_{between} + SS_{within}$$

$$SS_{between} = \frac{(\sum X_1)^2}{n_1} + \frac{(\sum X_2)^2}{n_2} + \frac{(\sum X_3)^2}{n_3} + \ldots + \ldots - \frac{(\sum X)^2}{N}$$

$$SS_{total} = \sum X^2 - \frac{(\sum X)^2}{N}$$

K - 1 is the formula for degrees of freedom where K is the number of groups.

N - k is the formula for the degrees of freedom for the within term where N is the total sample size and k is still the number of treatment groups.

$$\text{Mean square} = \frac{\text{sum of squares}}{\text{degrees of freedom}}$$

$$F = \frac{MS_B}{MS_W}$$

If the F value is greater than the F table value, the null hypothesis, there is a significant difference among the means.

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[180]Dennis E. Hinkle, William Wiersma and Stephen G. Jurs, Applied Statistics For the Behavioral Sciences (Boston: Houghton Mifflin Company, 1988), 346.

The linear model for anova is:

$$\chi_{ik} = u = \alpha_{k} = e_{ik}$$

Correlation is a statistical way of expressing a relationship between two variables. Correlations can range from +1 to -1. In this study correlations are called weak if they are between .00 and .30; modest if between .30 and .70; and strong if between .70 and 1.00. Most correlations in this study were modest to strong and all were significant at beyond the .01 level.

APPENDIX H

RAW DATA

Raw Data

EDLEVEL What is your highest level of education?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
High School	1	30	16.0	16.6	16.6
Some College	2	21	11.2	11.6	28.2
A.A. Degree	3	10	5.3	5.5	33.7
Bachelor"s Degree	4	25	13.3	13.8	47.5
Master"s Degree	5	65	34.6	35.9	83.4
Doctorate Degree	6	27	14.4	14.9	98.3
Other	7	3	1.6	1.7	100.0
	.	7	3.7	Missing	
	Total	188	100.0	100.0	

Mean 3.923 Std dev 1.768

Valid cases 181 Missing cases 7

- -

AGE What is your age?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
25-31	2	14	7.4	8.0	8.0
32-38	3	34	18.1	19.4	27.4
39-45	4	45	23.9	25.7	53.1
46-52	5	56	29.8	32.0	85.1
Over 52	6	26	13.8	14.9	100.0
	.	13	6.9	Missing	
	Total	188	100.0	100.0	

Mean 4.263 Std dev 1.169

Valid cases 175 Missing cases 13

ETHNIC What is your ethnic background?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
African-American	1	45	23.9	26.0	26.0
Native American	4	2	1.1	1.2	27.2
Caucasian	5	122	64.9	70.5	97.7
Other	6	4	2.1	2.3	100.0
	.	15	8.0	Missing	
	Total	188	100.0	100.0	

Mean 3.971 Std dev 1.777

Valid cases 173 Missing cases 15

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SEX What is your sex?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Male	1	45	23.9	25.4	25.4
Female	2	132	70.2	74.6	100.0
	.	11	5.9	Missing	
	Total	188	100.0	100.0	

Mean 1.746 Std dev .437

Valid cases 177 Missing cases 11

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HOWLONG For how long have you worked at MSDE?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-5 years	1	53	28.2	29.9	29.9
6-10 years	2	53	28.2	29.9	59.9
11-15 years	3	35	18.6	19.8	79.7
16-20 years	4	22	11.7	12.4	92.1
Over 21 years	5	14	7.4	7.9	100.0
	.	11	5.9	Missing	
	Total	188	100.0	100.0	

Mean 2.384 Std dev 1.252

Valid cases 177 Missing cases 11

- -

DEPT In what department do you work?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
A	1	21	11.2	13.8	13.8
B	2	51	27.1	33.6	47.4
C	3	15	8.0	9.9	57.2
D	4	4	2.1	2.6	59.9
E	5	12	6.4	7.9	67.8
F	6	1	.5	.7	68.4
G	7	17	9.0	11.2	79.6
H	8	8	4.3	5.3	84.9
I	9	11	5.9	7.2	92.1
J	10	12	6.4	7.9	100.0
	.	36	19.1	Missing	
	Total	188	100.0	100.0	

Mean 4.289 Std dev 3.044

Valid cases 152 Missing cases 36

Recoded Data

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EDLEVEL What is your highest level of education?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
High School	1	30	16.0	16.9	16.9
Some College & A.A.	2	31	16.5	17.4	34.3
Bachelor"s Degree	3	25	13.3	14.0	48.3
Master"s Degree	4	65	34.6	36.5	84.8
Doctorate Degree	5	27	14.4	15.2	100.0
	.	10	5.3	Missing	
	Total	188	100.0	100.0	

Mean 3.157 Std dev 1.344

Valid cases 178 Missing cases 10

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AGE What is your age?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
18-24	Not Represented in Sample				
25-31	2	14	7.4	8.0	8.0
32-38	3	34	18.1	19.4	27.4
39-45	4	45	23.9	25.7	53.1
46-52	5	56	29.8	32.0	85.1
Over 52	6	26	13.8	14.9	100.0
	.	13	6.9	Missing	
	Total	188	100.0	100.0	

Mean 4.263 Std dev 1.169

Valid cases 175 Missing cases 13

- -

ETHNIC What is your ethnic background?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
African-American	1	45	23.9	26.9	26.9
Caucasian	2	122	64.9	73.1	100.0
	.	21	11.2	Missing	
	Total	188	100.0	100.0	

Mean 1.731 Std dev .445

Valid cases 167 Missing cases 21

- -

SEX What is your sex?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Male	1	45	23.9	25.4	25.4
Female	2	132	70.2	74.6	100.0
	.	11	5.9	Missing	
	Total	188	100.0	100.0	

Mean 1.746 Std dev .437

Valid cases 177 Missing cases 11

- -

HOWLONG For how long have you worked at MSDE?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
0-5 years	1	53	28.2	29.9	29.9
6-10 years	2	53	28.2	29.9	59.9
11-15 years	3	35	18.6	19.8	79.7
16-20 years	4	22	11.7	12.4	92.1
Over 21 years	5	14	7.4	7.9	100.0
	.	11	5.9	Missing	
	Total	188	100.0	100.0	

Mean 2.384 Std dev 1.252

Valid cases 177 Missing cases 11

- -

DEPT In what department do you work?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
A	1	21	11.2	13.8	13.8
B	2	51	27.1	33.6	47.4
C	3	15	8.0	9.9	57.2
E	4	12	6.4	7.9	65.1
G	5	17	9.0	11.2	76.3
I	6	11	5.9	7.2	83.6
J	7	12	6.4	7.9	91.4
Special	8	13	6.9	8.6	100.0
	.	36	19.1	Missing	
	Total	188	100.0	100.0	

Mean 3.651 Std dev 2.253

Valid cases 152 Missing cases 36

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Variable CO Customer Orientation
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	16.8494	4.2123	1.2663	.2854
Within Groups	164	545.5530	3.3265		
Total	168	562.4024			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	29	8.1379	1.8846	.3500	5.0000	12.0000	7.4211 TO 8.8548
Some Col	28	7.1071	2.2168	.4189	3.0000	12.0000	6.2476 TO 7.9667
Bachelor	23	7.8696	1.6322	.3403	4.0000	10.0000	7.1638 TO 8.5754
Master"s	63	7.6508	1.4936	.1882	4.0000	12.0000	7.2746 TO 8.0270
Doctorat	26	7.1000	2.1587	.4234	3.0000	11.0000	6.6261 TO 8.5719
Total	169	7.6509	1.8297	.1407	3.0000	12.0000	7.3730 TO 7.9287

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Variable CO Customer Orientation
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.2897 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable PA Participation
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	34.7577	8.6894	2.2831	.0625
Within Groups	169	643.2193	3.8060		
Total	173	677.9770			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	28	6.0714	2.3401	.4422	3.0000	12.0000	5.1640 TO 6.9788
Some Col	31	5.0645	1.8246	.3277	3.0000	9.0000	4.3953 TO 5.7338
Bachelor	25	6.2400	2.1268	.4254	3.0000	10.0000	5.3621 TO 7.1179
Master"s	63	6.2857	1.7637	.2222	3.0000	9.0000	5.8415 TO 6.7299
Doctorat	27	6.1852	1.9022	.3661	3.0000	9.0000	5.4327 TO 6.9377
Total	174	6.0115	1.9796	.1501	3.0000	12.0000	5.7153 TO 6.3077

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Variable PA Participation
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3795 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.40

* No two groups are significantly different at the .050 level

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Variable DT Development/Training
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	28.8342	7.2086	2.0232	.0935
Within Groups	166	591.4582	3.5630		
Total	170	620.2924			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	29	6.4828	1.9752	.3668	3.0000	12.0000	5.7314 TO 7.2341
Some Col	29	5.5517	1.9196	.3565	3.0000	9.0000	4.8216 TO 6.2819
Bachelor	23	6.3913	1.9941	.4158	3.0000	9.0000	5.5290 TO 7.2536
Master"s	63	6.7460	1.7583	.2215	3.0000	10.0000	6.3052 TO 7.1868
Doctorat	37	6.2963	1.9771	.3885	3.0000	11.0000	5.5142 TO 7.0784
Total	171	6.3801	1.9102	.1461	3.0000	12.0000	6.0918 TO 6.6685

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Variable DT Development/Training
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3347 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable MO Motivation
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	27.2662	6.8116	1.8095	.1294
Within Groups	165	621.1067	3.7643		
Total	169	648.3729			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	28	6.9286	1.9613	.3706	3.0000	12.0000	6.1681 TO 7.6891
Some Col	31	5.7097	2.1632	.3885	3.0000	10.0000	4.9162 TO 6.5032
Bachelor	25	6.3200	2.0761	.4152	3.0000	10.0000	5.4630 TO 7.1770
Master"s	59	6.5932	1.9039	.2479	3.0000	11.0000	6.0971 TO 7.0894
Doctorat	27	6.7407	1.5589	.3000	3.0000	9.0000	6.1241 TO 7.3574
Total	170	6.4706	1.9587	.1502	3.0000	12.0000	6.1740 TO 6.7671

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Variable MO Motivation
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3719 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable PS Products/Services
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	42.5621	10.6405	2.5438	.0419
Within Groups	152	635.8073	4.1829		
Total	156	678.3694			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	27	7.9259	1.9966	.3846	3.0000	12.0000	7.1353 TO 8.7165
Some Col	28	6.2500	2.4286	.4590	3.0000	12.0000	5.3083 TO 7.1917
Bachelor	22	7.0000	2.5820	.5505	3.0000	11.0000	5.8552 TO 8.1448
Master"s	55	6.7091	1.7070	.2302	3.0000	9.0000	6.2476 TO 7.1706
Doctorat	25	6.8400	1.7720	.3544	3.0000	9.0000	6.1086 TO 7.5714
Total	157	6.8981	2.0853	.1664	3.0000	12.0000	6.5694 TO 7.2268

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Variable PS Products/Services
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4462 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable PP Processes/Procedures
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	43.9345	10.9836	3.0188	.0197
Within Groups	153	556.6731	3.6384		
Total	157	600.6076			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	27	7.6296	1.9044	.3665	3.0000	12.0000	6.8763 TO 8.3830
Some Col	29	6.0345	1.9727	.3663	3.0000	10.0000	5.2841 TO 6.7849
Bachelor	22	6.7727	2.3285	.4964	3.0000	12.0000	5.7403 TO 7.8051
Master"s	56	6.8214	1.7798	.2378	3.0000	10.0000	6.3448 TO 7.2981
Doctorat	24	6.1667	1.6854	.3440	3.0000	9.0000	5.4550 TO 6.8783
Total	158	6.7089	1.9559	.1556	3.0000	12.0000	6.4015 TO 7.0162

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Variable PP Processes/Procedures
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3488 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

(*) Indicates significant differences which are shown in the lower triangle

Mean	EDLEVEL	S o m e C o l	D o c t o r a t	B a c h e l o r	M a s t e r " s	H i g h S c h
6.0345	Some Col					
6.1667	Doctorat					
6.7727	Bachelor					
6.8214	Master"s					
7.6296	High Sch	*				

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Variable IN Information
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	32.4860	8.1215	2.4396	.0490
Within Groups	163	542.6331	3.3290		
Total	167	575.1190			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	28	7.1429	1.8199	.3439	3.0000	12.0000	6.4372 TO 7.8486
Some Col	29	5.6552	2.0577	.3821	3.0000	10.0000	4.8725 TO 6.4379
Bachelor	22	6.2727	2.0513	.4373	3.0000	11.0000	5.3632 TO 7.1822
Master"s	62	6.3226	1.5762	.2002	3.0000	9.0000	5.9223 TO 6.7229
Doctorat	27	6.5185	1.9089	.3674	3.0000	10.0000	5.7634 TO 7.2737
Total	168	6.3690	1.8558	.1432	3.0000	12.0000	6.0864 TO 6.6517

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Variable IN Information
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.2902 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable SU Supplies
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	59.9129	14.9782	3.8885	.0049
Within Groups	149	573.9378	3.8519		
Total	153	633.8506			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	26	7.6154	2.1760	.4264	3.0000	12.0000	6.7373 TO 8.4935
Some Col	26	5.8077	2.3498	.4608	3.0000	11.0000	4.8586 TO 6.7568
Bachelor	20	6.2000	2.1909	.4899	3.0000	10.0000	5.1746 TO 7.2254
Master"s	55	5.9091	1.6018	.2160	3.0000	9.0000	5.4761 TO 6.3421
Doctorat	27	6.3333	1.8397	.3541	3.0000	9.0000	5.6056 TO 7.0611
Total	154	6.2922	2.0354	.1640	3.0000	12.0000	5.9682 TO 6.6162

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Variable SU Supplies
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3878 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

(*) Indicates significant differences which are shown in the lower triangle

Mean	EDLEVEL	S o m e C o l	M a s t e r " s	B a c h e l o r	D o c t o r a t	H i g h S c h
5.8077	Some Col					
5.9091	Master"s					
6.2000	Bachelor					
6.3333	Doctorat					
7.6154	High Sch	*	*			

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Variable CU Culture
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	40.1924	10.0481	5.6261	.0003
Within Groups	165	294.6841	1.7860		
Total	169	334.8765			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	27	7.3704	1.3053	.2512	5.0000	10.0000	6.8540 TO 7.8867
Some Col	30	6.1333	1.6965	.3097	3.0000	9.0000	5.4998 TO 6.7668
Bachelor	25	6.9600	1.5133	.3027	3.0000	9.0000	6.3354 TO 7.5846
Master"s	61	7.3279	1.1064	.1417	4.0000	9.0000	7.0445 TO 7.6112
Doctorat	27	7.5926	1.2172	.2342	5.0000	10.0000	7.1111 TO 8.0741
Total	170	7.1118	1.4077	.1080	3.0000	10.0000	6.8986 TO 7.3249

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Variable CU Culture
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .9440 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

(*) Indicates significant differences which are shown in the lower triangle

Mean	EDLEVEL	Some Col	Bachelor	Master"s	High Sch	Doctorat
6.1333	Some Col					
6.9600	Bachelor					
7.3279	Master"s	*				
7.3704	High Sch	*				
7.5926	Doctorat	*				

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Variable PL Planning
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	34.5624	8.6406	1.7820	.1354
Within Groups	149	722.4765	4.8488		
Total	153	757.0390			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	24	7.4583	2.4844	.5071	3.0000	12.0000	6.4093 TO 8.5074
Some Col	30	6.0667	2.2118	.4038	3.0000	11.0000	5.2408 TO 6.8926
Bachelor	22	6.9091	2.2019	.4695	3.0000	12.0000	5.9328 TO 7.8854
Master"s	54	6.8333	2.1610	.2941	3.0000	11.0000	6.2435 TO 7.4232
Doctorat	24	6.1667	1.9760	.4033	3.0000	10.0000	5.3345 TO 6.9989
Total	154	6.6883	2.2244	.1792	3.0000	12.0000	6.3342 TO 7.0424

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Variable PL Planning
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.5571 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable CON Communication
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	14.3317	3.5829	1.6975	.1529
Within Groups	166	350.3818	2.1107		
Total	170	364.7135			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	26	6.9615	1.7316	.3396	4.0000	12.0000	6.2621 TO 7.6609
Some Col	31	6.0968	1.5352	.2757	3.0000	9.0000	5.5336 TO 6.6599
Bachelor	25	6.7600	1.4224	.2845	3.0000	9.0000	6.1728 TO 7.3472
Master"s	62	6.4839	1.3150	.1670	3.0000	9.0000	6.1499 TO 6.8178
Doctorat	27	6.2222	1.3960	.2687	3.0000	9.0000	5.6700 TO 6.7744
Total	171	6.4854	1.4647	.1120	3.0000	12.0000	6.2643 TO 6.7065

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Variable CON Communication
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.0273 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.61

- No two groups are significantly different at the .050 level

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Variable AC Accountability
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	67.0486	16.7622	4.2186	.0028
Within Groups	166	659.5830	3.9734		
Total	170	726.6316			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	30	7.1000	2.2338	.4078	3.0000	12.0000	6.2659 TO 7.9341
Some Col	29	5.6897	1.7949	.3333	3.0000	9.0000	5.0069 TO 6.3726
Bachelor	24	6.3833	2.3575	.4812	3.0000	11.0000	5.3878 TO 7.3788
Master"s	61	7.4754	1.8313	.2345	3.0000	11.0000	7.0064 TO 7.9444
Doctorat	27	6.7037	1.9178	.3691	3.0000	11.0000	5.9450 TO 7.4624
Total	171	6.8596	2.0674	.1581	3.0000	12.0000	6.5476 TO 7.1717

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Variable AC Accountability
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4095 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

(*) Indicates significant differences which are shown in the lower triangle

		S o m e C o l	B a c h e l o r	D o c t o r a t	H i g h S c h	M a s t e r " s
Mean	EDLEVEL					
5.6897	Some Col					
6.3833	Bachelor					
6.7037	Doctorat					
7.1000	High Sch					
7.4754	Master"s	*				

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Variable TOTAL
By Variable EDLEVEL What is your highest level of education?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	4308.3611	1077.0903	4.1435	.0036
Within Groups	115	29893.5639	259.9440		
Total	119	34201.9250			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
High Sch	19	82.6842	16.9713	4.2606	48.0000	127.0000	73.7331 TO 91.6353
Some Col	20	62.2500	19.7027	4.4057	33.0000	93.0000	53.0288 TO 71.4712
Bachelor	18	76.2778	17.7128	4.1749	41.0000	110.0000	67.4694 TO 85.0861
Master"s	41	74.4390	12.3147	1.9232	45.0000	98.0000	70.5520 TO 78.3260
Doctorat	22	73.0000	15.2908	3.2600	43.0000	103.0000	66.2204 TO 79.7796
Total	120	73.7250	16.9532	1.5476	33.0000	127.0000	70.6606 TO 76.7894

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Variable TOTAL
By Variable EDLEVEL What is your highest level of education?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 11.4005 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.43

(*) Indicates significant differences which are shown in the lower triangle

Mean	EDLEVEL	S o m e C o l	D o c t e r a t	M a s t e r " s	B a c h e l o r	H i g h S c h
62.2500	Some Col					
73.0000	Doctorat					
74.4390	Master"s					
76.2778	Bachelor					
82.6842	High Sch	*				

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Variable CO Customer Orientation
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	4.2682	1.0670	.3029	.8757
Within Groups	161	567.1595	3.5227		
Total	165	571.4277			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	7.3571	1.6458	.4399	5.0000	10.0000	6.4069 TO 8.3074
32-38	32	7.9063	1.5731	.2781	5.0000	12.0000	7.3391 TO 8.4734
39-45	43	7.5116	2.3235	.3543	3.0000	12.0000	6.7966 TO 8.2267
46-52	52	7.6731	1.7546	.2605	3.0000	11.0000	7.1982 TO 8.1560
Over 52	25	7.7200	1.7682	.3536	3.0000	11.0000	6.9901 TO 8.4499
Total	166	7.6566	1.8610	.1444	3.0000	12.0000	7.3714 TO 7.9418

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Variable CO Customer Orientation
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3272 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable PA Participation
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	45.4479	11.3620	3.0657	.0187
Within Groups	166	619.2655	3.7305		
Total	170	664.7133			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.3571	1.9648	.5305	3.0000	10.0000	5.2111 TO 7.5032
32-38	34	5.7941	2.0711	.3552	3.0000	9.0000	5.0715 TO 6.5168
39-45	44	5.2955	1.7331	.2613	3.0000	9.0000	4.7685 TO 5.8224
46-52	56	6.5536	1.8084	.2461	3.0000	10.0000	6.0619 TO 7.0492
Over 52	25	6.4000	2.2730	.4546	3.0000	12.0000	5.4617 TO 7.3383
Total	171	6.0409	1.9774	.1512	3.0000	12.0000	5.7424 TO 6.3394

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Variable PA Participation
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3657 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

(*) Indicates significant differences which are shown in the lower triangle

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		v			
		3	3	2	0 4
		9	2	5	r 6
		-	-	-	-
		4	3	3	5 5
		5	8	1	2 2

Mean	AGE	
5.2955	39-45	
5.7941	32-38	
6.3571	25-31	
6.4000	Over 52	
6.5536	46-52	*

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Variable DT Development/Training
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	28.7867	7.1967	2.0730	.0867
Within Groups	163	565.8740	3.4716		
Total	167	594.6607			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.3571	2.4685	.6597	3.0000	10.0000	4.9319 TO 7.7824
32-38	33	6.3939	1.7843	.3106	3.0000	10.0000	5.7613 TO 7.0266
39-45	43	5.7674	1.9711	.2396	3.0000	10.0000	5.2839 TO 6.2510
46-52	54	6.8148	1.8022	.2453	3.0000	10.0000	6.3229 TO 7.3067
Over 52	24	6.7083	2.1765	.4443	3.0000	12.0000	5.7893 TO 7.6274
Total	168	6.4107	1.8878	.1456	3.0000	12.0000	6.1233 TO 6.6981

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Variable DT Development/Training
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3175 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable MO Motivation
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	49.3700	12.3425	3.4333	.0101
Within Groups	162	582.3785	3.5949		
Total	166	631.7485			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.9286	2.1649	.5786	3.0000	11.0000	5.6786 TO 8.1786
32-38	32	6.1563	1.7060	.3016	3.0000	9.0000	5.5412 TO 6.7713
39-45	44	5.7500	1.9305	.2910	3.0000	11.0000	5.1631 TO 6.3369
46-52	53	6.9811	1.8552	.2548	3.0000	10.0000	6.4698 TO 7.4925
Over 52	24	7.8000	2.0000	.4082	3.0000	12.0000	6.1555 TO 7.8445
Total	167	6.4970	1.9508	.1510	3.0000	12.0000	6.1990 TO 6.7951

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Variable MO Motivation
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3487 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

(*) Indicates significant differences which are shown in the lower triangle

		O v e r 5 2	4 6 - 5 2	3 9 - 4 5	3 2 - 3 8	2 5 - 3 1
Mean	AGE					
5.7500	39-45					
6.1563	32-38					
6.9286	25-31					
6.9811	46-52	*				
7.8000	Over 52					

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Variable PS Products/Services
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	3.3872	.8468	.1949	.9408
Within Groups	148	643.0834	4.3452		
Total	152	646.4706			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	7.2857	2.4939	.6665	3.0000	12.0000	5.8458 TO 8.7257
32-38	29	7.1034	1.7596	.3267	3.0000	10.0000	6.4341 TO 7.7727
39-45	38	6.8158	2.3116	.3750	3.0000	12.0000	6.0560 TO 7.5756
46-52	49	6.8571	1.9257	.2751	3.0000	11.0000	6.3040 TO 7.4103
Over 52	23	6.9130	2.1302	.4442	3.0000	12.0000	5.9919 TO 7.8342
Total	153	6.9412	2.0823	.1667	3.0000	12.0000	6.6118 TO 7.2706

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Variable PS Products/Services
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4740 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable PP Processes/Procedures
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	15.0314	3.7578	.9763	.4223
Within Groups	152	585.0705	3.8491		
Total	156	600.1019			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.6429	1.9648	.5205	3.0000	9.0000	5.4968 TO 7.7889
32-38	30	7.1333	1.7167	.3134	3.0000	10.0000	6.4923 TO 7.7744
39-45	40	6.2500	1.9579	.3096	3.0000	10.0000	5.6238 TO 6.8762
46-52	50	6.8600	2.0801	.2942	3.0000	12.0000	6.2688 TO 7.4512
Over 52	23	6.6957	1.9871	.4143	3.0000	12.0000	5.8364 TO 7.5549
Total	157	6.7134	1.9613	.1565	3.0000	12.0000	6.4042 TO 7.0226

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Variable PP Processes/Procedures
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3673 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable IN Information
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	6.7868	1.6967	.4978	.7374
Within Groups	162	552.1952	3.4086		
Total	166	558.9820			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.6429	2.2051	.5893	3.0000	10.0000	5.3696 TO 7.9161
32-38	33	6.3636	1.5169	.2641	3.0000	9.0000	5.8257 TO 6.9015
39-45	42	6.0476	1.7243	.2661	3.0000	10.0000	5.5103 TO 6.5850
46-52	54	6.4815	1.8908	.2573	3.0000	11.0000	5.9654 TO 6.9976
Over 52	24	6.5417	2.1260	.4340	3.0000	12.0000	5.6439 TO 7.4394
Total	167	6.3713	1.8350	.1420	3.0000	12.0000	6.0909 TO 6.6516

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Variable IN Information
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3055 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable SU Supplies
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	17.2497	4.3124	1.0573	.3799
Within Groups	145	591.3903	4.0786		
Total	149	608.6400			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.9286	2.4951	.6668	3.0000	11.0000	5.4880 TO 8.3692
32-38	27	6.7037	1.9178	.3691	3.0000	10.0000	5.9450 TO 7.4624
39-45	39	5.9231	2.0823	.3334	3.0000	11.0000	5.2481 TO 6.5981
46-52	47	6.3830	1.8481	.2696	3.0000	10.0000	5.8404 TO 6.9256
Over 52	23	6.0435	2.0556	.4286	3.0000	12.0000	5.1546 TO 6.9324
Total	150	6.3200	2.0211	.1650	3.0000	12.0000	5.9939 TO 6.6461

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Variable SU Supplies
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4288 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable CU Culture
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	10.3333	2.5833	1.2350	.2981
Within Groups	163	340.9464	2.0917		
Total	167	351.2798			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	13	7.1538	1.9081	.5292	3.0000	10.0000	6.0008 TO 8.3069
32-38	33	6.6970	1.0150	.1767	4.0000	8.0000	6.3371 TO 7.0569
39-45	44	6.9773	1.7978	.2710	3.0000	10.0000	6.4307 TO 7.5238
46-52	53	7.3208	1.3123	.1803	3.0000	9.0000	6.9590 TO 7.6825
Over 52	25	7.3600	1.2207	.2441	5.0000	10.0000	6.8561 TO 7.8639
Total	168	7.1012	1.4503	.1119	3.0000	10.0000	6.8803 TO 7.3221

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Variable CU Culture
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.8227 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable PL Planning
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	9.6151	2.4038	.4780	.7519
Within Groups	146	734.2525	5.0291		
Total	150	743.8675			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.6429	2.2051	.5893	3.0000	9.0000	5.3696 TO 7.9161
32-38	31	7.0323	1.6224	.2914	4.0000	11.0000	6.4371 TO 7.6274
39-45	40	6.4250	2.1350	.3376	3.0000	11.0000	5.7422 TO 7.1078
46-52	44	6.9318	2.6815	.3741	3.0000	12.0000	6.1774 TO 7.6863
Over 52	22	6.5000	2.6602	.5689	3.0000	12.0000	5.3170 TO 7.6830
Total	151	6.7285	2.2269	.1812	3.0000	12.0000	6.3704 TO 7.0866

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Variable PL Planning
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.5917 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable CON Communication
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	12.3759	3.0940	1.4912	.2196
Within Groups	163	347.5289	2.1321		
Total	167	359.9048			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.6429	1.4469	.3867	4.0000	9.0000	5.8075 TO 7.4782
32-38	33	6.6061	1.2976	.2259	4.0000	10.0000	6.1460 TO 7.0662
39-45	43	6.8930	1.4279	.2177	3.0000	8.0000	5.6536 TO 6.5325
46-52	55	6.6182	1.4336	.1933	3.0000	9.0000	6.2306 TO 7.0057
Over 52	23	6.9130	1.7815	.3715	4.0000	12.0000	6.1426 TO 7.6834
Total	168	6.5238	1.4660	.1133	3.0000	12.0000	6.3002 TO 6.7474

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Variable CON Communication
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
  MEAN(J)-MEAN(I) >= 1.0325 * RANGE * SQRT(1/N(I) + 1/N(J))
  with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable AC Accountability
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	20.0847	5.0212	1.2230	.3031
Within Groups	163	669.1951	4.1055		
Total	167	689.2798			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	14	6.3571	2.8908	.7726	3.0000	11.0000	4.6836 TO 8.0307
32-38	31	6.6452	1.6441	.2953	3.0000	11.0000	6.0421 TO 7.2482
39-45	42	6.5476	2.0625	.3182	3.0000	11.0000	5.9049 TO 7.1903
46-52	56	7.3036	1.7902	.2403	3.0000	11.0000	6.8220 TO 7.7851
Over 52	25	6.8000	2.2971	.4594	3.0000	12.0000	5.9318 TO 7.8782
Total	168	6.8512	2.0316	.1567	3.0000	12.0000	6.5417 TO 7.1606

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Variable AC Accountability
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4327 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable TOTAL
By Variable AGE What is your age?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	1336.9173	334.2293	1.1324	.3449
Within Groups	113	33352.5064	295.1549		
Total	117	34689.4237			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
25-31	13	76.2308	20.3599	5.6468	40.0000	106.0000	63.9274 TO 88.5341
32-38	20	74.1500	16.7729	3.7503	51.0000	93.0000	67.2361 TO 81.0639
39-45	31	67.9355	17.3953	3.1243	33.0000	96.0000	61.5548 TO 74.3161
46-52	36	75.6667	15.4513	2.5752	41.0000	110.0000	70.4387 TO 80.8946
Over 52	18	75.8889	19.9967	4.7133	43.0000	127.0000	65.9447 TO 85.8330
Total	118	73.6746	17.2189	1.5851	33.0000	127.0000	70.3353 TO 76.6138

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Variable TOTAL
By Variable AGE What is your age?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 12.1681 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.03

* No two groups are significantly different at the .050 level

t-tests for independent samples of ETHNIC What is your ethnic background?

Variable	Number of Cases	Mean	SD	SE of Mean
CO Customer Orientation				
African-American	41	7.3902	1.986	.310
Caucasian	118	7.6949	1.771	.163

Mean Difference = -.3047

Levene's Test for Equality of Variances: F= 3.261 P= .073

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-.92	157	.359	.331	(-.959, .350)
Unequal	-.87	63.51	.388	.350	(-1.005, .395)

Variable	Number of Cases	Mean	SD	SE of Mean
PA Participation				
African-American	45	5.3333	1.989	.296
Caucasian	118	6.2288	1.795	.165

Mean Difference = -.8955

Levene's Test for Equality of Variances: F= 1.316 P= .253

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.76	161	.006	.324	(-1.536, -.255)
Unequal	-2.64	72.93	.010	.339	(-1.572, -.219)

Variable	Number of Cases	Mean	SD	SE of Mean
DT Development/Training				
African-American	44	5.7045	1.875	.283
Caucasian	117	6.6154	1.761	.163

Mean Difference = -.9108

Levene's Test for Equality of Variances: F= .125 P= .725

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.87	159	.005	.317	(-1.537, -.285)
Unequal	-2.79	73.27	.007	.326	(-1.561, -.261)

Variable	Number of Cases	Mean	SD	SE of Mean
MO Motivation				
African-American	43	5.9070	2.158	.329
Caucasian	116	6.6293	1.737	.161

Mean Difference = -.7223

Levene's Test for Equality of Variances: F= 2.955 P= .088

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.18	157	.031	.332	(-1.370, -.067)
Unequal	-1.97	63.27	.053	.367	(-1.455, .010)

Variable	Number of Cases	Mean	SD	SE of Mean
PS Products/Services				
African-American	42	6.6429	2.356	.364
Caucasian	103	6.9320	1.070	.104

Mean Difference = -.2892

Levene's Test for Equality of Variances: F= 3.980 P= .048

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-.78	143	.436	.370	(-1.021, .442)
Unequal	-.71	63.08	.481	.408	(-1.104, .526)

Variable	Number of Cases	Mean	SD	SE of Mean
PP Processes/Procedures				
African-American	42	6.4286	2.002	.309
Caucasian	107	6.7850	1.843	.178

Mean Difference = -.3565

Levene's Test for Equality of Variances: F= 1.513 P= .221

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-1.04	147	.302	.344	(-1.036, .323)
Unequal	-1.00	69.83	.321	.357	(-1.068, .355)

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t-tests for independent samples of ETHNIC What is your ethnic background?

Variable	Number of Cases	Mean	SD	SE of Mean
IN Information				
African-American	43	5.8372	1.963	.299
Caucasian	116	6.5172	1.660	.154

Mean Difference = -.6800

Levene's Test for Equality of Variances: F= 1.956 P= .164

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-2.18	157	.031	.312	(-1.296, -.064)
Unequal	-2.02	69.54	.048	.337	(-1.352, -.008)

Variable	Number of Cases	Mean	SD	SE of Mean
SU Supplies				
African-American	41	5.9756	2.184	.341
Caucasian	102	6.3039	1.044	.103

Mean Difference = -.3283

Levene's Test for Equality of Variances: F= .584 P= .446

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-.91	141	.363	.360	(-1.040, .384)
Unequal	-.85	64.11	.399	.387	(-1.102, .445)

Variable	Number of Cases	Mean	SD	SE of Mean
CU Culture				
African-American	45	6.4444	1.673	.249
Caucasian	115	7.3913	1.175	.110

Mean Difference = -.9469

Levene's Test for Equality of Variances: F= 4.581 P= .034

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-4.04	158	.000	.234	(-1.410, -.484)
Unequal	-3.48	61.74	.001	.272	(-1.491, -.402)

Variable	Number of Cases	Mean	SD	SE of Mean
PL Planning				
African-American	38	6.4737	1.928	.313
Caucasian	107	6.7009	2.233	.216

Mean Difference = -.2273

Levene's Test for Equality of Variances: F= 1.136 P= .288

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-.56	143	.578	.408	(-1.033, .578)
Unequal	-.60	74.74	.552	.380	(-.984, .530)

Variable	Number of Cases	Mean	SD	SE of Mean
COM Communication				
African-American	44	6.0000	1.398	.211
Caucasian	116	6.6379	1.386	.129

Mean Difference = -.6379

Levene's Test for Equality of Variances: F= .032 P= .858

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-2.59	158	.010	.246	(-1.124, -.152)
Unequal	-2.58	77.03	.012	.247	(-1.130, -.146)

Variable	Number of Cases	Mean	SD	SE of Mean
AC Accountability				
African-American	43	6.3488	2.137	.326
Caucasian	117	7.0256	1.927	.178

Mean Difference = -.6768

Levene's Test for Equality of Variances: F= 1.235 P= .268

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-1.91	158	.058	.354	(-1.376, .023)
Unequal	-1.82	68.65	.073	.371	(-1.418, .064)

Variable	Number of Cases	Mean	SD	SE of Mean
TOTAL				
African-American	31	69.3871	19.214	3.451
Caucasian	81	74.4815	14.322	1.591

Mean Difference = -5.0944

Levene's Test for Equality of Variances: F= 5.965 P= .016

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-1.53	110	.130	3.338	(-11.712, 1.523)
Unequal	-1.34	43.38	.187	3.800	(-12.760, 2.571)

t-tests for independent samples of SEX What is your sex?

Variable	Number of Cases	Mean	SD	SE of Mean
CO Customer Orientation				
Male	45	7.2444	1.873	.279
Female	123	7.8455	1.802	.162

Mean Difference = -.6011

Levene's Test for Equality of Variances: F= .313 P= .577

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-1.89	166	.060	.317	(-1.228, .025)
Unequal	-1.86	79.72	.067	.323	(-1.245, .042)

Variable	Number of Cases	Mean	SD	SE of Mean
PA Participation				
Male	45	6.0667	1.776	.265
Female	128	6.0313	2.030	.181

Mean Difference = .0354

Levene's Test for Equality of Variances: F= 1.830 P= .176

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	.10	171	.918	.344	(-.643, .714)
Unequal	.11	88.18	.912	.321	(-.602, .673)

Variable	Number of Cases	Mean	SD	SE of Mean
DT Development/Training				
Male	45	6.4889	1.854	.276
Female	125	6.3680	1.902	.170

Mean Difference = .1209

Levene's Test for Equality of Variances: F= .139 P= .710

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	.39	168	.695	.329	(-.520, .778)
Unequal	.40	79.62	.692	.325	(-.517, .775)

Variable	Number of Cases	Mean	SD	SE of Mean
MO Motivation				
Male	43	6.4651	1.830	.279
Female	126	6.4921	2.011	.179

Mean Difference = -.0269

Levene's Test for Equality of Variances: F= .642 P= .424

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-.08	167	.938	.347	(-.713, .659)
Unequal	-.08	79.22	.935	.332	(-.687, .633)

Variable	Number of Cases	Mean	SD	SE of Mean
PS Products/Services				
Male	48	6.7356	1.936	.292
Female	111	6.9820	2.132	.202

Mean Difference = -.2264

Levene's Test for Equality of Variances: F= .196 P= .658

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-.62	154	.539	.368	(-.954, .501)
Unequal	-.64	88.39	.525	.355	(-.932, .479)

Variable	Number of Cases	Mean	SD	SE of Mean
PP Processes/Procedures				
Male	41	6.6098	2.072	.324
Female	118	6.7712	1.923	.177

Mean Difference = -.1614

Levene's Test for Equality of Variances: F= .048 P= .828

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-.45	157	.651	.356	(-.864, .541)
Unequal	-.44	69.52	.663	.369	(-.898, .575)

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t-tests for independent samples of SEX What is your sex?

Variable	Number of Cases	Mean	SD	SE of Mean
IN Information				
Male	44	6.2045	1.786	.269
Female	125	6.4560	1.869	.167

Mean Difference = -.2515

Levene's Test for Eq ality of Variances: F= .959 P= .329

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-.78	167	.439	.324	(-.891, .388)
Unequal	-.79	78.48	.430	.317	(-.883, .380)

Variable	Number of Cases	Mean	SD	SE of Mean
SU Supplies				
Male	43	6.1163	1.892	.289
Female	110	6.3636	2.102	.200

Mean Difference = -.2474

Levene's Test for Equality of Variances: F= .561 P= .453

t-test for Equality of Means Variances	t-value	df	2-Tail Sig	SE of Diff	95% CI for Diff
Equal	-.67	151	.502	.368	(-.976, .480)
Unequal	-.70	84.68	.485	.351	(-.946, .451)

Variable	Number of Cases	Mean	SD	SE of Mean
CU Culture				
Male	44	7.1136	1.185	.179
Female	126	7.1111	1.487	.132

Mean Difference = .0025

Levene's Test for Equality of Variances: F= 2.054 P= .154

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	.01	168	.992	.248	(-.487, .492)
Unequal	.01	93.53	.991	.222	(-.439, .444)

Variable	Number of Cases	Mean	SD	SE of Mean
PL Planning				
Male	42	6.9762	2.444	.377
Female	111	6.6306	2.127	.202

Mean Difference = .3456

Levene's Test for Equality of Variances: F= .794 P= .374

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	.86	151	.391	.402	(-.449, 1.140)
Unequal	.81	65.85	.422	.426	(-.509, 1.200)

Variable	Number of Cases	Mean	SD	SE of Mean
COM Communication				
Male	44	6.2272	1.538	.232
Female	126	6.5952	1.449	.129

Mean Difference = -.3680

Levene's Test for Equality of Variances: F= .592 P= .443

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-1.43	168	.155	.258	(-.877, .141)
Unequal	-1.39	71.41	.170	.265	(-.897, .161)

Variable	Number of Cases	Mean	SD	SE of Mean
AC Accountability				
Male	45	6.7556	2.227	.332
Female	125	6.8960	2.019	.181

Mean Difference = -.1404

Levene's Test for Equality of Variances: F= 1.198 P= .275

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-.39	168	.698	.361	(-.853, .572)
Unequal	-.37	71.66	.711	.378	(-.894, .613)

Variable	Number of Cases	Mean	SD	SE of Mean
TOTAL				
Male	36	72.6389	16.274	2.729
Female	84	74.2381	17.259	1.883

Mean Difference = -1.5992

Levene's Test for Equality of Variances: F= .179 P= .673

t-test for Equality of Means					95%
Variances	t-value	df	2-Tail Sig	SE of Diff	CI for Diff
Equal	-.47	118	.638	3.387	(-8.307, 5.109)
Unequal	-.48	69.61	.631	3.316	(-8.214, 5.015)

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Variable CO Customer Orientation
By Variable NOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	7.6332	1.9008	.5465	.7018
Within Groups	163	569.3588	3.4930		
Total	167	576.9940			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	49	7.4898	1.9053	.2722	3.0000	11.0000	6.9423 TO 8.0371
6-10 yea	52	7.9231	1.8348	.2544	3.0000	12.0000	7.4123 TO 8.4339
11-15 ye	35	7.4286	2.0333	.3437	3.0000	12.0000	6.7301 TO 8.1270
16-20 ye	19	7.7895	1.6186	.3713	5.0000	10.0000	7.0093 TO 8.5696
Over 21	13	7.8462	1.7246	.4783	5.0000	12.0000	6.8040 TO 8.8883
Total	168	7.6726	1.8588	.1434	3.0000	12.0000	7.3895 TO 7.9557

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Variable CO Customer Orientation
By Variable NOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3216 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable PA Participation
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	18.8552	4.7138	1.2173	.3054
Within Groups	168	650.5667	3.8724		
Total	172	669.4220			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	53	6.3396	2.0750	.2850	3.0000	10.0000	5.7677 TO 6.9116
6-10 yea	53	6.2642	2.0015	.2749	3.0000	12.0000	5.7125 TO 6.8158
11-15 ye	34	5.7059	1.9153	.3285	3.0000	10.0000	5.0376 TO 6.3742
16-20 ye	20	5.8500	1.8432	.4122	3.0000	10.0000	4.9874 TO 6.7126
Over 21	13	5.3077	1.6525	.4583	3.0000	8.0000	4.3091 TO 6.3063
Total	173	6.0578	1.9728	.1500	3.0000	12.0000	5.7617 TO 6.3539

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Variable PA Participation
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3915 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.40

- No two groups are significantly different at the .050 level

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Variable DT Development/Training
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	8.7065	2.1766	.6119	.6547
Within Groups	165	586.9465	3.5573		
Total	169	595.6529			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	50	6.6800	2.0146	.2849	3.0000	11.0000	6.1074 TO 7.2526
6-10 yea	52	6.3846	2.0015	.2776	3.0000	12.0000	5.8274 TO 6.9418
11-15 ye	35	6.1429	1.5765	.2661	3.0000	10.0000	5.6020 TO 6.6837
16-20 ye	20	6.6500	2.0333	.4547	3.0000	10.0000	5.6984 TO 7.6016
Over 21	13	6.0769	1.3205	.3662	3.0000	8.0000	5.2790 TO 6.8749
Total	170	6.4294	1.8774	.1440	3.0000	12.0000	6.1452 TO 6.7137

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Variable DT Development/Training
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The differences between two means is significant if
MEAN(J)-MEAN(I) >= 1.3337 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable MO Motivation
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	21.2999	5.3250	1.4202	.2295
Within Groups	164	614.9132	3.7495		
Total	168	636.2130			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	52	6.7692	2.0255	.2809	3.0000	11.0000	6.2053 TO 7.3331
6-10 yea	31	6.7843	2.0131	.2819	3.0000	12.0000	6.2181 TO 7.3505
11-15 ye	35	6.1429	1.7514	.2960	3.0000	10.0000	5.5412 TO 6.7445
16-20 ye	10	6.3333	2.1620	.5049	3.0000	11.0000	5.2681 TO 7.3985
Over 21	13	5.6923	1.3196	.3649	3.0000	8.0000	4.8973 TO 6.4873
Total	169	6.5148	1.9460	.1497	3.0000	12.0000	6.2193 TO 6.8103

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Variable MO Motivation
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3692 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable P8 Products/Services
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	19.6556	4.9139	1.1611	.3304
Within Groups	150	634.8218	4.2321		
Total	154	654.4774			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	43	7.2093	1.8459	.2815	3.0000	10.0000	6.6412 TO 7.7774
6-10 yea	47	7.1489	2.2261	.3247	3.0000	12.0000	6.4953 TO 7.8025
11-15 ye	32	6.9375	2.0468	.3618	3.0000	11.0000	6.1995 TO 7.6755
16-20 ye	20	6.4500	2.1079	.4892	3.0000	11.0000	5.4240 TO 7.4760
Over 21	13	6.0769	1.8913	.5245	3.0000	10.0000	4.9340 TO 7.2198
Total	155	6.9419	2.0615	.1656	3.0000	12.0000	6.6148 TO 7.2690

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Variable P8 Products/Services
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.6547 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable PP Processes/Procedures
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	14.5298	3.6324	.9468	.4387
Within Groups	154	590.8413	3.8366		
Total	158	605.3711			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	47	6.7660	2.0664	.3014	3.0000	10.0000	6.1592 TO 7.3727
6-10 yea	48	6.9375	2.0043	.2893	3.0000	12.0000	6.3555 TO 7.5195
11-15 ye	32	6.2500	1.7961	.3175	3.0000	12.0000	5.6025 TO 6.8975
16-20 ye	19	7.1579	1.9512	.4476	3.0000	11.0000	6.2175 TO 8.0983
Over 21	13	6.3846	1.7578	.4875	4.0000	10.0000	5.3224 TO 7.4468
Total	159	6.7296	1.9574	.1552	3.0000	12.0000	6.4230 TO 7.0362

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Variable PP Processes/Procedures
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3810 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable IN Information
By Variable NOWLONG For how long have you worked at MSDS?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	12.6560	3.1642	.9274	.4495
Within Groups	164	559.5681	3.4120		
Total	168	572.2249			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	90	6.6000	1.7163	.2424	3.0000	10.0000	6.1128 TO 7.0872
6-10 yea	52	6.5962	2.0665	.2857	3.0000	12.0000	6.0225 TO 7.1698
11-15 ye	24	6.1765	1.6601	.2847	3.0000	11.0000	5.5972 TO 6.7557
16-20 ye	20	6.1000	2.0225	.4525	3.0000	10.0000	5.1530 TO 7.0470
Over 21	13	5.7692	1.5892	.4408	3.0000	9.0000	4.8089 TO 6.7296
Total	169	6.3905	1.8456	.1420	3.0000	12.0000	6.1103 TO 6.6708

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Variable IN Information
By Variable NOWLONG For how long have you worked at MSDS?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3061 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable SU Supplies
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	23.2240	5.8060	1.4234	.2291
Within Groups	147	599.6181	4.0790		
Total	151	622.8421			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	44	6.4545	2.0624	.3109	3.0000	11.0000	5.8275 TO 7.0816
6-10 yea	46	6.6957	2.0962	.3091	3.0000	12.0000	6.0731 TO 7.3182
11-15 ye	30	6.2333	1.8880	.3447	3.0000	10.0000	5.5284 TO 6.9383
16-20 ye	19	5.8421	2.0887	.4792	3.0000	10.0000	4.8354 TO 6.8488
Over 21	13	5.3846	1.7578	.4875	3.0000	9.0000	4.3224 TO 6.4468
Total	152	6.3158	2.0310	.1647	3.0000	12.0000	5.9903 TO 6.6413

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Variable SU Supplies
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4281 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.61

* No two groups are significantly different at the .050 level

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Variable CU Culture
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	6.8911	1.7228	.8234	.5119
Within Groups	165	345.2031	2.0921		
Total	169	352.0941			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	32	7.3462	1.4126	.1959	3.0000	10.0000	6.9529 TO 7.7394
6-10 yea	51	7.0196	1.5426	.2160	3.0000	10.0000	6.5857 TO 7.4535
11-15 ye	35	7.0000	1.3720	.2319	3.0000	9.0000	6.5287 TO 7.4713
16-20 ye	19	6.7368	1.5931	.3655	3.0000	9.0000	5.9690 TO 7.5047
Over 21	13	7.3077	1.1094	.3077	6.0000	9.0000	6.6373 TO 7.9781
Total	170	7.1059	1.4434	.1107	3.0000	10.0000	6.8873 TO 7.3244

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Variable CU Culture
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.0228 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable PL Planning
By Variable NOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	13.4281	3.3570	.6774	.6087
Within Groups	148	733.4870	4.9560		
Total	152	746.9150			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	46	6.8696	2.1665	.3194	3.0000	11.0000	6.2262 TO 7.5129
6-10 yea	45	6.5333	2.3218	.3461	3.0000	12.0000	5.8358 TO 7.2309
11-15 ye	32	6.4375	2.0310	.3590	3.0000	12.0000	5.7052 TO 7.1698
16-20 ye	17	7.4118	2.2377	.5427	3.0000	11.0000	6.2612 TO 8.5623
Over 21	13	6.6154	2.5344	.7029	3.0000	11.0000	5.0839 TO 8.1469
Total	153	6.7190	2.2167	.1792	3.0000	12.0000	6.3649 TO 7.0730

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Variable PL Planning
By Variable NOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.5762 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

- No two groups are significantly different at the .050 level

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Variable CON Communication
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	10.8258	2.7065	1.2780	.2839
Within Groups	165	351.6212	2.1310		
Total	169	362.4471			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	52	6.4808	1.5402	.2136	3.0000	10.0000	6.0520 TO 6.9096
6-10 yea	53	6.8113	1.5449	.2122	3.0000	12.0000	6.3855 TO 7.2372
11-15 ye	33	6.4242	1.3926	.2424	3.0000	8.0000	5.9304 TO 6.9180
16-20 ye	20	6.4000	1.1425	.2555	4.0000	8.0000	5.8653 TO 6.9347
Over 21	12	5.8333	1.3371	.3860	3.0000	8.0000	4.9838 TO 6.6829
Total	170	6.5176	1.4645	.1123	3.0000	12.0000	6.2959 TO 6.7394

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Variable CON Communication
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.0322 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.61

* No two groups are significantly different at the .050 level

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Variable AC Accountability
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	14.3574	3.5893	.8583	.4953
Within Groups	165	696.5191	4.2213		
Total	169	710.8765			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	52	7.3077	2.0726	.2874	3.0000	11.0000	6.7307 TO 7.8847
6-10 yea	49	6.7755	2.1259	.3036	3.0000	12.0000	6.1654 TO 7.3856
11-15 ye	34	6.6471	2.0283	.3479	3.0000	11.0000	5.9393 TO 7.3548
16-20 ye	22	6.9455	1.9935	.4250	3.0000	11.0000	5.6616 TO 7.4293
Over 21	13	6.8462	1.8640	.5170	5.0000	10.0000	5.7198 TO 7.9725
Total	170	6.8882	2.0369	.1573	3.0000	12.0000	6.5777 TO 7.1988

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Variable AC Accountability
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4528 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.41

* No two groups are significantly different at the .050 level

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Variable TOTAL
By Variable HOWLONG For how long have you worked at MSDE?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	4	755.6300	188.9075	.6343	.6390
Within Groups	115	34249.3617	297.8205		
Total	119	35004.9917			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
0-5 year	36	76.8056	17.2938	2.8823	34.0000	106.0000	70.9362 TO 82.6569
6-10 yea	36	74.1944	17.5089	2.9181	33.0000	127.0000	68.2703 TO 80.1186
11-15 ye	26	70.6923	16.8209	3.2988	33.0000	110.0000	63.8982 TO 77.4864
16-20 ye	11	72.0909	20.4864	6.1769	40.0000	106.0000	58.3280 TO 85.8538
Over 21	11	70.1818	13.3478	4.0245	45.0000	96.0000	61.2146 TO 79.1490
Total	120	73.6583	17.1511	1.5657	33.0000	127.0000	70.5581 TO 76.7585

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Variable TOTAL
By Variable HOWLONG For how long have you worked at MSDE?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 12.2029 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 4.43

* No two groups are significantly different at the .050 level

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Variable CO Customer Orientation
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	59.2589	8.4644	2.6392	.0137
Within Groups	138	442.3847	3.2071		
Total	145	501.6336			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	7.6500	2.1588	.4827	3.0000	12.0000	6.6396 TO 8.6604
B	47	7.9149	2.0198	.2946	3.0000	12.0000	7.3219 TO 8.5079
C	15	6.3333	1.7182	.4437	3.0000	9.0000	5.3818 TO 7.2849
E	11	8.4545	1.0357	.3123	7.0000	10.0000	7.7587 TO 9.1504
G	17	7.4706	1.8411	.4465	5.0000	11.0000	6.5240 TO 8.4172
I	11	8.7273	1.4286	.4283	6.0000	11.0000	7.7729 TO 9.6817
J	12	8.6667	1.0731	.3098	7.0000	10.0000	7.9849 TO 9.3485
Special	13	7.5385	1.9044	.4178	5.0000	10.0000	6.6282 TO 8.4488
Total	146	7.7945	1.8004	.1540	3.0000	12.0000	7.4902 TO 8.0988

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Variable CO Customer Orientation
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.7643 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.39

* No two groups are significantly different at the .050 level

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Variable PA Participation
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	81.6490	11.5784	3.2965	.0028
Within Groups	141	495.2329	3.5123		
Total	148	576.2819			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	6.1000	1.8610	.4161	3.0000	9.0000	5.2290 TO 6.9710
B	51	5.7843	2.0524	.2874	3.0000	10.0000	5.2071 TO 6.3616
C	15	5.0667	1.8310	.4727	3.0000	9.0000	4.0527 TO 6.0806
E	12	6.6667	1.7233	.4975	4.0000	9.0000	5.5717 TO 7.7616
G	17	5.8235	1.9441	.4715	3.0000	9.0000	4.8240 TO 6.8231
I	11	8.0909	1.3003	.3921	6.0000	10.0000	7.2173 TO 8.9645
J	11	7.0909	1.7003	.5126	5.0000	10.0000	5.9487 TO 8.2332
Special	12	5.9167	1.7299	.4994	4.0000	10.0000	4.8176 TO 7.0158
Total	149	6.1074	1.9733	.1617	3.0000	10.0000	5.7879 TO 6.4268

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Variable PA Participation
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3252 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 3.39

(*) Indicates significant differences which are shown in the lower triangle

		S p e c i a l	C	B	G	I	A	E	J
Mean	DEPT								
5.0667	C								
5.7843	B								
5.8235	G								
5.9167	Special								
6.1000	A								
6.6667	E								
7.0909	J								
8.0909	I	*							

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Variable DT Development/Training
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	74.1006	10.5858	3.5230	.0016
Within Groups	137	411.6511	3.0048		
Total	144	485.7517			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	6.5500	2.2355	.4999	3.0000	11.0000	5.5038 TO 7.5962
B	47	6.1915	1.7771	.2592	3.2000	9.0000	5.6697 TO 6.7133
C	15	5.3333	1.8772	.4847	3.0000	9.0000	4.2938 TO 6.3729
E	12	7.4167	.9962	.2876	6.0000	9.0000	6.7837 TO 8.0496
G	17	6.0588	1.5195	.3685	4.0000	9.0000	5.2776 TO 6.8401
I	10	7.4000	1.4298	.4522	5.0000	9.0000	6.3772 TO 8.4228
J	12	7.9167	1.6214	.4680	5.0000	10.0000	6.8865 TO 8.9468
Special	12	5.9167	1.5643	.4516	3.0000	9.0000	4.9220 TO 6.9106
Total	145	6.4414	1.8366	.1525	3.0000	11.0000	6.1399 TO 6.7429

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Variable DT Development/Training
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.2257 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.29

(*) Indicates significant differences which are shown in the lower triangle

Mean	DEPT	S p e c i a l	C	I	G	B	A	I	E	J
5.3333	C									
5.9167	Special									
6.0588	G									
6.1915	B									
6.5500	A									
7.4000	I									
7.4167	E									
7.9167	J	*								

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Variable MO Motivation
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	48.6098	6.9443	2.0028	.0590
Within Groups	137	475.0177	3.4673		
Total	144	523.6276			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	21	6.8095	1.8606	.4060	3.0000	11.0000	5.9626 TO 7.6565
B	49	6.3061	2.1526	.3075	3.0000	10.0000	5.6878 TO 6.9244
C	14	5.6429	1.7805	.4759	3.0000	8.0000	4.6148 TO 6.6709
E	11	7.1818	1.6624	.5012	5.0000	10.0000	6.0650 TO 8.2986
G	16	6.0625	1.6112	.4028	3.0000	9.0000	5.2040 TO 6.9210
I	10	8.0000	1.5333	.4216	6.0000	10.0000	7.0462 TO 8.9538
J	12	7.0833	1.6765	.4840	5.0000	11.0000	6.0181 TO 8.1485
Special	12	6.6667	1.6143	.4660	3.0000	9.0000	5.6410 TO 7.6924
Total	145	6.5655	1.9069	.1584	3.0000	11.0000	6.2525 TO 6.8785

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Variable MO Motivation
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3167 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.39

* No two groups are significantly different at the .050 level

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Variable PS Products/Services
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	39.6378	5.6625	1.3946	.2305
Within Groups	124	518.3319	4.1801		
Total	131	557.9697			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	17	6.5294	1.9078	.4627	3.0000	9.0000	5.5485 TO 7.5103
B	46	7.0870	2.4205	.3569	3.0000	12.0000	6.3681 TO 7.8058
C	15	6.0667	2.0862	.5387	3.0000	9.0000	4.9113 TO 7.2220
E	9	8.0000	1.3229	.4410	6.0000	10.0000	6.9831 TO 9.0169
G	15	6.8000	1.9346	.4995	4.0000	9.0000	5.7286 TO 7.8714
I	9	8.1111	1.0541	.3514	6.0000	9.0000	7.3009 TO 8.9214
J	9	7.4444	1.9437	.6479	4.0000	9.0000	5.9504 TO 8.9385
Special	12	7.0000	1.6514	.4767	5.0000	11.0000	5.9507 TO 8.0493
Total	132	7.0152	2.0638	.1796	3.0000	12.0000	6.6598 TO 7.3705

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Variable PS Products/Services
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.4457 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.40

- No two groups are significantly different at the .050 level

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Variable PP Processes/Procedures
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	54.8649	7.8378	2.1759	.0405
Within Groups	128	461.0689	3.6021		
Total	135	515.9338			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	19	6.2632	1.4848	.3406	3.0000	9.0000	5.5475 TO 6.9788
B	48	6.8958	2.1162	.3054	2.0000	12.0000	6.2814 TO 7.5103
C	14	5.5000	1.8292	.4889	3.0000	9.0000	4.4438 TO 6.5562
E	10	7.0000	1.6997	.5375	4.0000	10.0000	5.7841 TO 8.2159
G	15	6.9333	1.6676	.4306	3.0000	10.0000	6.0098 TO 7.8568
I	9	8.4444	1.2360	.4120	6.0000	10.0000	7.4943 TO 9.3945
J	9	7.0000	2.0000	.6667	4.0000	9.0000	5.4627 TO 8.5373
Special	12	6.7500	2.3012	.6643	3.0000	11.0000	5.2879 TO 8.2121
Total	136	6.7721	1.9569	.1676	3.0000	12.0000	6.4403 TO 7.1036

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Variable PP Processes/Procedures
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3420 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 3.40

* No two groups are significantly different at the .050 level

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Variable IN Information
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	28.3067	4.0438	1.3234	.2439
Within Groups	135	412.5185	3.0557		
Total	142	440.8252			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	6.2500	1.6504	.3690	3.0000	9.0000	5.4776 TO 7.0224
B	47	6.3830	2.0276	.2958	3.0000	11.0000	5.7877 TO 6.9783
C	14	5.7143	1.8983	.5074	3.0000	9.0000	4.6181 TO 6.8105
E	12	6.6667	1.3027	.3761	5.0000	9.0000	5.8390 TO 7.4943
G	17	6.5294	1.4194	.3443	4.0000	9.0000	5.7996 TO 7.2592
I	10	7.0000	1.3984	.4422	5.0000	9.0000	6.7996 TO 8.0004
J	11	6.1818	1.8340	.5530	3.0000	9.0000	4.9497 TO 7.4139
Special	12	6.3333	1.4355	.4144	5.0000	10.0000	5.4213 TO 7.2454
Total	143	6.4196	1.7619	.1473	3.0000	11.0000	6.1283 TO 6.7108

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Variable IN Information
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.2361 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.39

- No two groups are significantly different at the .050 level

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Variable SU Supplies
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	39.1187	5.5872	1.5132	.1689
Within Groups	122	450.4506	3.6923		
Total	129	489.5692			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	17	6.2941	1.8630	.4518	3.0000	9.0000	5.3363 TO 7.2520
B	46	6.4130	2.1455	.3163	3.0000	11.0000	5.7759 TO 7.0502
C	14	5.3571	1.0232	.4873	3.0000	9.0000	4.3044 TO 6.4098
E	8	7.0000	1.0516	.6547	5.0000	11.0000	5.4520 TO 8.5480
G	14	6.2143	1.8884	.5047	3.0000	9.0000	5.1240 TO 7.3046
I	9	7.8889	1.0541	.3514	6.0000	9.0000	7.0786 TO 8.6991
J	10	6.4000	1.8974	.6000	4.0000	9.0000	5.0427 TO 7.7573
Special	12	6.5833	1.7299	.4994	4.0000	10.0000	5.4842 TO 7.6824
Total	130	6.4154	1.9481	.1709	3.0000	11.0000	6.0773 TO 6.7534

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Variable SU Supplies
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
  MEAN(J)-MEAN(I) >= 1.3587 * RANGE * SQRT(1/N(I) + 1/N(J))
  with the following value(s) for RANGE: 5.48

* No two groups are significantly different at the .050 level

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Variable CU Culture
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	55.7028	7.9575	4.5263	.0001
Within Groups	138	242.0780	1.7542		
Total	145	297.7808			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	7.7000	1.1286	.2524	6.0000	10.0000	7.1718 TO 8.2282
B	10	6.8000	1.5119	.2138	3.0000	9.0000	6.3703 TO 7.2297
C	14	5.7143	1.7289	.4621	3.0000	8.0000	4.7161 TO 6.7125
E	12	7.4167	1.0836	.3128	6.0000	9.0000	6.7282 TO 8.1052
G	16	7.0625	1.0626	.2657	5.0000	8.0000	6.4963 TO 7.6287
I	10	6.0000	1.1547	.3651	6.0000	10.0000	7.1740 TO 8.8260
J	12	7.5833	.9962	.2876	6.0000	10.0000	6.9504 TO 8.2163
Special	12	7.7500	1.1382	.3286	6.0000	9.0000	7.0268 TO 8.4732
Total	146	7.1233	1.4331	.1186	3.0000	10.0000	6.8889 TO 7.3577

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Variable CU Culture
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= .9365 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.39

(*) Indicates significant differences which are shown in the lower triangle

		S						
		P						
		e						
		c						
		i						
		a						
		C	B	G	E	J	A	I
Mean	DEPT							
5.7143	C							
6.8000	B							
7.0625	G							
7.4167	E							
7.5833	J							
7.7000	A	*						
7.7500	Special	*						
8.0000	I	*						

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Variable PL Planning
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	62.5798	8.9400	1.8911	.0765
Within Groups	123	581.4660	4.7274		
Total	130	644.0458			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	19	6.2632	1.5379	.3574	3.0000	9.0000	5.5123 TO 7.0140
B	44	6.8636	2.4927	.3758	3.0000	12.0000	6.1058 TO 7.6215
C	15	5.6000	2.0284	.5237	3.0000	9.0000	4.4767 TO 6.7233
E	10	6.9000	2.3310	.7371	3.0000	11.0000	5.2325 TO 8.5675
G	16	7.5000	1.9322	.4830	3.0000	11.0000	6.4704 TO 8.5296
I	8	8.5000	1.3093	.4629	6.0000	10.0000	7.4054 TO 9.5946
J	9	7.3333	2.5000	.8333	3.0000	11.0000	5.4117 TO 9.2550
Special	10	7.3000	2.2632	.7157	3.0000	11.0000	5.6810 TO 8.9190
Total	131	6.8779	2.2258	.1945	3.0000	12.0000	6.4931 TO 7.2626

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Variable PL Planning
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.5374 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.48

* No two groups are significantly different at the .050 level

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Variable CON Communication
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	16.4518	2.3503	1.1105	.3600
Within Groups	138	292.0687	2.1164		
Total	145	308.5205			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	7.0500	.8870	.1983	6.0000	9.0000	6.6349 TO 7.4651
B	50	6.4400	1.6557	.2341	3.0000	9.0000	5.9695 TO 6.9105
C	13	6.2308	1.4806	.4107	3.0000	8.0000	5.3360 TO 7.1255
E	12	6.5833	1.0836	.3128	5.0000	9.0000	5.8948 TO 7.2718
G	16	6.9000	1.7127	.4282	3.0000	10.0000	5.9874 TO 7.4126
I	10	7.2000	1.6193	.5121	5.0000	10.0000	6.0416 TO 8.3584
J	12	7.1667	.7177	.2072	6.0000	8.0000	6.7106 TO 7.6227
Special	13	6.2308	1.5892	.4408	3.0000	8.0000	5.2704 TO 7.1911
Total	146	6.6164	1.4587	.1207	3.0000	10.0000	6.3778 TO 6.8550

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Variable CON Communication
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.0267 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 3.39

- No two groups are significantly different at the .050 level

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Variable AC Accountability
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	82.1396	11.7342	3.0572	.0051
Within Groups	137	525.8328	3.8382		
Total	144	607.9724			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	20	6.5100	2.2335	.4999	3.0000	10.0000	5.5038 TO 7.5962
B	47	6.7234	2.1336	.3112	3.0000	11.0000	6.0970 TO 7.3499
C	15	5.8000	1.8974	.4899	3.0000	9.0000	4.7493 TO 6.8507
E	12	7.9167	1.4434	.4167	6.0000	11.0000	6.9996 TO 8.8337
G	16	6.9375	2.2648	.5662	3.0000	11.0000	5.7307 TO 8.1443
I	10	9.0000	1.1547	.3651	8.0000	12.0000	8.1740 TO 9.8260
J	12	7.4167	1.5050	.4345	6.0000	11.0000	6.4604 TO 8.3729
Special	13	7.2308	1.6909	.4690	5.0000	11.0000	6.2090 TO 8.2525
Total	145	6.9862	2.0348	.1706	3.0000	12.0000	6.6489 TO 7.3235

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Variable AC Accountability
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 1.3853 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.39

(*) Indicates significant differences which are shown in the lower triangle

		C	A	B	G	I	J	E	I
Mean	DEPT								Special
5.8000	C								
6.5100	A								
6.7234	B								
6.9375	G								
7.2308	Special								
7.4167	J								
7.9167	E								
9.0000	I	*							

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Variable TOTAL
By Variable DEPT In what department do you work?

Analysis of Variance

Source	D.F.	Sum of Squares	Mean Squares	F Ratio	F Prob.
Between Groups	7	4673.4806	667.6401	2.5362	.0195
Within Groups	95	25008.5000	263.2474		
Total	102	29681.9806			

Group	Count	Mean	Standard Deviation	Standard Error	Minimum	Maximum	95 Pct Conf Int for Mean
A	16	71.0714	17.3802	4.6451	42.0000	103.0000	61.0364 TO 81.1065
B	35	73.7714	18.3369	3.0995	33.0000	110.0000	67.4725 TO 80.0704
C	12	61.4333	18.6431	5.4395	33.0000	96.0000	49.8610 TO 73.0056
E	6	82.1667	7.9834	3.2600	73.0000	95.0000	73.7866 TO 90.5467
G	10	72.5000	14.1990	4.4901	57.0000	98.0000	62.3427 TO 82.6573
I	8	89.7500	8.1196	2.8707	74.0000	101.0000	82.9618 TO 96.5382
J	8	80.5000	14.2528	5.0391	60.0000	106.0000	68.5844 TO 92.4156
Special	10	76.1000	13.8520	4.3804	55.0000	106.0000	66.1909 TO 86.0091
Total	103	74.3689	17.0587	1.6808	33.0000	110.0000	71.0350 TO 77.7029

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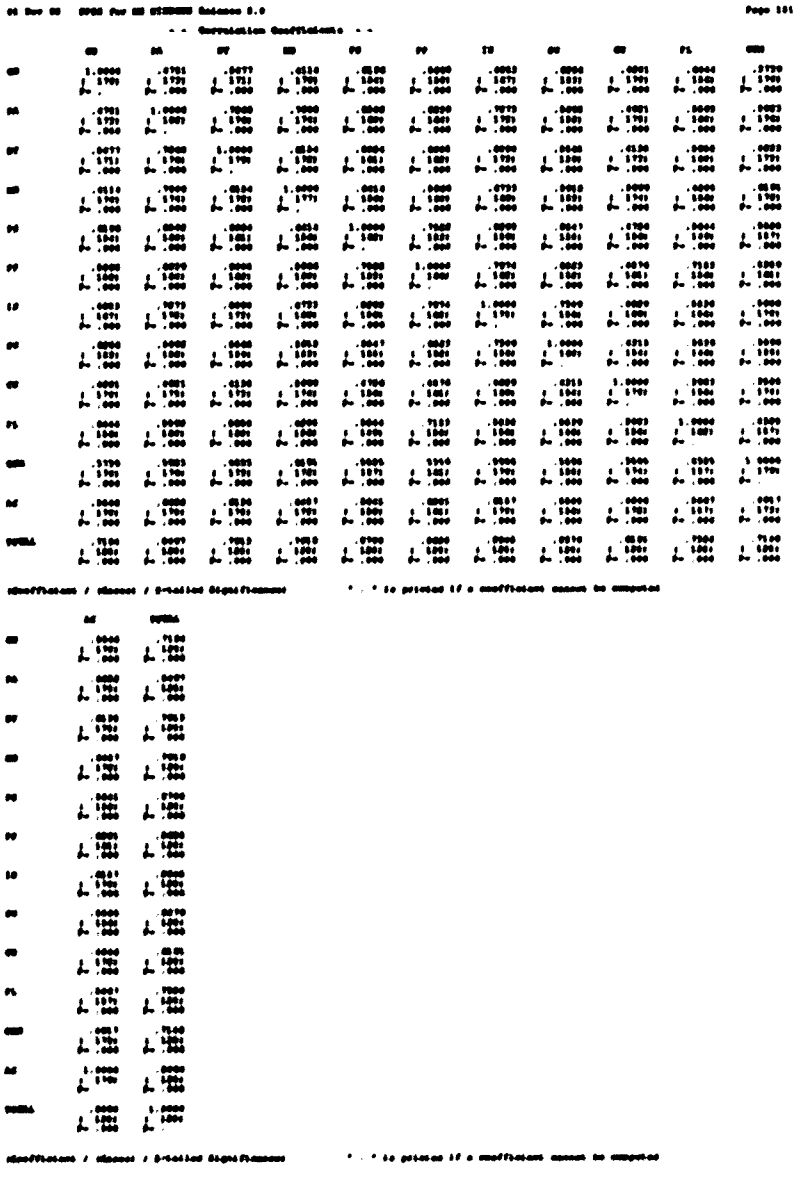
Variable TOTAL
By Variable DEPT In what department do you work?

Multiple Range Tests: Scheffe test with significance level .05

The difference between two means is significant if
MEAN(J)-MEAN(I) >= 11.4727 * RANGE * SQRT(1/N(I) + 1/N(J))
with the following value(s) for RANGE: 5.43

- No two groups are significantly different at the .050 level



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