

1992

Improving the National Quality Award

Charles M. Bish
San Jose State University

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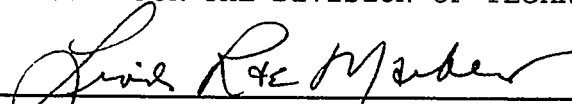
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THE NATIONAL QUALITY AWARD

A Thesis
Presented to
The Faculty of the Division of Technology
San Jose State University

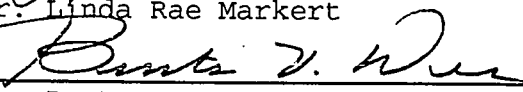
In Partial Fulfillment
of the Requirements for the Degree
Master of Science

by
Charles M. Bish
December, 1992

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Dr. Linda Rae Markert



Dr. Burton V. Dean

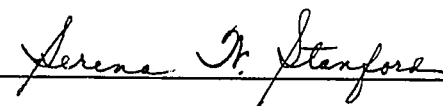


Dr. Ali M. Zargar



Dr. Abdel El-Shaieb

APPROVED FOR THE UNIVERSITY



Abstract

Improving the National Quality Award

by

Charles M. Bish

This study explores possible upgrades to the Malcolm Baldrige National Quality Award. A national survey of companies addressed five research questions: (1) Are companies using the Baldrige criteria for self-assessment and evaluation? (2) Will those companies who are using the criteria apply for the Award? (3) Would more companies apply for the Award if changes were made to the criteria or processes? (4) What specific changes might increase Baldrige participation? (5) Will state quality award programs prove to be a valuable addition to the national TQM movement?

Analysis by industry type, company size, and state quality award program status indicated giving awards to finalists, including independent measures of product and service quality, placing more emphasis on service industries, shortening and simplifying the Application Report, and expanding the Award to include the public and education sectors might increase Baldrige participation.

Acknowledgements

This researcher would like to thank the following for their contributions to this effort:

To Dr. Burton Dean, thesis committee co-chair, for his continued support and guidance during this project.

To Dr. Linda Markert, thesis committee co-chair, for her assistance and Drs. Ali Zargar and Abdel El-Shaieb for their help as members of the committee.

To the people at Torchiana Mastrov and Associates, especially Suzy Steiner, who assisted with access to the "Career Search" database.

And finally, to Lena Bish who provided support, understanding, and love.

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Chapter 1

Problem Definition

Introduction

America's world economic leadership is faltering. The industrial dominance the United States once enjoyed in world markets is being eroded as more countries enter the global market place with quality products and services. Clearly the standard of living that exists for Americans is a result of our country's ability to sell its goods and services. If our individual economic wellbeing is to continue, the United States must have a healthy, vital business community which is able to compete successfully for world consumers.

After WWII, the United States was the only country capable of supplying the large quantities of goods the world needed for economic recovery. The war effort had significantly increased U.S. industrial capacity and American firms turned that increased capacity toward satisfying world needs. Consumer demands reached an all time high after the long period of deprivation. It seemed U.S. industry could do no wrong. Profits came as a result of using mass production techniques. More products meant more profits. It was a

seller's market and products from the U.S. were in great demand.

But with the rebirth of Germany and Japan and their ability to compete in world markets, consumers began to have more choices when making their purchasing decisions. Initially, the products coming from such countries were considered inferior and of poor quality and did not threaten U.S. market dominance. As time progressed, however, the quality of products from countries such as Japan increased and an erosion of U.S. market share in world consumer products began to occur. American businesses began to lose their advantage in the design and introduction of new products. World consumers began to realize that "Made in America" was not necessarily a label that was synonymous with quality. And, with the rest of the world, American consumers became attracted to foreign products because of their quality, technology and lower cost. American industry had lost its competitive edge.

There are those who believe that to regain its competitive edge, the U.S. must do some or all of the following: (a) increase trade barriers, (b) improve government support of research and development in consumer product areas, (c) train and educate its work force, and/or provide government support to small and medium size companies (Petre, 1990). However, U.S. industry believes an emphasis

on quality is required. A 1987 Gallup survey found that 80% of the respondents believed that product and service quality played a very important role in strengthening the ability of U.S. businesses to compete with foreign industry (Ryan, 1987). Further, a Massachusetts Institute of Technology study on U.S. industrial productivity reported that among other imperatives to regain its competitive edge, the main focus of U.S. industry must be on improving production processes and eliminating defects. Continually improving quality was seen as a mandatory competitive response to stem the declining economic power of the United States (Dertouzos, 1990).

If quality is an answer to improving our industrial competitiveness, what then must be done to increase and enhance the adoption of quality principles?

In the early 1980s, it was believed by many U.S. government and industry leaders that the United States needed a national quality award program to encourage improved quality of American products and services. Such an award could provide the renewed focus on practices that result in improved quality. A national quality award program, similar to Japan's Deming Prize could provide the focus and stimulate businesses to adopt the best quality practices. Such an award was created into law, when President Ronald Reagan

signed the Malcolm Baldrige National Quality Improvement Act on August 20, 1987 (DeCarlo & Sterett, 1990).

The architects of the award program felt it would help improve the quality of U.S. goods and productivity in the following ways:

1. It would help stimulate American companies to improve quality and productivity for the pride of recognition.

2. It would provide a means of recognizing the achievements of those companies that improve the quality of their goods and services and provide an example to others.

3. The award process would establish guidelines and criteria that could be used by businesses to evaluate their quality programs.

4. It would provide specific guidance for American enterprises that wish to learn how to manage for high quality by making detailed information available on how winning enterprises were able to change their culture and achieve eminence (DeCarlo & Sterett, 1990).

Since the creation of the Award, there has been considerable analysis to determine the extent to which these original goals are being achieved. Those companies who have won the Award, the army of Baldrige examiners, and those who are responsible for administering the process, namely the American Society for Quality Control (ASQC) and the National Institute of Standards and Technology (NIST) are strong

supporters of the Baldrige Award process. Their analyses indicate that the original purposes of the Award are indeed being met. They point to the number of applications distributed annually as a sign that U.S. companies are using the guidelines and criteria to establish total quality management programs (Crosby & Reimann, 1991). They also suggest that the heightened awareness of U.S. industry on the benefits of quality is due, in part, to the publicity surrounding the Baldrige and the business successes of the winning companies (Petre, 1990). Further, they point to the growing establishment of state quality awards as an indication that the Baldrige values are being accepted and used (Reimann, 1990).

But it is difficult to determine whether it is the Award program itself which is responsible for a renewed national interest on quality or whether other forces are at work. Most analysts of the quality movement in the U.S. would agree the Baldrige has been successful in heightening awareness. What is needed, however, is not just an increased awareness in quality, but an increased adoption of quality practices by American business.

Statement of the Problem

Applications for the Baldrige Award are distributed annually. In 1988, the first year awards were presented,

over 12,000 applications were distributed (Haavand, 1989). In 1989, more than 65,000 application guidelines were distributed (Stratton, 1990a). In 1990, that figure rose to 180,000 and in 1991 to 240,000 (Rothgeib, NIST, telephone conversation, May 6, 1992). The number of application guidelines distributed in 1992 is yet unknown but it is expected to equal or surpass those distributed in 1991. However, the number of companies applying for the Award has not risen as dramatically. The figures in Table 1 below show the total number of applications actually received as they are separated into categories defined in the Award criteria.

Table 1

Total Applications by Category

	1988	1989	1990	1991	1992
Manufacturing	45	23	45	38	31
Service	9	6	18	21	15
Small Business	12	11	34	47	44
Total	66	40	97	106	90

Note. From "Twenty vie for Baldrige Award", October, 1991, On Q, p.3.; Telephone conversation with A. Rothgeib, NIST, May 6, 1992.

The disparity between applications distributed and actual applicants is quite large. It is recognized that many companies may be using the application criteria to establish a total quality program of their own or to evaluate one that already exists and do not currently plan to apply. However, there may be others who are dissuaded from using the Baldrige criteria or applying for the Award because of disagreements with the definition of total quality the criteria imply or with the application process itself.

After the first two years of the Award, there was concern that the number of applicants would increase substantially. The drop to 40 applicants in 1989 was seen as a result of industry's recognition of how difficult it was to win the Award. But with the increasing number of guidelines being distributed and the amount of interest being shown to the winning companies' strategies, plans were made to handle the anticipated flood of applicants (Stratton, 1990a). While the number of applicants did increase to 97 in 1990, no such flood has occurred since the Award's inception. Why?

U.S. industry is the current customer of the Baldrige Award criteria and its processes. Just like potential customers of any enterprise, if the product or service does not meet their expectation or need, they will not buy. It may be that U.S. industry is not buying-in to the Baldrige Award because it does not meet its needs.

There has been conjecture in the literature that customers are dissatisfied with the Baldrige Award and its processes. Notable critics have pointed to areas of the Baldrige which need improvement. Further, states have created their own quality awards using Baldrige Award criteria and processes as a basis, but changes have been made in an attempt to encourage and increase participation. No data exist which support the contentions of the critics or the changes made by state quality awards. What is needed is an objective evaluation from potential customers of the Award to determine whether changes in the Baldrige could increase U.S. industry participation in the process. It has been pointed out that continual improvement applies just as much to the Baldrige itself as to the companies that seek the Award. NIST has received input from hundreds of people in an attempt to improve the Baldrige. Feedback and site visit reports from Baldrige examiners are reviewed each year in an iterative process to upgrade the criteria and processes (Zemke, 1991).

Indeed, changes have been made in the Award criteria in every year since its inception. Most have been aimed at simplification. But the input for these changes has come from those involved in the process (e.g., examiners, companies applying) and has not readily come from what may be a large silent majority of potential customers who have

obtained the application, but have decided for one reason or another not to apply.

Do companies in the U. S. have quality programs in place and, if they do, are they using the Baldrige criteria as a model? Does the number of applications distributed mean that companies are using the Award criteria for self-assessment? Will those companies using the guidelines eventually apply for the Award? Would more companies apply for the Award if changes were made to the criteria or processes? What changes might increase Baldrige participation? Can state quality award programs be a valuable adjunct to the Baldrige? It is answers to these questions from potential customers that this study sought.

Significance of the Study

It is no secret that the United States productivity growth has decreased in relation to its world competitors. Productivity growth, a key indicator of a nation's ability to improve its competitive position against other countries of the world, has been hovering at just below one percent per year while productivity growth in other countries is nearly twice that (Dertouzos, 1990).

The United States' position as world economic leader is clearly being challenged by Japan and Germany and will be further challenged by the European Common Market. For

example, in 1985, Japan became the world's top creditor nation while, for the first time in its history, the United States became a net debtor nation. Whatever the reasons for the decline in U.S. industrial performance, the trends of slowed industrial performance must be reversed. Not to do so will mean an eventual lower standard of living and less opportunity for all Americans (DeCarlo & Sterett, 1990).

American companies are recognizing that focusing on improved quality of products and services increases productivity. Improved quality will lead to greater customer satisfaction and perhaps even a growing market share. And, of course, increased productivity, decreased costs and improved market share mean greater profitability (Fuller, 1985).

But recognition that quality pays and the actual implementation of a total quality management system are two different things.

Everyone loves quality. A poll conducted by Electronic Business, found that when asked "Does your company have a quality program?", 98% responded in the affirmative (Kerr, 1989). Kerr (1989) feels that quality is an "apple-pie" issue and that "quality at least acquired nominal program status in virtually every U.S. electronics firm" (p.270). What was unclear, however, was how much of the response was

lip service and how much was the result of formal company-wide quality improvement practices.

To contend for the Baldrige Award requires much more than lip service to quality principles. Those who have been strong competitors have demonstrated comprehensive quality improvement programs. If serious contention for the Award can be increased, it follows that more U.S. companies would have, by necessity, adopted thorough quality improvement practices.

An underlying goal of the Malcolm Baldrige National Quality Improvement Act is to encourage the adoption and use of quality improvement practices. Many of the participants in the Baldrige Award process believe this objective is being reached. Some progress has been made; however, more can be accomplished. Gaining input from a diverse cross section of industry can assist in the identification of improvements to the Baldrige process. Making those improvements might increase the participation of American companies and help accelerate the attainment of increased quality and productivity in the U.S.

To maintain and improve our world economic position, America's products must be inferior to none. Since individual economic well being is directly tied to the economic well being of U.S. Industry, it would seem, that an increase in use of total quality practices which can be

stimulated by participation in the Baldrige Award process benefits all of American society. It is this researcher's belief that the results of this study point the way toward an increased level of participation in the Baldrige Award application process.

Limitations of the Research

Ideally this research should have gathered data from that cross section of U.S. industry that is familiar with the Baldrige Award, but for one reason or another has decided not to apply. As was mentioned earlier, 240,000 applications were distributed by ASQC and NIST in 1991. Data collected from this population could best identify possible improvements to the Baldrige. Unfortunately, the names of the individuals and companies who requested applications are confidential. Since the Award has existed for almost five years and considerable publicity is given to Award winners, it was assumed that most who received requests for their assistance were able to supply knowledgeable input.

As with many research investigations, the issue of non-responses to survey instruments is troublesome. In this study no action was taken to increase participation beyond that which occurred with the initial mailings of the survey instrument. For example, no follow up letters were sent nor

were telephone calls placed to non-respondents. Time and cost constraints precluded this additional effort.

There was the chance that companies who have already applied for the Balridge Award would be sampled. This researcher believed that these companies might have responded with a bias toward preserving the status quo regarding any proposed changes to the Award criteria or its processes. While more will be said in Chapter 4 about those companies who have applied for the Award, no such bias was noted in their response.

As indicated earlier, a number of states have developed or are in the process of developing their own state quality awards. In doing so, most are using the Baldrige Award criteria and processes as their foundation, but some modifications have been made. This study attempted to identify which, if any, of these modifications could increase participation if carried over to the Baldrige. However, several issues were raised while attempting to determine the value of these state modifications.

Existing state quality awards can vary widely. As an example, a state such as Wyoming has a quality award process which only requires the applicant to indicate why they feel they deserve the award. On the other hand, New York's Excelsior Award encompasses the public, private, and educational sectors in the state using the Baldrige criteria

as a foundation for three separate applications. By requesting companies to comment on the value of state quality awards, the researcher must know which state the respondent has in mind when commenting. This was controlled to some degree by structuring the companies sampled so that comments were gathered from companies in states with known award criteria and processes. However, two assumptions were made at this point.

First, there is a difference of opinion on the exact status of state awards. Houston (1990) reported that Wyoming, Connecticut, Minnesota, Michigan, Iowa, New Jersey, North Carolina, California, Colorado, Illinois, Maryland, Maine, and Washington were cloning quality award competitions of their own. Reimann (1990), Director of the National Quality Award Program at NIST, reported that twenty states were working to develop regional quality programs based on the national program. Knotts and Parrish (1991) identified 30 states with programs to encourage quality or productivity. At the Quest for Excellence IV Conference held in Washington, DC in February 1992, NIST reported that 7 states had awards in place (Malcolm Baldrige National Quality Award Office [MBNQAO], 1992a) and 15 states were working on quality awards (MBNQAO, 1992b). A complication and limitation in the research was that the state quality award status was continuously changing. In structuring a sample so comments

were gathered from companies in states with known quality award criteria and processes, it was assumed the most recent data provided by NIST was accurate. However, there is little information in the literature regarding the details of the seven already existing state quality awards. Therefore, it was necessary to obtain information from state administrators of the awards.

The second assumption made concerns the knowledge of a company sampled relative to its eligibility for a state award. Some companies may be eligible to apply for more than one state quality award. For example, to be eligible to apply in certain states, all that is required of a company is to have a "significant" presence in that state. A large company may have sizeable organizations in a number of states, and hence could have multiple eligibilities. On the other hand, separate staff organizations usually are not eligible. Further, many companies may not be aware of their eligibility, in either a single state or multiple states. When trying to structure a representative sample so that information was gathered from companies knowledgeable about state quality awards, information was requested from the corporate headquarters location. The corporate headquarters, usually a staff organization, may have been located in a state where they are not eligible. The assumption was made, however, that companies sampled were familiar with their

eligibilities. Ideally, where large companies are concerned, responses on state quality awards should have been targeted at specific units of the company within a state with a quality award for which they are eligible. This study was limited in that this level of corporate organizational eligibility was not researched.

Definition of Terms

American Society for Quality Control (ASQC). A professional, not-for-profit association that develops, promotes, and applies quality related information and technology for the private sector, government, and academia. The society serves more than 96,000 individuals and 700 corporate members in the United States and 63 other countries ("Quality Glossary," 1992).

Application Report. The document that is submitted by an applicant for the Baldrige Award which describes the organization's total quality management system.

Baldrige Criteria. The standards which are used to judge an applicant's entry into the Award competition. The criteria contain seven categories in which the applicant is examined. These examination categories contain examination "items." "Items" contain specific "areas" that must be addressed by applicants in an application report. As

discussed in this paper, the examination categories, items, and areas to address comprise the criteria.

Baldrige guideline. Prior to 1992, instructions for applying for the Baldrige Award were contained in a document known as "application guideline." The guideline contained the forms and instructions for applying. It also described the application and review process and contained the criteria upon which the Award is based. In 1992, the Award criteria were placed in one document and the forms, instructions and information on the application, and review process were placed in another.

Baldrige process. As used in this paper, the Baldrige process refers to the rules, restrictions, instructions, methods or procedures involved in applying for the Baldrige Award.

Deming Prize. Award given annually to organizations that, according to the guidelines, have successfully applied company wide quality control based on statistical quality control and will keep up with it in the future. Although the Award is named in honor of W. Edwards Deming, its criteria are not specifically related to Deming's teachings. There are three separate divisions for the Award: the Deming Application Prize, the Deming Prize for Individuals, and the Deming Prize for Overseas Companies. The Award process is overseen by the Deming Prize Committee of the Union of

Japanese Scientists and Engineers in Tokyo ("Quality Glossary," 1992).

National Institute of Standards and Technology (NIST).

An agency reporting to the United States Department of Commerce which is responsible for managing the Malcolm Baldrige National Quality Award.

Total Quality Management (TQM). A term initially coined in 1985 by the Naval Air Systems Command to describe its Japanese-style management approach to quality improvement. Since then, total quality management has taken on many meanings. Simply stated, TQM is a management approach to long-term success through customer satisfaction. TQM is based on participation by all of an organization in improving processes, products, services, and the culture they work in. TQM benefits all organization members and society. The methods for implementing this approach are found in the teachings of such quality leaders as Philip B. Crosby, W. Edwards Deming, Armand V. Feigenbaum, Kaoru Ishikawa, and J. M. Duran ("Quality Glossary," 1992).

Chapter 2

Review of the Literature

The Malcolm Baldrige National Quality Award

The Malcolm Baldrige National Quality Award recognizes outstanding quality improvement and achievement in U.S. industry. It is the highest level of national recognition for quality that a U.S. company can receive. The Secretary of Commerce and the National Institute of Standards and Technology (NIST) are responsible to continually improve and administer the Award process with the cooperation and financial support of the private sector. The American Society for Quality Control (ASQC) assists in administering the Award program under contract to NIST.

Up to two awards may be given each year in each of three categories (six awards total): (a) Manufacturing, (b) Service, and (c) Small Business. A small business is defined by the Baldrige criteria as an independently owned manufacturing or service company with 500 or fewer full-time employees. Fewer than two awards may be given in a category if the high standards of the Award program are not met. The Award consists of a medal in a crystal base. All recipients

may publicize and advertise their Award providing they agree to share information about their successful quality strategies with other American organizations.

Completion of an application for the Award requires a company to complete a description of their quality management system in seven examination categories. These categories include: (a) Leadership, (b) Information and Analysis, (c) Strategic Quality Planning, (d) Human Resource Development and Management, (e) Management of Process Quality, (f) Quality and Operational Results, and (g) Customer Focus and Satisfaction. Collectively they provide a framework around which a total quality management system can be built. Within the seven examination categories are 28 examination items and within these items are 89 areas which must be addressed (MBNQAO, 1992d). The principles embodied in the areas to address and the items in the seven categories are supposed to provide a blueprint of total quality. They do not provide an explicit view or prescription of total quality. Rather a system of concepts or values around which individual total quality systems can be built is implied.

Scoring of the application is by the 28 examination items. Each examination item is scored based upon three evaluation dimensions: (1) approach; (2) deployment; and (3) results. "Approach" refers to the methods or procedures the company uses to achieve the purposes addressed in the

examination items. "Deployment" refers to the extent to which the approaches are applied to all relevant areas addressed by the examination items. And finally, "Results" refers to the outcomes and effects in achieving the purposes addressed in the examination items (MBNQAO, 1992d).

A perfect score is 1000 points. Point values are distributed among the seven examination categories as follows: Leadership (90); Information and Analysis (80); Strategic Quality Planning (60); Human Resource Development and Management (150); Management of Process Quality (140); Quality and Operational Results(180); and Customer Focus and Satisfaction (300). Note that the Customer Focus and Satisfaction category represents 30% of the total points available, a clear indication of the importance that is placed on customer satisfaction by the Award.

The Baldrige Award guidelines are being continually improved. Modifications have been made to the Baldrige Award criteria or process each year since its inception. These changes are the result of input to NIST from concerned individuals and organizations. Examiners, judges, companies who apply, and professional and trade associations are asked for their input throughout the annual process cycle. Between 1988, the first year of the Award, and 1989, changes were made in the scoring of the seven major examination categories and in the relationships among them. The category

definitions were sharpened, the application process was streamlined, the scoring and reporting system was made more reliable, and the site visit review process by examiners was improved; all of this occurred in 1989 (DeCarlo & Sterett, 1990).

In 1990 and 1991, most changes occurred in reducing the items that had to be addressed from 44 to 33 and then to 32. Also the number of areas to address was reduced from 133 to 99, minimizing overlap as much as possible (MBNQAO, 1990 & MBNQAO, 1991).

This year there have been further changes. The number of items was reduced from 32 to 28 and the areas to address were reduced from 99 to 89. Point values were also adjusted among items. In addition, an introduction section was created to enhance the educational value of the criteria (MBNQAO, 1992d).

Application for the Award is a two step process. First, potential applicants must establish their eligibility by submitting an Eligibility Determination Form and a Site Listings and Descriptors Form prior to submitting an application. Eligibility is determined and potential applicants are notified within 14 days of receipt of the Eligibility Determination Form. A non-refundable \$50 eligibility determination fee is required of all potential applicants. Four restrictions apply:

1. A company or its subsidiary is eligible only if the quality practices associated with all major business functions of the applicant are inspectable in the United States or its territories. One or both of the following conditions must also apply (a) more than 50% of the applicant's employees must be located in the U.S. or its territories, or (b) more than 50% of the applicant's physical assets must be located in the U.S. or its territories.

2. At least 50% of a subsidiary's customer base must be free of direct financial and line organizational control by the parent company.

3. Individual units or partial aggregations of units of "chain" organizations (such as hotels, retail stores, banks, or restaurants) are not eligible.

4. Subsidiaries performing any of the business support functions of the company are not eligible.

Second, applicants must prepare an application form and the application report. Applicants must supply 20 copies of the complete package along with application fees. Fees (non-refundable) are \$4000 for organizations applying in the Manufacturing or Service Categories and \$1200 for those applying in the Small Business Category. The application report consists of a four page overview which addresses key business factors that must be considered in the Award evaluation process and the applicant's responses to the 28

examination items in the Award criteria. The application report is limited to 75 pages for Manufacturing and Service Category entrants and 60 pages for Small Business entrants, exclusive of the overview (MBNQAO, 1992c).

The application report is evaluated and scored by members of a Board of Examiners. The Board of Examiners is comprised of approximately 250 quality professionals selected from industry, professional and trade associations, and universities. In the fall of each year, NIST solicits applications from potential Examiners. Examiners are selected by an Examiner Selection Committee consisting of representatives from NIST, the ASQC, and Judges who are appointed by NIST. Those who are selected serve for one year and if they wish to serve in succeeding years, they must reapply. Examiners must attend a training course, usually in March, to gain understanding of the application and scoring system. Within the Board of Examiners are approximately 50 Senior Examiners who are also chosen by the Examiner Selection Committee (Stratton, 1990a).

The scoring and selection process consists of several stages. First the application report is scored by at least four members of the Board of Examiners. At the conclusion of this initial scoring, a Panel of Judges, comprised of past Examiners who are recognized leaders in total quality management practices, determines which applications should be

referred for consensus review. A second stage consensus review of the application report is conducted by at least four members of the Board of Examiners and a Senior Examiner who has served as an Examiner in previous years. After consensus is reached with the help of the Senior Examiner, the Panel of Judges determines which applicants should receive site visits. The number of sites visited is based on the national distribution of scores in each of the filing categories; Manufacturing, Service and Small Business. Only the highest scoring companies are visited by a team of at least five members of the Board of Examiners and a Senior Examiner. The purpose of this visit is to verify information in the application report and to clarify issues and questions raised during the initial scoring and review process. The site visit review team prepares a report for the Panel of Judges. The Panel then reviews the site visit reports to recommend Award recipients. Recommendations are made to NIST who in turn submits the recommendations to the Secretary of Commerce. Typically, the Awards are presented to the winning organizations in November by the President of the United States in Washington, DC. All applicants of each year receive a written feedback which provides an in depth analysis of the company's strengths and areas for improvement (MBNQAO, 1992c).

In 1988 three Awards were given. Motorola, Inc. and the Commercial Nuclear Fuel Division of Westinghouse Electric Corporation received Awards in the Manufacturing category and Globe Metallurgical, Inc. received an Award in the Small Business category.

In 1989, Milliken & Company and Xerox Corporation's Business Products and Systems Division received Awards in the Manufacturing category. No Awards were given in the Service or Small Business categories.

In 1990 four awards were presented. Cadillac Motor Car Division and IBM Rochester won in the Manufacturing category while Federal Express received an Award in the Service category. This was the first year that an Award was presented in the Service category and no other Service category Awards have been presented since then. Wallace Co., Inc. won in 1990 in the Small Business category.

In 1991, Zytec Corporation and Solectron Corporation received Awards in the Manufacturing category while Marlow Industries, Inc. won in the Small Business category.

Strengths of the Baldrige

Provides a Total Quality definition. As mentioned earlier, NIST believes the Baldrige criteria provide a definition of total quality useful for helping a company establish a program of its own or measure its cumulative

progress. Reimann, Director of the Malcolm Baldrige National Quality Award Office at NIST, points to the number of applications distributed as an indication of their utility (Crosby & Reimann, 1991, p. 44). It is Reimann's belief that organizations are now better able to create do-it-yourself quality systems based on the common sense of the Baldrige criteria ("Does the Baldrige," 1992, p. 134).

The concept of creating a universal framework or definition of quality like the Baldrige does for business can be expanded to other areas. For example, Dean (1992) has suggested the creation of a framework and quality criteria for project quality.

Use of the criteria as a definition of total quality, as mentioned earlier, has spread to the States in the form of state quality awards. The acceptance of the values suggested by the criteria is evidenced by the increase in regional quality programs. Reimann (1990) believes that "the values represented by Baldrige are carrying over to federal and local government agencies, trade groups, schools, and health care centers, weaving together a cooperative program between the public and private sector on a scale that may be without precedent" (p. 25).

Indeed, those who have won and those who have been runners-up have indicated their support for the criteria and the lessons they have learned. James E. Sierk, Vice

President of Quality at Xerox, a Baldrige Award winner in 1989, said "The Baldrige application itself is an excellent outline of what a quality program is all about" ("Baldrige benefits," 1991, p. 37). Simply by focusing on the criteria contained in the application, Sierk says, Xerox learned a lot about the quality process.

The Award has given a powerful impetus to total quality improvement in the U.S. Jack Fooks, Vice President of Corporate Productivity and Quality at Westinghouse Electric Corporation, believes that the Baldrige management model of total quality is a condition of survival for the 1990s (Fooks, 1991). According to Fooks (1991) it has had a large impact on Westinghouse employees. Their total quality improvement efforts have gained significant momentum. He urges those companies not currently applying for the Baldrige to give serious consideration to gearing up their organizations to apply for it. Fooks (1991) believes the benefits are substantial whether you win or not.

Cadillac Motor Car Division of General Motors believes that through the process of applying they learned much about their quality program. John Grettenberger, Cadillac's General Manager, indicated after receiving the Award in 1990, "We didn't make the Malcolm Baldrige National Quality Award in our first try, but we made a great showing as a finalist in the competition last year. We learned so much about

ourselves and our quality emphasis, that we were determined to come back stronger than ever this year - and we did" (Stratton, 1990b, p. 19). In writing about the benefits of the Award, E. Michael Shay, a consultant and publisher of the Competitive Concepts Newsletter, said the key is not the winning, but the striving. "Whether you win or even apply for the Malcolm Baldrige Award, the mere pursuit of the criteria will move your company into the future" (1991, p. 2).

This thought is certainly one that Motorola would agree with. After winning the Award, they insisted that each of its 4,000 domestic suppliers, from bankers and accountants to parts makers and hotels, compete for the Award or risk losing their business (Houston, 1990). While many companies believe the criteria should be followed, some think Motorola may have carried the suggested use of the criteria too far.

For winners, losers, and even nonparticipants the Baldrige has become a widely accepted guide to running a successful company. Companies such as Cummins Engine, NEXT, Texas Instruments, and 3M have made the Baldrige criteria their corporate standard (Main, 1990). As Main (1990) reports, many are using the criteria for internal measure.

Perhaps, the best synopsis of the usefulness of the Baldrige as a self-assessment tool is expressed by David Nadler, President of the Delta Consulting Group in New York

City. Mr. Nadler summarizes the Baldrige's self assessment benefits. "The process refocuses companies and makes them look hard at themselves, it gives them a level of understanding of what's good and bad that they never had before. It forces senior executives to focus in detail on what they are doing for quality" (Main, 1990, p. 116).

Improves corporate performance. But, does this focus on quality improvement pay off in financial terms? Analysts seem to disagree as to whether quality is visible in financial terms. While several analysts who follow electronics seem to feel quality throughout the industry has improved, measuring the effectiveness of quality programs in financial terms is open to debate (Rice, 1989).

No so according to Solectron who won the Award in 1991. In presentations made by them since the Award, they have indicated their adoption of Baldrige criteria has contributed significantly to their bottom line.

The cost of poor quality is probably not a well understood concept by most of U.S. industry. While scrap and rework costs are usually easily identified in manufacturing industries, most poor quality costs are unknown and unknowable. If a customer has a bad experience with a product or service and refuses to buy again, the cost of that lost business is usually not identified. It has been

estimated that in U.S. Industry, poor quality costs amount to as much as 20% of a company's sales revenue (Crosby, 1979).

Bob Galvin, Chairman of Motorola, Inc. when they won the Award, believes that if the Baldrige Award became national policy forcing all companies to participate, the gross national product would increase from 2 1/2% to 3% (Rohan, 1989).

Certainly there is no guarantee that use of the Baldrige criteria as a road map for total quality management will pay off on the bottom line. As a matter-of-fact, Motorola saw earning per share drop for the first time in five years in 1990. Further, Federal Express profits were down after they won the Award in 1990, and their shares were worth half of their 1987 and 1988 highs (Main, 1991). As Donald E. Peterson, Chairman of the Board and CEO of Ford Motor Company indicates, "Post Award relaxation poses a real threat to companies in highly competitive markets" ("Does the Baldrige," 1992, p. 141).

Perhaps the best analysis of the impact of formal total quality management practices was performed by the United States General Accounting Office (GAO) in response to a request by Representative, Donald Ritter ("Management practices," 1991). The GAO studied 20 companies that were among the highest scoring applicants for the 1988 and 1989 Malcolm Baldrige National Quality Award. They indicated the

companies that had adopted a formal total quality management system had experienced improved corporate performance. The improved performance could be seen in:

1. Better employee relations--The GAO report indicated employees in the companies reviewed experienced improved job satisfaction. The companies enjoyed improved attendance and lower employee turnover.

2. Improved quality and lower cost--The GAO study found that the companies studied increased reliability and on-time delivery of their product or service and reduced errors, product lead time, and their cost of quality.

3. Greater customer satisfaction--Customer satisfaction data from the 20 companies surveyed indicated product or service complaints were reduced, customer retention rates were increased, and overall customer perception of product or service quality was increased.

4. Improved market share and profitability--The GAO found that by instituting total quality management practices, the companies surveyed saw an overall improvement in financial performance. This improvement was seen in measures of increased market share, increased sales per employee, and as increased return on assets.

Winning provides marketing advantage. Most companies who have won the Baldrige Award would agree that winning has provided them with a marketing advantage. For small company

winners, like Globe Metallurgical, winning means larger companies are more eager to buy from them. Globe saw its business grow 10% in the year after the Award when it would otherwise have sustained a flat period (Leibowitz, 1989). Wallace, a small oil and chemical pipe distributor in Houston, Texas, believes they get respect from CEOs and Presidents instead of having to kowtow to purchasing agents and have lined up more potential customers since winning the Award in 1990 than they did in the previous 40 years (Main, 1991).

But even large companies have seen the marketing advantage provided by winning the Baldrige. Westinghouse, Commercial Nuclear Fuel Division who received the Award in 1988, won a large, flat multiyear contract from a utility that claimed the Award played a part in its decision (Houston, 1990).

It is believed that the Award places U.S. winners in a class with Japan's best in terms of quality. According to Leibowitz (1989), some of the largest electronics companies in the U.S. including IBM, Hewlett-Packard Co., Harris Corp. and Sun Microsystems Inc., view the Baldrige winners as very special companies that deserve their business.

However, George Cohan, President of Q/Mark, a unit of Starmark Co. advertising agency in Chicago, says the Award provides less value to a market leader that is already known

for its high quality and more value for a firm with a weaker market position. Likewise, he feels winning the Baldrige Award is likely to have little impact in a developing industry where technology is still king. Also, Cohan points out that the market advantage of winning the Award may not be as great when the winning firm serves a regional or non industrial market where the Baldrige is not well known (Leibowitz, 1989).

The notion of using the Baldrige Award as only a public relations and marketing tool is shortsighted according to Curt Reimann of NIST (Haavand, 1989). The program is seen as a "catalyst" he says to bring about revolutionary change--not just to the U.S. business community, but to American society as a whole.

When Cadillac won the Award in 1990, they perhaps over used the marketing and public relations value of the Award and were criticized for doing so. In some of their TV and newspaper ads, Cadillac said it was one of the 167,000 companies that "applied for consideration." They were, in fact, one of 97 applicants and the higher figure referred to the number of applications mailed out. Cadillac, of course changed their ads when the error was called to their attention, but other details in the ads--such as a statement that the Commerce Department had praised Cadillac's 4.9 liter

V-8 engine--brought accusations of false advertising from the Texas Attorney General (Main, 1991).

Provides free consulting. Those who apply for the Baldrige Award receive a very inexpensive form of quality consulting. The written feedback report which is provided to all applicants by examiners summarizes the company's strengths and weaknesses. The feedback is an objective view of the applicant's quality practices by a number of quality professionals.

Donald M. Berwick, a doctor with the Harvard Community Health Plan, Brookline, Massachusetts, was one of the nine 1989 Baldrige Award judges. He believes the feedback provided to applicants is one of the biggest quality consulting bargains around (Stratton, 1990a). Said Berwick, "Companies are getting very careful reviews of their quality systems that they couldn't buy from consultants for a price close to the application fee" (p. 30).

Each application is reviewed completely by two examiners in order to prepare comments on how total quality might be improved. Then, 13 core items in the entries are reviewed and scored by as many as six examiners. The remaining items in the entry are split up for examination. Thus, valuable, written feedback is prepared for all applicants whether they become finalists or not (Haavand, 1990). This process is a

valuable training and education tool for those companies trying to improve their quality practices.

Focuses corporate quality effort. Applying for the Baldrige Award has tended to focus companies on a singular quality path. Jack Fooks of Westinghouse believes that a positive result of the Baldrige Award has been to galvanize American CEOs into action. "Many chairmen and presidents today are pointing their companies toward achieving the Baldrige. And they're viewing total quality performance as the critical element for business success in the nineties," said Fooks (1991, p. 3).

John Hudiberg, CEO of Florida Power and Light when they won the Deming Prize in 1989, has a slightly different view of focusing corporate efforts toward winning a quality prize. One of the reasons, for applying for a prize says Hudiberg is that it creates an artificial crisis and puts pressure on a company to advance rapidly (Main, 1990).

Summary. The strengths of the Baldrige, as described in the literature, seem to fall into five areas.

1. It provides a common definition of total quality. The criteria give a value system to the private, public, and educational sectors which can be used as an infrastructure for the development of unique total quality management systems.

2. Using the Baldrige criteria to identify and establish corporate objectives can improve performance. While there is no guarantee that profits increase from adopting the Baldrige criteria, the analysis performed by the GAO indicated that companies adopting total quality practices in accordance with the values and philosophy of the Baldrige, have experienced improved corporate performance.

3. The Baldrige Award provides a marketing advantage to the winning company. The advertising and public relations value of the Award has helped strengthen and improve the market position of the companies who have won.

4. Applying for the Award provides an inexpensive, yet valuable, consulting service for the applying company. The feedback provided by Baldrige examiners is seen as a valuable analysis of the applying company's total quality system.

5. Applying for the Baldrige Award focuses a company's total quality effort. Employees are energized and mobilized by identifying the winning of the Baldrige Award as a corporate goal. It provides a common rallying point against which all corporate activities can be gaged.

There are, however, a number of critics who, while they may agree with some or all of the strengths listed above, believe that the Baldrige has some faults which should be corrected.

Criticism of the Baldrige

A lack of financial measures. As mentioned earlier, winning the Baldrige Award does not necessarily mean a better bottom line. Motorola and Federal Express saw weakened financial performance after winning the Award. The fact that the Baldrige does not directly measure a company's financial performance has been seen by some critics as a major flaw.

Jerry Bowles, publisher of The Quality Executive and co-author of Beyond Quality: How 50 Winning Companies use Continuous Improvement, believes that quality is really measured by satisfied customers who continue to buy a product or service and therefore financial performance of a company cannot be overlooked in a quality award. According to Bowles "Financial performance simply cannot be ignored as a criteria for winning the Baldrige" ("Does the Baldrige," 1992, p. 127).

This view is shared by Phil Pifer, Principal of McKinsey and Company. He points out that if the Baldrige is to inspire the pursuit of quality in the United States, it should not be possible to win on process improvement activities alone, especially if those process improvement activities are not arresting deteriorating quality and slipping market share. Pifer believes more emphasis should be given to a company's results over time and that the Baldrige needs to reinforce that just "doing it" is not

enough if you don't do it right ("Does the Baldrige," 1992, p. 138).

Garvin (1991) believes that faulting the Baldrige because it does not predict a company's financial success is meaningless. He points out that the Baldrige was never designed to do so and that winning is neither a necessary nor sufficient condition for financial success. It is not necessary because there are obviously other ways a company can become financially successful (e.g., a long standing patent, or a one-of-a-kind production process). It is not sufficient since the criteria leave out vital tasks of management such as effective marketing, innovative R&D, and sound financial planning.

A lack of product quality measures. Critics of the Award process have pointed to some companies who have won and complained that winning the Award does not guarantee that the company produces quality products.

Sometimes referred to as the Cadillac argument, critics point to that company and wonder how they could win. They note that Cadillac has only earned average ratings by Consumer Reports for its cars throughout the 1980s and it has never placed a car in the top 20 in the J.D. Power and Associates Initial Quality Survey (Zemke, 1991). Carey, Neff, and Therrien (1991) reported that the research director at the Deming Center for Quality Management at Columbia

University, Peter J. Kolesar, was shocked that Cadillac had won and argues that customer surveys show that the Lexus and Acura are of greater quality.

Crosby has indicated his disappointment in the Award criteria because it does not relate to quality output. His criticism is that companies are being led to believe that if they subscribe to the system described by the Baldrige criteria, their customers will receive quality products and services. "Where these perfect products come from is not clear" he notes, and believes the process should be changed such that product quality is definitely recognized (Crosby & Reimann, 1991, p. 42).

Some critics have argued that the Baldrige examiners seem to take a factory floor approach to quality, forgetting that for most firms, quality is an optimum, not an absolute standard ("Bolder Baldrige," 1991). They point out that those who buy a \$50 gun do not expect it to be as accurate as a \$1,000 rifle. For these critics, the Award would be more praiseworthy if it went to companies which prosper by providing their customers with good value for the money: companies like Levi Strauss in trousers, McDonald's in junk food, and Walt Disney in films and theme parks.

Garvin (1991) argues the Award is not designed to reward product quality and should not be designed to do so. His belief is that the Award is positioned between two extremes--

where it should be. At one extreme lies a narrowly defined award limited to product and service excellence and perhaps traditional quality control. At the other extreme is an all encompassing award that is designed to reward management excellence, not just quality management. Garvin (1991) argues that that positioning between these extremes is the most effective strategy for the Baldrige.

A lack of prescriptive direction. Some critics of the Baldrige have complained because the criteria are not more prescriptive in nature. They believe that the criteria should provide more guidance in how the core values of the Baldrige should be implemented. Clare Crawford-Mason who is a Senior Producer of CCM Productions Inc. and a co-author of the production Quality or Else, a film on America's quality imperative, believes that an effective quality catalyst for transformation of industry should offer both an aim and a method ("Does the Baldrige," 1992). She believes it would be helpful if the Baldrige could not only alert American businesses that problems exist, but also provide ideas on how to solve them.

Crosby appears to believe the criteria are already prescriptive and that they may have "trivialized the quality crusade." He indicates this "do-it-yourself kit" may be recognized as the cause of a permanent decline in product and

service quality management in the U.S. ("Does the Baldrige," 1992, p. 127).

Garvin (1991) notes, in his argument against critics who claim the Baldrige can be "bought" like some "quality kit," that the criteria of the Award allow flexibility. While "the Award criteria are indeed strongly prescriptive on philosophy and values....they are open minded on practices and procedures" (p. 82).

Indeed, the 1992 Malcolm Baldrige National Quality Award criteria state:

The Award criteria are nonprescriptive for two important reasons:

- 1) Organizations, techniques, and technologies vary greatly among businesses, depending on business size, type, and other factors.
- 2) By focusing on requirements, companies are encouraged to develop unique, creative, or adaptive overall approaches to achieving the goals of the criteria (MBNQA, 1992d, p. 7).

A bias against service companies. During the first two years of the Baldrige Award only 15 service companies applied versus 68 large manufacturing organizations. It was reported by Main (1990), although none had won, two service companies rated site visits in each of the first two years:

L. L. Bean and Paul Revere Insurance in 1988 and GTE Telephone Systems Division and USAA Insurance, in 1989. It was generally felt that the criteria of the Baldrige did not fit the service sector well because quality standards were originally developed for manufacturing. For example, statistical process control is widely used in the manufacturing industries, but has found only limited use in service companies. You can measure defects on a integrated circuit chip and determine specific failure rates, but because of its subjectivity, it is difficult to determine the failure rate associated with a "defective" meal in a restaurant or room in a hotel.

In 1990, Federal Express won the Baldrige in the service category; Wallace Co., also a service company, won in the small business category. Since they won, some critics are now beginning to believe the bias against service companies was a fluke and simply a consequence of the initial examiners' greater familiarity with manufacturing quality practices (Zemke, 1991).

The creation of bureaucracy. When the Baldrige Award was created, Department of Commerce officials were determined not to copy the criteria used for Japan's Deming Prize, named after U.S. quality expert, W. Edwards Deming. They believed that too large a burden was placed on prospective applicants. To win, most companies had to install a large quality

bureaucracy, write an application of up to 1,000 words, and spend years working with consultants from the Union of Japanese Scientists and Engineers (JUSE) which administers the prize (Cary, Neff, & Therrien, 1991). The experiences of Florida Power and Light (FPL), winner of the Deming Prize in 1989, exemplify the bureaucracy problem.

Before a Deming Prize application is submitted, a company must first work with consultants from JUSE to assure them that their quality practices are as good as the best in the world. Once the application is accepted, an army of inspectors from Japan descends upon the company to evaluate all activities in detail. At FPL, one of the Company's two executive vice-presidents was assigned full time to run the Deming Prize campaign. He supervised a hierarchy of data gatherers, reviewers, and quality improvement teams. John Hudiberg, Chairman of FPL when they won, claimed that employees worked so much overtime that the company cafeteria was busier on the weekends than it was on weekdays. One thousand employees were prepped to talk to inspectors which meant being able to give a detailed response to questions in a maximum of three minutes. It was reported that the company resembled a giant ant colony with employees carrying mountains of data around in milk crates ("Quality fever," 1991). Even before FPL won the Deming Prize they began recognizing that their quality efforts had become overly

procedure oriented. When James Broadhead became Chairman and CEO of FPL in 1989, he thought the quality efforts were misguided. In a letter to all employees several months later he stated: "in the process of achieving this pervasive quality improvement, we have created an intense institutional emphasis on procedural requirements and processes"

(Unpublished letter to employees, June 19, 1990). Broadhead has since dismantled most of the quality bureaucracy.

While the Baldrige architects did not want the Award to create a bureaucracy like the Deming Prize qualification process, some critics think they may have done so anyway.

Perhaps one of the most outspoken critics regarding Baldrige and bureaucracy is author and lecturer Tom Peters. Peters actually appears to have two issues regarding bureaucracy. First he wonders why the criteria are silent on bureaucracies that might exist in applying companies and contends that three winners of the Award, Cadillac, Motorola, and Xerox "remain abysmally bureaucratic" (Main, 1991, p. 63). Second, he suggests all the record keeping and attention to process that go into winning a Baldrige may actually be creating more bureaucracies. For example, Peters claims that Milliken & Co. was a better organization when it failed to win in 1988 than when it won in 1989 because Milliken was forced to "pollute its quality-management system

with a globule of bureaucratic cholesterol in order to please the judges and win the Award" (Zemke, 1991, p. 34).

Other critics also believe that the pursuit of the Baldrige Award may be creating another layer of corporate bureaucracy.

Author Philip Crosby agrees with Peters' second point on bureaucracy, calling the Baldrige a negative likely to create form filling rather than real quality programs (Main, 1991).

Kate McKeown, President and CEO of McKeown and Company, a consulting firm, also criticizes the bureaucratic nature of the Award. She says, "The danger of the Baldrige Award is that it is yet another manifestation of the urge toward bureaucracy that stifles human creativity" ("Does the Baldrige," 1992, p. 140).

The high cost of applying and winning. Shortly after the winners of the 1989 Baldrige Award were announced, criticism arose that the race for the Award belonged to those companies who could afford to spend the time and effort necessary to fill out the application and defend its claims. ("Race for the rich," 1989). The time and expense of applying may have actually deterred some companies from submitting an application. Reportedly, Eastman Kodak Co. of Rochester, NY, was dissuaded from applying because of the time involved ("Quality awards," 1990). In a sarcastic note, Kinsley (1990) points out that the instructions for filling

out the application are 39 pages and that applying for the Award would, if he were eligible, probably take him most of the year.

The issue of cost also surfaced when Xerox won the Award and was so forthright in detailing the expense of competing. Xerox assigned a team of 20 people to the application process, giving them free reign to draw upon other internal resources as needed. Another 400 to 500 employees were used to document specific areas in the application and it was estimated that out-of-pocket costs were \$800,000 (Zemke, 1991). Corning, who has never won the Baldrige, reportedly spent 7,000 man hours in 1989, preparing an application for their Optical Fiber Manufacturing Division and another 7,000 man-hours in preparing for the site visit by examiners (Houston, 1990).

Houston (1990), labeled the effort spent by Corning as "manic drive." He pointed out that Corning had decided to apply for the 1989 Award just five months before the application deadline in April and that a team of 16 full-time and 120 part-time people produced 1,100 pages of documentation for the 75 page application. To make sure the site visitors did not run into an employee who was unaware of the Baldrige, all of the Division's 1,000 employees were briefed. Back up documentation contained in nine three-ring binders was available for examiners at their hotel, at a

conference room at headquarters where they worked, and at one of the plants they intended to visit. In addition, 30 subject experts were placed on-call to answer any question that was not covered in the documentation.

Some large companies are reluctant to say how much applying for the Award has cost them and claim that only focusing on the costs does a disservice to the Award (Zemke, 1991). When John Akers was asked how much they had spent on the application, he replied, "I don't know how much we spent. It was not, in absolute terms, an insignificant amount. On the other hand, in terms of value received to the IBM Company, it was money extremely well spent" (Stratton, 1991a, p. 18).

There are those who believe the application process is becoming too costly for the small business and thus may be a deterrent to their entry. Gail Cooper, Chairman of the Board, Cooper Consulting Co., Inc. indicated that small businesses are key to economic growth and must be encouraged to strive for quality, but asks which of them can afford to put 14,000 man-hours into preparing an application and readying employees for site visits as Corning did. Cooper points out that small businesses will have a tough time affording the long term investment to effect the quality process much less the application process to win the Baldrige. Also, Cooper is troubled by the distraction that

pursuit of the Award could have for small companies who have limited management staff ("Does the Baldrige," 1992).

Not until 1991, was there a number of winners in the small to medium size companies. Solectron Corp. with about 2,100 employees and Zytec Corp. with about 1,500 employees won in the large manufacturing category while Marlow with less than 500 employees won in the small business category. Department of Commerce's Secretary Robert Mosbacher said "This is the first time that all of the winners, have been in the small to middle-sized category. I was pleased to see that because it emphasizes the point that we have been making that jobs in this country are created by small to middle-sized companies" (Clark, 1991, p. C1). While this author fails to see the logic between these two statements, most observers of the Baldrige process would agree that to spur economic growth through improved quality and productivity, its criteria and processes must effectively draw participation from small and mid-sized companies.

Supporters of the Baldrige are quick to point out that cost in time and effort to apply does not need to be high. When Globe Metallurgical, Inc. won in the small business category in 1989, Kenneth Leach who was then a Globe Vice-President, filled out the entire application over a long weekend using his home computer (Main, 1990). Further, companies like Zytec, spent 767 hours and \$9,000 in expenses

to apply in 1990. In 1991, the year they won, they kept no record of time spent and their out-of-pocket expenses totaled only \$8,300, primarily for a writer to help edit the application (Bemowski, 1991).

Garvin (1991) refers to the notion that the Award requires large expenditures on the application and preparation for site visits as a myth. He argues that implying the Baldrige can be bought with sufficient time and effort on the application and site visits is akin to saying there are set steps and activities that must be described in order to win. In effect, there is a standard "Quality Kit" that must be applied to one's company in order to win. This argument, Garvin points out, reflects a complete misunderstanding of the Baldrige Award. He believes the Baldrige allows flexibility in quality practices and although certain quality tools and procedures have proven track records, their use is not mandatory.

The costs of applying for the Award and preparing for site visits are not the only costs that can be incurred in the Baldrige process. Winners are required to share openly their quality program strategies and insights. Several months after the Award is presented, winners are required to make a single Washington D.C. presentation at the "Quest For Excellence" conference which details their quality efforts. They are also encouraged to further share their expertise

with other interested U.S. companies ("Burden of Baldrige," 1991). But Rohan (1991) reports that some winners are shocked by the "Avalanche of requests for speakers, personal visits, and information they receive" (p. 11).

In the year after Motorola won the Award, Motorola people made 352 speeches to conventions and corporations, answered questions from 1,162 companies, and held monthly five hour briefings for 150 industry executives. In 1990, 600 individual presentations were given (Main, 1990).

Xerox runs from 30 to 40 Corporate Quality Day briefings each year. They also take their show on the road several times a year talking to groups of 350 or so throughout the country (Main, 1990).

The small business winners of the Award have also been deluged with requests. Globe Metallurgical, Inc. for example revealed they received 25 to 50 calls per day after winning. Kenneth Leach who prepared their entry became the company's speech giver delivering 134 speeches on four continents in 1989 (Rohan, 1991). Rohan further reported that Wallace Co. Inc. was also swamped after they won in 1990, receiving as many as 50 calls daily for information on their quality strategies.

The self nomination procedure. Crosby points out that the Baldrige requires self-nomination, unlike the Nobel and Pulitzer Prizes, military medals, or royal honors (Crosby &

Reimann, 1991). As a result, he argues, companies must spend a lot of time and effort in applying and because of this, are not participating in the Award process. As an example, Crosby says that companies wishing to compete in Japan's Deming Prize have established whole departments just to collect data. This process has dulled the Prize's glamour and many companies no longer participate. His belief is that the Baldrige should provide for customer nomination of those companies who have served them well and that those nominated companies could then be asked to provide objective customer satisfaction data.

Other critics disagree on this point regarding customer nomination. Some suggest it would be almost impossible to have customers of a potential applicant get together and submit a nomination. Customers would also be unlikely to have any facts or objective data which could be used to justify a nomination ("More criticism," 1991).

The creation of application focused consulting. Critics of the Baldrige have been quick to point to the number of consultants who have gone into business to help companies apply for the Award. Brown (1991) developed a text that was designed to aid organizations prepare an application. Many of these consultants they say are Baldrige examiners or ex-Baldrige examiners and are using their expertise to help companies "cram" for the Award. Crosby sees this situation

as a dangerous conflict of interest problem and believes that those who evaluate the Award should not be consultants on how to win it ("Does the Baldrige," 1992).

There are a number of seminars, consulting interventions, and benchmarking services that are provided by consultants who use the Baldrige criteria as a road map for improving the quality of goods and services. There does not seem to be an objection to this kind of consulting since there is no consensus on a better road map. Rather the critics are faulting those consultants who are selling a service aimed at how to "pass the exam." This kind of consulting is driven by the American business desire for the quick fix. Businesses are searching for the answers the examiners are looking for without really mastering the subject. They are seeking to find the hidden agendas the examiners might have so they can obtain an edge in the Award competition (Zemke, 1991).

Supposedly, there is no way to beat the system. The kind of consulting service that tries to give a company an edge in the application process should be of little value. Indeed, if insider information is of value and Crosby's concern mentioned earlier is valid ("Does the Baldrige," 1992), the Award itself becomes suspect.

Actually, most of the critics who have decried examiners for taking advantage of their position have had little data

to support their claims. Stratton (1991b), in a study of the Quality Assurance and Quality Control Directory of Quality Progress, believes that while the number of companies offering clients help in filling out the Baldrige forms doubled between 1990 to 1991 increasing from 7 to 14, the number of companies using the Award guidelines as a framework for improving clients quality practices increased eight fold from 3 to 24.

Summary. The Baldrige Award criticisms in the literature fall into two major areas; those that involve Award criteria, and those that concern the Award process. These criticisms are summarized in Table 2.

Table 2

Literature Criticisms of The Baldrige Award

Criticisms	
of Criteria	of Process
1.) Lack of financial measures	1.) The creation of bureaucracy
2.) Lack of product quality measures	2.) The high cost of applying and winning
3.) Lack of prescriptive direction	3.) The self-nomination procedure
4.) A bias against service companies	4.) The creation of application focused consulting

While the literature contains considerable opinion there is little fact. Data to support or refute the criticisms of the Baldrige criteria or process is lacking. It appears, however, when several of the states created their own quality awards, some of the criticisms were addressed, especially those related to process.

State Quality Awards

The National Governors Association (NGA) initiated a public and private sector study to explore existing responses to the diverse pressures affecting the U.S. economy and to recommend state strategies to bring excellence to the American workplace (NGA, 1991). The study made specific recommendations for reshaping existing state economic development and workforce preparation systems with a goal of increasing the productivity of workers and firms. Recommendations were categorized into modernization, technology, financing, and employment support. In the category of modernization, states were specifically encouraged to establish an awards program, similar to the Malcolm Baldrige National Quality Award, "to recognize high performance firms, especially small and medium-sized companies" (NGA, 1991, p. 9). While some states already had award programs in place that recognized various forms of business excellence, the National Governors Association study

provided additional encouragement for the development of quality awards.

The Malcolm Baldrige National Quality Award Office of NIST tracks the development of state quality awards. In January, 1992, they reported seven states with quality awards in place and 15 states who were developing their quality awards. States with quality awards in place include Connecticut, Maine, Massachusetts, Minnesota, New York, North Carolina, and Wyoming (MBNQAQO, 1992a). Those with awards under development include California, Colorado, Delaware, Georgia, Hawaii, Iowa, Illinois, Kentucky, Michigan, Missouri, New Jersey, Pennsylvania, Rhode Island, Tennessee, and Texas (MBNQAQO, 1992b). The following sections discuss the seven states with quality awards in place and will identify departures they have made while using the Baldrige criteria and processes as a framework for their design. Noting these departures may provide insight on possible Baldrige changes.

Connecticut. Connecticut has had a state quality award in place since 1988. This award uses the Baldrige Award material. That is, applicants are asked to submit their entries on the latest version of the Baldrige Award Application forms and Award criteria are used verbatim. Sheila Carmine, Connecticut Quality Award Administrator, explained that there are two major categories in their award,

a manufacturing category and a service category. A maximum of one award can be given to small (1 to 99 employees), medium (100 to 499 employees), and large (500 or more employees) companies in each major category. A maximum of six awards therefore can be given annually (S. Carmine, telephone conversation, May, 1992).

Carmine indicated that to be eligible for the Connecticut Award, the applying company is required to have a profit center in the state. Staff organizations of companies are not eligible alone. Foreign owned companies may apply as long as they maintain a profit center in the state. Application costs are set at 75% of the Baldrige fees.

According to Carmine, in its first year, 1988, Connecticut had seven applicants for their award. Two awards were given, one in the large manufacturing category and one in the large service category. In 1989, four applications were submitted, and two awards were given; one in the large manufacturing category and one in the large service category. In 1990 and 1991, three applications were received each year. An award in the medium manufacturing category was given in 1990, but no awards were given in 1991. No awards have been given to small companies since the Connecticut Quality Award's inception.

No departures were made by Connecticut away from the Baldrige Award criteria. However, regarding process, they

have defined the small, medium, and large sized companies to better suit the demographics of the state and eliminated the use of eligibility determination forms before allowing a company to apply. Eligibility, according to Carmine, is usually determined via a telephone conversation between she and the company.

Maine. The Margaret Chase Smith Maine State Quality Award is administered by the Maine Chamber of Commerce and the Main Science and Technology Commission. The first awards will be given in 1992. One hundred applications were distributed and five were submitted (MBNQAO, 1992a).

Maine's Award is patterned after the Baldrige. There are four categories of awards--large and small manufacturing and large and small service companies. A small company is defined as one with 100 or fewer full-time employees. A maximum of one award may be given out annually in each of the four categories. Like most other states who use the Baldrige criteria, Maine uses the criteria of the previous year (Maine Chamber of Commerce [MCC], 1991).

To be eligible for the Maine Quality Award, a company's quality practices associated with all major business functions must be inspectable in the state of Maine. One or more of the following must apply: a) more than 50% of the applicant's employees must be located in Maine, or b) more than 50% of the applicant's physical assets must be located

in Maine, or c) more than 50% of the total quality management operations which underlie the products and services it delivers must be conducted in Maine. Restrictions regarding subsidiary applications are similar to those in the Baldrige Guideline (MCC, 1991).

The Maine application is limited to 50 pages for large organizations and 35 pages for small organizations. While the size of Maine's application is smaller than that of Baldrige, they still require information to the "area" level of detail (MCC, 1991).

Fee structure for Maine's application process is tiered and based on the fact that there is no separate eligibility determination process like Baldrige. An initial application review fee of \$50 for large companies and \$25 for small companies is charged. The next tier is an advanced evaluation fee of \$100 for large companies and \$50 for small companies. If companies are scored such that they require site visits, an additional \$200 for large companies and \$100 for small companies is charged (MCC, 1991 p.7).

The primary departures from the Baldrige that the Maine State Quality Award has created are in process. Fewer pages are used in Maine's award to document companies' quality practices. Further, the cost of applying for the Maine award is significantly less than applying for the Baldrige.

Massachusetts. The Massachusetts State Quality Award is administered by the Massachusetts Council for Quality Inc., a private non-profit organization. The first awards will be given in 1992 (MBNQAQO, 1992a). While the award is patterned after the Baldrige, an additional category is provided for non-profit organizations. The categories then include manufacturing, service, small business (200 or fewer full-time employees) and non-profit (government, educational, health care, social service, etc.) A maximum of two awards can be given in each category per year making a maximum total of eight awards. Winning companies cannot reapply for five years.

According to Brendon Healey, Director of the Award, the application is limited to a maximum of 35 pages (Healey, Telephone conversation, May 11, 1992). The Armand V. Feigenbaum Massachusetts State Quality Award, its full name, uses the Baldrige criteria as its basis, but because of timing, is one year behind. For example, the Baldrige 1991 criteria are used for determining Massachusetts 1992 Quality Award. Applicants, because of the shortened version of the application, are asked to describe their total quality practices down to the "item" level only.

There is an eligibility determination process which costs the applicant \$50. Eligibility is only restricted to U.S. firms who do business in the State of Massachusetts. If

a company is found eligible to apply and subsequently submits an application, the eligibility determination fee is applied to the cost of application. Application fees are \$1200 for manufacturing and service companies and \$700 for small business and non-profit organizations.

Healey indicated that the response to the award since its creation last year has exceeded expectations. Sixty application bulletins were distributed and 29 applications were actually received by the April 10, 1992 deadline--a response rate of nearly 50%.

Massachusetts has made no significant departures from the Baldrige criteria, but has expanded their use to include non-profit organizations. Most Massachusetts changes have been to shorten and streamline the process of Baldrige. The 35 page application which requires only the item level of detail as compared to Baldrige's 75 page application is a simplification which may encourage more small business participation.

Minnesota. The Minnesota Quality Award is sponsored by the Minnesota Council for Quality. The Minnesota State Quality Award was first presented in 1991.

Minnesota's award criteria are patterned after those in the Baldrige. There are three award categories: manufacturing, service, and small business (less than 200 full time employees). A maximum of two "highest achievement"

awards may be given in each of the three categories. In addition, Minnesota has created a "finalist" award to be given to a limited number of companies who have received site visits (Minnesota Council for Quality [MCQ], 1991).

Minnesota's application report is limited to 35 pages. Like several other state awards, they require an applicant to provide information on their quality practices only to the "item" level of detail. And, also like other states they use the Baldrige Award criteria of the previous year (MCQ, 1991).

Eligibility for the state quality award does not require a company to be headquartered in Minnesota. Rather "a significant number of the employees must be located in Minnesota and a significant portion of the quality management practices which underlies the products and services the applicant delivers must be conducted in Minnesota" (MCQ, 1991, p. 2). Subsidiary requirements are similar to those described in the Baldrige Award.

The fee structure associated with Minnesota's award requires payment of \$50 when the eligibility determination form is submitted, regardless of company size. Further an additional fee of \$1,150 is required for manufacturing and service category applicants and \$650 for small business category applicants (MCQ 1991).

While reviewing Minnesota's departures from the Baldrige Award criteria and process, one is struck by their decision

to provide awards to "finalists." It is probably too early to tell whether this will stimulate participation in the award process. For those companies who may not apply because the probability of success is limited, this additional recognition may encourage more applicants.

New York. The New York State Quality Award is known as the Governor's Excelsior Award. It is administered by the New York State Department of Economic Development and the New York State Department of Labor. The Governor's Excelsior Award is provided to the private, public, and educational sectors. Up to six awards may be given across these three sectors (New York State Department of Economic Development [NYSDED], 1991b).

Each sector is divided into separate categories within which applications can be made. The private sector has large and small (100 or fewer employees) organization categories (NYSDED, 1991b). The public sector has state and local government categories both of which are divided into large and small (less than 500 employees) divisions (NYSDED, 1991c). The educational sector has large and small (less than 500 employees) entity categories (NYSDED, 1991a).

The Baldrige criteria were used as the basis for creating the three sector awards. New York's award, however, has placed greater emphasis on the Baldrige examination categories of "leadership" and "human resource utilization"

and less emphasis on "customer satisfaction". They added "partnering" items to "leadership" and "customer satisfaction" to emphasize the need for labor/management cooperation and employee involvement (NYSDED, 1991b). New York's award criteria for the three sectors are basically the same except that the public and educational sector criteria refer to customers as constituents and products as programs (NYSDED, 1991b, 1991c).

To be eligible for the New York State Private Sector Award, a company or its subsidiary must meet one or both of the following: a) more than 50% of the applicant's employees must be located in the U.S. or its territories, or b) more than 50% of the applicant's physical assets must be located in the U.S. or its territories. Further, a company or its subsidiary is eligible only if a significant portion of the quality practices associated with all major business functions can be inspected in New York state and one or both of the following conditions are met: a) a significant portion of the applicant's employees must be located in New York state, or b) a significant portion of the applicant's physical assets must be located in New York state. Subsidiary eligibility restrictions are similar to those contained in the Baldrige Award (NYSDED, 1991b).

Applications are limited in size to 75 pages for large organizations and 50 pages for small organizations (NYSDED, 1991b).

Fees for the three sectors are the same. There is an eligibility determination fee of \$50 followed by an application submittal fee of \$2000 for large organizations and \$500 for small organizations (NYSDED, 1991b).

While New York has used the Baldrige criteria and process as a base, they have made changes designed to enhance the award's appeal to their customers. The creation of awards for three sectors of their economy is unique to state awards. Haavand (1989) reported that the scope of the Baldrige might one day be broadened to include other areas of American society including schools, health care, and other activities outside the commercial sphere. It cannot yet be determined if this expansion will be successful for New York, but other states are similarly considering awards for the public and educational sectors.

The emphasis that New York's criteria have placed on their leadership and human resources examination categories clearly demonstrates a concern for the importance of a quality workforce, labor/management cooperation, and employee involvement which the Baldrige does not stress. Again, it is too early to tell whether or not these departures are significant. Important is the fact that, of those states

that have used the Baldrige model, New York, in an attempt to better satisfy its customers, has made more significant changes in the process and criteria than any other state.

North Carolina. North Carolina's state quality award is called the North Carolina Quality Leadership Award. It was established in 1990 and is administered by the North Carolina Quality Leadership Awards Council. Awards were presented for the first time in 1991 (North Carolina Quality Leadership Award Council [NCQLAC], 1991).

North Carolina's award is patterned after the Baldrige and uses the same criteria, except that theirs is one year behind any Baldrige changes. There are four award categories: large and small manufacturing, and large and small service. To qualify as a small company, you must meet two of the following three requirements: a) must have not more than 100 full-time employees, b) must have not more than \$5 million in sales, or c) must not have more than \$7.5 million in total assets. A maximum of one "Outstanding Achievement Award" is given in each category. North Carolina also has an "Honor Roll" which identifies those applicants who have adopted prevention-based management approaches and quality systems and have scored well enough on their application to warrant a site visit (NCQLAC, 1991).

There are minor eligibility restrictions in order to apply for the North Carolina Award. Any business

organization located in the state may apply if the quality practices associated with all major business functions of the applicant can be demonstrated in North Carolina (not requiring site visits outside the state). A "business organization" could be a company, subsidiary, business unit, division or like organization. The "business organization" must have a defined quality system, customer base, and products or services to be eligible. North Carolina does not require a majority of business activity, employment, or assets to be within the state (NCQLAC, 1991).

Applications are limited in size to a maximum of 75 pages for large organizations and 50 pages for small organizations. Fees are \$100 payable when the eligibility determination form is submitted and \$2,500 for large organizations and \$750 for small organizations when the full application is submitted (NCQLAC, 1991).

No departures have been made by North Carolina in the use of the Baldrige criteria. Their changes have been in process and they have attempted to encourage participation by broadening the eligibility requirements so as to include a greater number of possible business organization applicants. For example, unlike the Baldrige, they do not restrict the number of subsidiaries of a company that may apply in any year and they do not disallow multiple or chain operations from applying.

Wyoming. Wyoming's state quality award is not a Baldrige copy. The Governor's Quality Award, as it is called, is administered by the Division of Economic and Community Development (DECD) in Wyoming's Department of Commerce. There are no categories and no fees. All that is required is for the applicants to submit a summary of why they deserve the award. Applicants are asked to provide applicable, quantitative, and qualitative information to describe strengths and extraordinary accomplishments specifically related to their company's commitment to quality. No format or length is prescribed (Division of Economic and Community Development [DECD], 1991).

Barbara Stafford, Director of Marketing in the DECD, stated that they were quite pleased with the response to the award. They had 89 Wyoming companies apply for their award in 1991, 87 of which were deemed eligible, from which one winner was chosen (B. Stafford, personal letter, August 8, 1991).

Summary. Based on a review of these state quality awards, what can be said about their departures from the Baldrige criteria and process?

First, the changes to the Baldrige criteria made by states have been minimal. Little seems to have been done by them to address the issues raised in the literature regarding lack of financial measures, lack of product quality measures,

lack of prescriptive direction or bias against service companies. While New York seems to have made the greatest number of changes in their Baldrige-like criteria, those changes have addressed issues which the developers of their award felt needed strengthening, namely the increase in emphasis on leadership and human resource utilization. Wyoming's approach provides no insight as to what Baldrige criteria changes would be valuable.

Second, changes to the Baldrige processes made by states are varied. It appears that to enhance participation, some states, like Minnesota and North Carolina, have created a category of "runner-up" awards to increase the likelihood that an applicant will receive recognition for its quality efforts. Some states (Minnesota, Massachusetts, and Maine) have reduced the maximum number of application pages and eliminated some detail which may address the bureaucracy and cost issues raised in the literature. New York, with its expansion of awards, will gain additional participation from the public and government sectors, but these changes should have no impact on participation by industry. Other states, especially North Carolina, have attempted to increase participation by decreasing eligibility requirements. It is too soon to tell if these varied efforts will be successful in increasing participation. While these efforts may successfully address the bureaucracy and cost issues raised

in the literature, two other issues, namely self-nomination and application focused consulting, are not addressed by any changes in the Baldrige process the states have made. This study addresses these issues as well as the changes made by the states to improve participation in the Award process.

Table 3 provides a summary comparison of the seven state quality awards in seven different areas.

Table 3

State Quality Award Comparison

Comparison Area	State						
	CT	ME	MA	MN	NY	NC	WY
Categories	a	b	c	d	e	b	f
Category Size	g	h	i,j	j	k	l	m
Awards / Category	n	n	o	o,p	q	r	m
Eligibility Requirements	s	t,u	w	v	x,t	t	m
Fee Structure	y	z	aa	ab	ac	ad	ae
Application Size	d	af	ag	ag	ah	ah	ai
MBNQA Comparison	aj	aj	ak	ak	al	aj	m

Notes. The letters in each column refer to the descriptors which follow.

- a.) Small, medium, and large manufacturing; Small, medium, and large service.
- b.) Small and large manufacturing; Small and large service.
- c.) Manufacturing, service, small business, and non-profit.
- d.) Same as MBNQA.

Table 3 - State Quality Award Comparison - Notes continued.

- e.) Three sectors- private, public and education. Private sector- small and large manufacturing and service. Public sector- small and large state, county, and local. Government sector- small and large school district, college, and university.
- f.) No categories.
- g.) Small- less than 100 employees; medium- 100 to 499 employees; large- 500 or more employees.
- h.) Small- less than 100 employees.
- i.) No size limitations apply to non-profit.
- j.) Small- 200 or less employees.
- k.) Private sector- small is 100 or less employees; Public and education sectors- small is 500 or less employees.
- l.) Small - must meet two of the three following criteria: 100 or less employees, \$5.0 million or less in total sales annually, \$7.5 million or less in total assets.
- m.) Not applicable.
- n.) A maximum of one award per category.
- o.) A maximum of two awards per category.
- p.) A limited number of "Finalist" awards may also be given.
- q.) A maximum of two awards per sector.
- r.) A maximum of one "Outstanding Achievement" award. Honor roll for significant improvement in each category.
- s.) Must have profit center in state. Not restricted to U.S. firms. No eligibility determination process required.
- t.) Quality practices of major business functions must be capable of inspection in the state.
- u.) One or more of the following also applies; more than 50% of the employees located within state, more than 50% of assets located within state, more than 50% of the total

Table 3 - State Quality Award Comparison - Notes continued.

quality management practices which underlie the products and services it delivers are conducted inside the state.

v.) Either headquartered within the state or; a significant number of employees must be located within the state and a significant portion of the quality management practices which underlie the products and services it delivers must be conducted within the state.

w.) Must be a U.S. firm doing business in the state.

x.) One or both of the following must apply; more than 50% of the employees located within the U.S. or its territories, or more than 50% of the assets located within the U. S. or its territories. Also, one or both of the following must apply; a significant number of employees must be located within the state, or a significant portion of the assets must be located within the state.

y.) Costs are 75% of the MBNQA fee structure.

z.) Fees are paid in three steps; an application review fee is paid at the time of application submittal (\$50 for large and \$25 for small organizations, an advanced evaluation fee due when the applicant is notified they have attained that level of review (\$100 for large and \$50 for small organizations), and a site evaluation fee due when the applicant is scheduled for a site visit (\$200 for large and \$100 for small organizations). No eligibility determination fee is required.

aa.) Eligibility determination fee is \$50. Application fee is an additional \$1150 for large and \$650 for small business. Application fee for non-profit is an additional \$650.

ab.) Eligibility determination fee is \$50. Application fee is an additional \$1150 for large and \$650 for small business.

ac.) Sector fees are the same. Eligibility determination fee is \$50. Application fees are \$2000 for large and \$500 for small organizations. Site visit fees are actual incurred costs for large organizations and are negotiated for small organizations.

ad.) Eligibility determination fee is \$100. Application fee is an additional \$2400 for large and \$650 for small organizations.

Table 3 - State Quality Award Comparison - Notes continued.

ae.) None.

af.) Large organizations limited to 50 pages, small organizations limited to 35 pages.

ag.) Limited to 35 pages.

ah.) Large organizations limited to 75 pages, small organizations limited to 50 pages.

ai.) Applicant is required to provide a summary of why they deserve the award. No page limit is specified.

aj.) Uses MBNQA Categories, Items, and Areas to Address of previous year.

ak.) Uses MBNQA Categories, and Items of previous year. Application report describes quality practices to the Item level only.

al.) Slight difference from MBNQA. More emphasis on leadership and human resource utilization, less for customer satisfaction. Addition of "Partnering" items in leadership and human resource utilization to emphasize labor/management cooperation and employee involvement.

Chapter 3

Methodology

Research Questions

Chapter 1 raised a number of issues surrounding the Baldrige Award and its use. Those issues were used to develop the following research questions.

1. Are companies using the Baldrige criteria for self-assessment and evaluation?
2. Will those companies who are using the criteria apply for the Award?
3. Would more companies apply for the Award if changes were made to the criteria or process?
4. What specific changes might increase Baldrige participation?
5. Will state quality award programs prove to be a valuable addition to the national TQM movement?

Research Design

Very little information is available which would help answer these questions. There is data from previous quality surveys, but these surveys have concentrated on quality attitudes and awareness (Kerr, 1989; Ryan, 1987).

Knotts and Parrish (1991) studied state award programs, but their surveys were directed at state governments and not at industry. Table 4 indicates the responses obtained from state organizations to five statements related to quality.

Table 4

States' Responses to Statements about Quality

Statement	Responses (number)				
	Strongly Disagree		3	Strongly Agree	
	<u>1</u>	<u>2</u>		<u>4</u>	<u>5</u>
1 Most businesses in your state believe quality is a key factor in improving competitiveness.	0	0	9	19	16
2 Most businesses in your state have implemented quality improvement programs.	1	10	25	7	0
3 Most businesses in your state should put more emphasis on quality improvement programs.	0	0	9	8	26
4 State and local government should encourage businesses to improve their quality programs.	0	1	2	14	27
5 The federal government has the primary responsibility for encouraging businesses to improve their quality programs.	10	13	15	4	2

Note. From "State quality award programs--Summary of findings" by U. S. Knotts and L. G. Parrish, 1991, Georgia Southern University, Bureau of Business Research and Economic Development, p. 2.

Their efforts indicated that state governmental organizations were supportive of creating incentive programs to encourage enhanced quality and productivity, but it was not clear whether an award program for quality would be the answer.

To help answer these research questions, a survey instrument was developed. A trial questionnaire was distributed to about 50 local companies. Based on the initial responses, several modifications were made to make the instrument relate more directly to the research questions. Further, changes were made to enable the researcher to determine which, if any, of the possible criticisms of the Baldrige could be used to point the way toward possible improvements.

In developing the instrument, three major factors were kept in mind. First, the instrument asked for information from companies who fell into either of the Baldrige application's main categories of manufacturing or service. Results could then be analyzed for differences in responses from the manufacturing or service sectors. Second, questionnaire recipients were asked to indicate their number of full-time employees. This approach allowed the analysis of data by small (less than 500 employees), medium (501 to 2500 employees), and large (greater than 2500 employees) size categories. Finally, while the instrument was designed to solicit information from all recipients on the value of state

quality awards in general, one half of the questionnaires were distributed to companies in states with known quality awards in order to gather adequate data from companies who might be familiar with specific state quality awards. The analysis of data from the samples could then be done on company type (manufacturing or service), company size (small, medium or large), and in states with known quality awards and those without.

The survey instrument requested information on whether the company had a formal quality program and if so, how long the program had been in place. Further, the questionnaire was constructed to gather information from the respondents regarding their familiarity with the Baldrige Award and use of the criteria. Companies were asked if they plan to apply for the Award and if not, what constraints they might have.

A list of possible changes to the Baldrige was suggested and the respondents were asked to express their opinions on them by using a five level scale ranging from strongly agree to strongly disagree. The list of possible changes was limited to those that would satisfy some of the criticisms that have already been raised in the literature and to those implied by state efforts.

Opinions about state quality awards were explored by asking the recipients to comment on the value of state awards as an adjunct to the Baldrige.

The survey was distributed with a cover letter explaining the intent of the questionnaire in hopes of raising the return response rate. A postage paid return envelope was also included. Additionally, to further encourage a better return rate, the researcher offered to provide a copy of the compiled results. A copy of the cover letter and the questionnaire appear as Appendix 1.

No information was available to help predetermine the sample size so that statistically valid data could be obtained. Sampling was therefore done in two phases. It was hoped that the data from the first phase would indicate the size necessary for the second phase so that overall statistical inferences would be valid.

Target Population and Sampling Design

The target population of the Baldrige Award is U.S. private industry. This same population was the target of the survey instrument. Obviously it was not possible to sample all U.S. Industry. Cost and time constraints limit such an approach. The objective was to identify a practical method of sampling which would be representative of all U.S. industry and at the same time allow easy segmentation by industry type, company size, and by state quality award status.

The survey instrument was sent to companies randomly selected from a database used primarily for job seekers. This database, known as "Career Search," is considered to contain a representative cross section of U.S. firms. It was developed by Career Finders, Inc. of Needham, MA and is used by employment counselors and career search firms. The database contains a nationwide listing of 180,000 companies in 22 industries with 4,000 different products and services. The largest number of companies in the database are in manufacturing and high technology. Other industries include banking, advertising, hospital, insurance, and retail-wholesale. It was believed that random sampling from this database would result in a sample which contained the same characteristics as one drawn from all U.S. industry.

The "Career Search" database is a combination of information compiled monthly from a variety of publishers who specialize in a unique market segment. Examples include R. L. Polk for banking, Corp Tech for high technology, and the Commerce Register for manufacturing data.

Selections from the database can be made using five parameters:

1. Industry--"Career Search" contains data on 22 industries with 4,000 different products and services.

2. Location--All areas within the United States are included in the database. The country is divided into 12

regions, each comprised of a series of states. Users can select entire regions, states, or preselected metropolitan areas within each state.

3. Specialty--Users can identify companies which use certain generic skills; such as accounting, data processing, or engineering.

4. Profile--Users can select companies within certain size parameters which are standard measures for the specific industry. Most are listed by the number of employees within the company. However, the hospital industry is measured by the number of beds and the insurance industry is measured by total premium value.

5. Contact--"Career Search" contains the names of many of the top executives of companies in the database. The program allows the user to select the President/CEO or other heads of many of the functional areas of a company.

In using the "Career Search" database for this study, selections were made by "industry," "location," "size," and "contact."

Samples were randomly selected from "industry" keeping in mind the manufacturing and service categorization of the Baldrige. One-half of the samples were obtained from manufacturing and one-half were obtained from service.

Samples were also selected by "location." In this way it was possible to select companies in states with known

quality awards. One-half of the samples were randomly selected from those states with quality awards in place and one-half were randomly selected from those states without awards. States with quality awards under development were considered as states without awards.

The "profile" selection parameter was used to select companies in small, medium, or large size categories. Even though the Baldrige Award only differentiates between small (500 or fewer employees) and large companies, it was felt that the additional information on company size would be of value when interpreting questionnaire results. In terms of industries for which "Career Search" uses measures other than the number of employees to determine size, a division was also made into the three categories of small, medium, and large. One-third of the samples were randomly selected from each of the size categories.

In all cases, the "contact" parameter selection was used to identify the President/CEO to receive the questionnaire mailing. While it would have been more appropriate perhaps to send the questionnaire to a particular individual responsible for company quality practices, these individuals were not specifically identified in the data base.

Phase one consisted of distributing a structured random sample of 96 questionnaires to companies across the United States. Forty-eight questionnaires were sent to

manufacturing companies and forty-eight were sent to service companies. Within each of the manufacturing and service samples, one-half (24) were sent to companies in states with quality awards and one-half (24) were sent to companies in states without awards. Within the sets of 24 samples a further division was made so that one-third of the samples (8) were in each of the three size categories; small, medium, and large. Thus a structured or blocked sampling procedure was designed. In all cases, sampling from the various categories or blocks (manufacturing or service; small, medium, or large; and states with quality awards or those without) was randomized. For example, the seven states identified earlier with quality awards were treated as a block and random selections were made within this block while the remaining 43 were treated as a separate block. This avoided any state-to-state biases that could occur if sampling were done by state. Likewise the samples within the other categories or blocks were randomized.

Table 5 depicts the structured design used in this study for both phase one and phase two. Each small block of the table represents a subset of the design. For example, the top far right block labeled "large" represents the sample that was sent to large manufacturing companies in states without quality awards. Note that the table contains 12 such blocks or subsets of the design.

Table 5

Structured Sampling Design

Industry Type	State Quality Award Status					
	With Awards			Without Awards		
Manufacturing	small	medium	large	small	medium	large
Service	small	medium	large	small	medium	large

Based on the return rate from the first phase of sampling (nineteen responses representing about 20% return), a sample size of 912 was selected for phase two. This brought the total study sample size to 1,008 companies. This was larger than originally anticipated and at the upper limit in terms of the researcher's cost and time constraints, but it was deemed necessary to increase the validity of the study. The phase one and phase two sample sizes were chosen so that they were evenly divisible by the twelve subsets of the three study factors of industry type, industry size, and state quality award status.

Statistical Analysis

Close review of the questionnaire in Appendix A shows that although there are eleven enumerated questions,

inclusion of the various sub-parts of these questions raises the number of yes/no and scaled responses to 23.

All yes/no response questions were tabulated and percentages determined. For example, the number of yes responses to Question 1 "Does your company have a formal documented quality program?" was counted and a percentage of yes responses was calculated using the total responses to Question 1 as the divisor. In other words the missing values associated with the questions were not used in the determinations of percentages. This analysis and approach was used on all yes/no questions for all responding companies. Additionally, this same analysis was performed on each of the yes/no questions in terms of the three factors of industry type, company size, and state quality award status. Confidence limits were established for the positive response percentages to further assist in answering the research questions.

Question 7 of the questionnaire contains a series of ten suggested changes to the Baldrige Award. The respondents were asked to express their level of agreement to each of them by marking a five level scale ranging from strongly disagree to strongly agree. After converting the responses to numerical data, means and standard deviations were calculated for all responses to each suggested change. Confidence limits were also determined. As with the yes/no

response questions, the means, standard deviations and confidence limits for each suggested change were also calculated for the three factors of industry type, company size, and state quality award status. Analysis of variance (ANOVA) studies were performed on each of the three factors against the responses for the suggested changes to determine which factors were of significance.

The responses to Question 4, "Are you using the Award criteria for internal assessment or evaluation of your quality efforts?", were used to answer the first of the research questions. Additionally, the affirmative responses to Question 1 of the questionnaire, "Does your company have a formal documented quality program?" were subdivided into those that had quality programs for more than five years and less than five years and cross tabulated with the responses to Question 4. This analysis was performed to test the likelihood of companies changing to the Baldrige criteria definition for TQM once a formal quality program was already in place.

The second research question concerning the intentions of companies to apply for the Award was analyzed using the responses to Question 5 "Has your organization ever applied for the Malcolm Baldrige National Quality Award?", and Question 6 "Are you considering applying for the Award in the future?".

The third and fourth of the research questions concern the likelihood of increasing Award participation. These research questions were answered through analysis of Question 7 and Question 8 of the questionnaire. Question 7 proposed ten changes to either the criteria or processes of the Baldrige. Question 8 asked "If you were not considering applying for the Award in the future, would you be more likely to apply if the preceding changes were made?" The responses to the ten suggested changes in Question 7 were analyzed (via means and standard deviations) for the companies responding in the affirmative to Question 8 to determine which changes might increase participation. Additionally, means and standard deviations for the suggested changes were computed for the three factors of industry type, company size, and state quality award status for those responding in the affirmative to Question 8. Since the suggested changes in the questionnaire were prepared keeping in mind the criticisms made in the literature and state departures from the Baldrige process, this analysis provided insight to their validity as well.

The fifth research question was analyzed using the responses to Question 9 of the questionnaire "Should States have quality award programs of their own?" and Question 10 for those states with quality awards in place. The responses from companies in states with awards who were aware of those

state awards (Question 10 a) were compared with the responses to Question 10 d "Does this quality award suit your needs better than the Baldrige Award?" This analysis was performed to determine if any of the state departures from the Baldrige was encouraging greater participation in the local award. This analysis might further point the way toward changes beneficial to increasing participation in the Baldrige.

Analysis of Threats to Validity

Three areas appear to exist where critics may disagree with the study.

First, the use of the "Career Search" database may have created a source of sampling bias. It certainly was not created to satisfy the sampling needs of this research and may contain biased distributions of certain industries or size of companies. In order to overcome any inherent biases, the samples were taken from the factor blocks randomly. This randomization within blocks, according to the central limit theorem, provides samples with a normal distribution regardless of the underlying distribution. Therefore, the analysis using means and standard deviations appears valid.

Second, some critics may find the return rate of the questionnaires to be of concern when drawing conclusions from the data. Nineteen questionnaires were returned from the first sample of 96 companies in phase one (approximately

20%). One hundred three questionnaires were returned from the 912 companies sampled in phase two (approximately 11%). These returns totaled 122 or about 12% of the total companies sampled.

Nothing was done to follow-up the initial mailings. It was assumed that responses from non responding companies, had they been observed, would have the same characteristics as those from the 122 responding companies. This may not be true. It can be argued that one of the reasons for the large non-response is a U.S. industry disillusionment with the Baldrige Award. Certainly such a disillusionment might exist in companies who had applied for the Award but had not won. Further, it could be argued, with so much national attention on quality, a company would be reluctant to admit they had no quality program or were unfamiliar with the Baldrige. To develop a model which adequately characterizes the non responding companies' reasons for not replying is perhaps an area for additional study. It was sufficient for the purposes of this research, to assume that a 100% response would have produced the same results as the 122 that did reply.

Phase one and phase two survey instruments were identical. While there had been some minor changes made in the questions from the initial distribution of about 50 questionnaires which was performed to test the validity of

the instrument, no changes were made to the questionnaire between phases. Table 6 depicts the number of returned responses for each of the categories of industry type, company size and status of state quality awards.

Table 6
Returned Questionnaires

		Company Size			Total
		Small	Medium	Large	
Industry Type	Mfg.	21	18	22	61
	Svc.	19	16	26	61
	Total	40	34	48	122
State Quality Award Status	With	17	12	24	53
	With out	23	22	24	69
	Total	40	34	48	122

Analysis of these numbers of returns per category indicates they are about what should be expected. Fifty percent of the questionnaires were sent to manufacturing companies and fifty percent were sent to service companies. Therefore, the probability of any return falling into one or the other of these categories is one-half. Likewise, the probability of a return falling into the category of a state with a quality award or one without is one-half. The probability of a return falling into one of the three size

categories is one-third. Using the binomial distribution statistics with the mean $m = np$, and standard deviation $s = \sqrt{npq}$, where n = sample size, p = probability of success and q = probability of failure (in this case p = the probability manufacturing or service; small, medium, or large company; or states with quality awards or states without) indicates that the expected number of manufacturing or service returns is 61. Also, the expected number of returns from states with quality awards and from states without quality awards is 61. The expected return from any of the size categories is 41. The standard deviation for the industry type and quality award status categories is about 4, while the standard deviation for any size category is approximately 5. Comparison of these sample means and standard deviations with Table 6 indicates that the returned questionnaires in each category are within two standard deviations of their expected value (e.g., 61 ± 8 or 41 ± 10). One can argue that even by receiving a total number of returns two or three times greater than actually received, the distribution of the samples and the responses contained in the samples would not be significantly changed. Therefore, the data contained in the returned questionnaires is valid.

To further test the validity of the data received, a regression analysis was performed on the responses to each of the questions using the factors of industry type, company

size, state quality award status and whether the data was from phase one or phase two responses. The regression analysis did point to various factors which appeared to predict the response to several of the questions (to be discussed later), however, in no case was the response phase significant. That is, in no case was the response phase a predictor of the response. This further verifies the assertion that data obtained from a larger response would not change the validity of the study. The data obtained from this sample of 122 is, therefore, valid.

The final criticism to the validity of this study is the same one used whenever a questionnaire process is involved to obtain data--the questionnaire itself as a threat to the validity of the statistics and inferences drawn. Care was taken to avoid any personal biases. The cover letter requesting help in the accumulation of information was screened so as to avoid any negative reaction to the request. In addition, the survey instrument was kept short and as mentioned, a postage paid return envelope was provided. Both of these actions were taken to avoid any negative reaction to the request for completion of the questionnaire.

Chapter 4

Results

Overview

The results contained in this section are generally arranged in the order the questions appeared on the survey instrument (See Appendix A). After the results are presented for the questions in the instrument, an analysis of the results specific to the research questions is presented. All computation of the results was performed using Minitab statistical software, release 8. Response percentages to the yes/no questions are followed by the 95% confidence limits in parentheses. Means of the scaled responses to the suggested changes are also followed by the 95% confidence limits in parentheses.

Survey Instrument Results--Questions 1 - 6

The results for Question 1, "Does your Company have a formal documented quality program?" are depicted in Figures 1, 2, and 3. As with the results for the other questions which follow, the figures show compiled question responses arranged by the factors of industry type, company size and status of state quality award programs. While the figures

present percentages of responses in each category, the numbers at the top of the columns are the frequencies of the response in each category. As with all succeeding figures, it is unlikely that the frequencies will total to the total number of responding companies since some companies chose not to respond to certain questions.

The results indicate that approximately 71% (63%, 79%) of responding companies have a formal documented quality program. Of the manufacturing companies responding, 88% (80%, 97%) reported that they had a program, while only 54% (41%, 67%) of the service companies reported having one in place.

Figure 1
Question 1
"Have Formal Quality Program"
by Industry Type

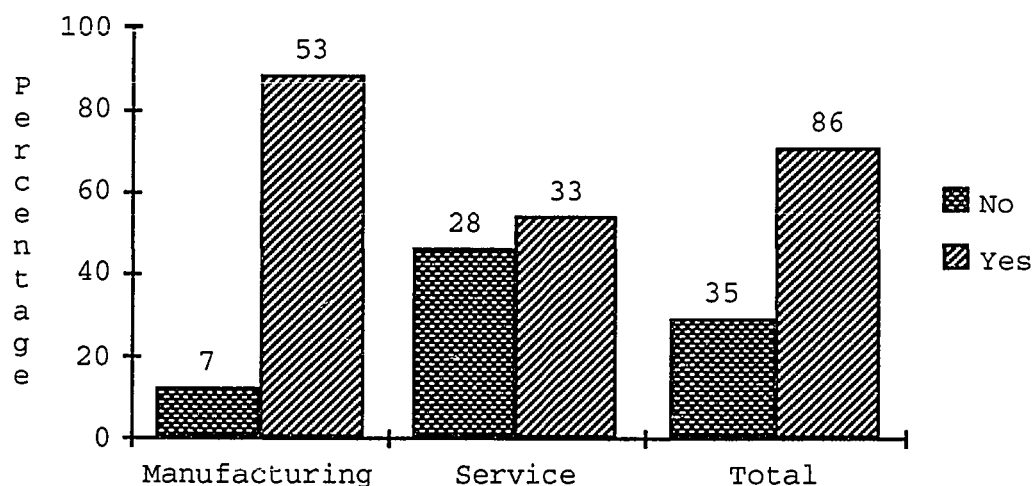


Figure 2
 Question 1
 "Have Formal Quality Program"
 by Company Size

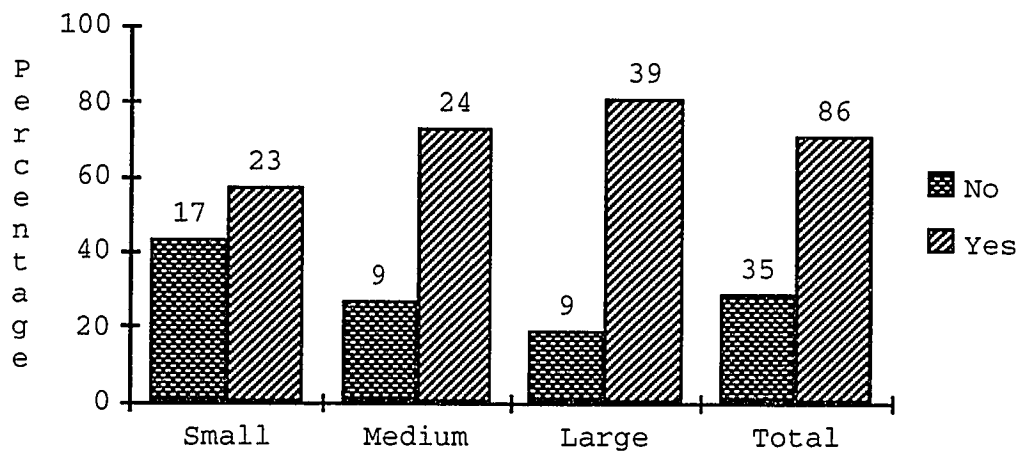
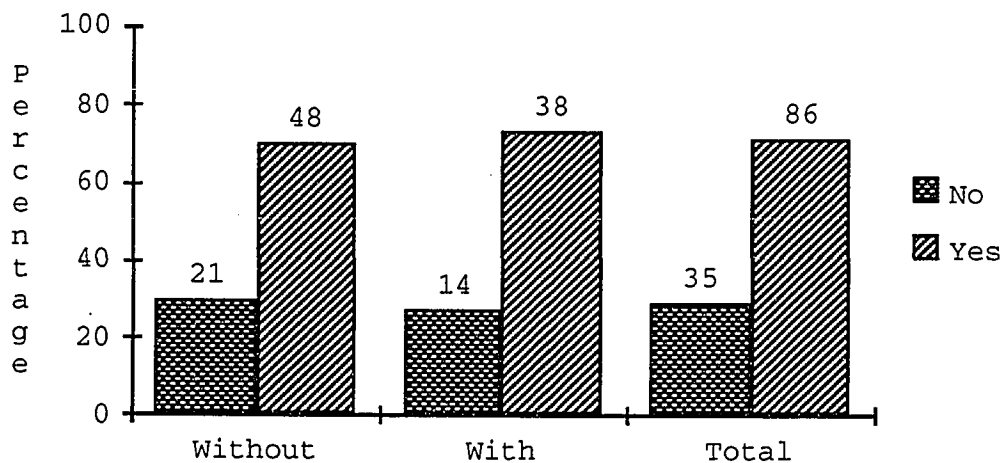


Figure 3
 Question 1
 "Have Formal Quality Program"
 by State Quality Award Status



In terms of company size, 81% (70%, 93%) of the large companies reported having a program while only 58% (42%, 74%) of the small companies responded in the affirmative to the question. Little difference was noted in responses between states without quality awards and those with quality awards in place.

Question 2 of the questionnaire was "Should the United States promote quality through a national quality award program?" The results are depicted in Figures 4, 5, and 6 and indicate that about 88% (82%, 94%) of the companies responded favorably to this question. Note that while manufacturing companies tended to respond slightly more

Figure 4
Question 2
"U.S. Promote Quality with National Award"
by Industry Type

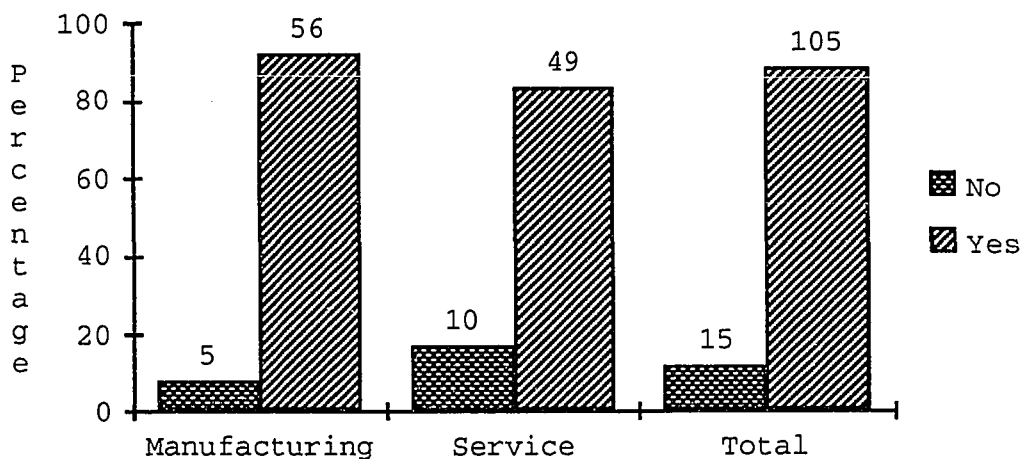


Figure 5
 Question 2
 "U.S. Promote Quality with National Award"
 by Company Size

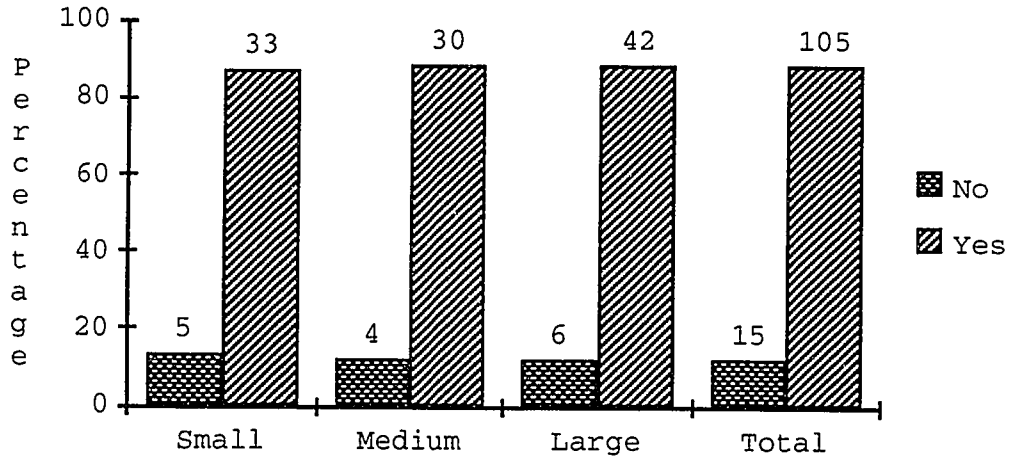
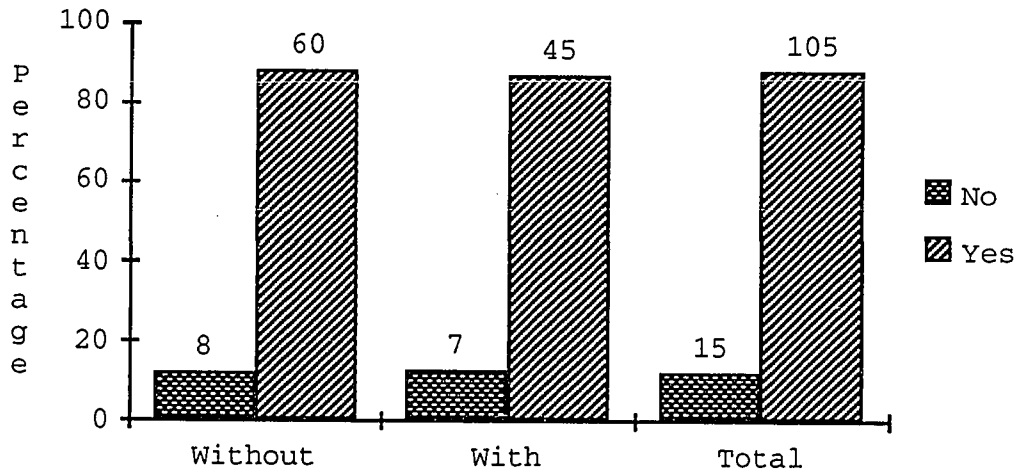


Figure 6
 Question 2
 "U. S. Promote Quality with National Award"
 by State Quality Award Status



favorably to this question than service companies, 92% (85%, 99%) vs. 83% (73%, 93%), there is no significant difference in response to this question based on company size or state quality award status. When asked why they had responded as they did to this question, those companies who answered negatively typically felt that a national quality award program was "too political" and "difficult to equitably judge across diverse regions and industries."

Question 3 was not a yes/no question but rather asked "How familiar are you with the requirements of the Malcolm Baldrige National Quality Award?" The respondents were asked to rate their familiarity using one of three categories, unfamiliar (U), familiar (F) and very familiar (VF). Results are depicted in Figures 7, 8 and 9.

Figure 7
Question 3
"Familiar with MBNQA"
by Industry Type

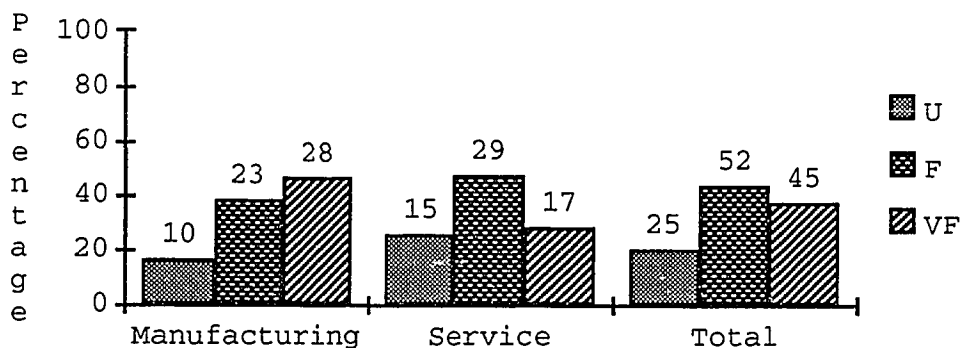


Figure 8
 Question 3
 "Familiar with MBNQA"
 by Company Size

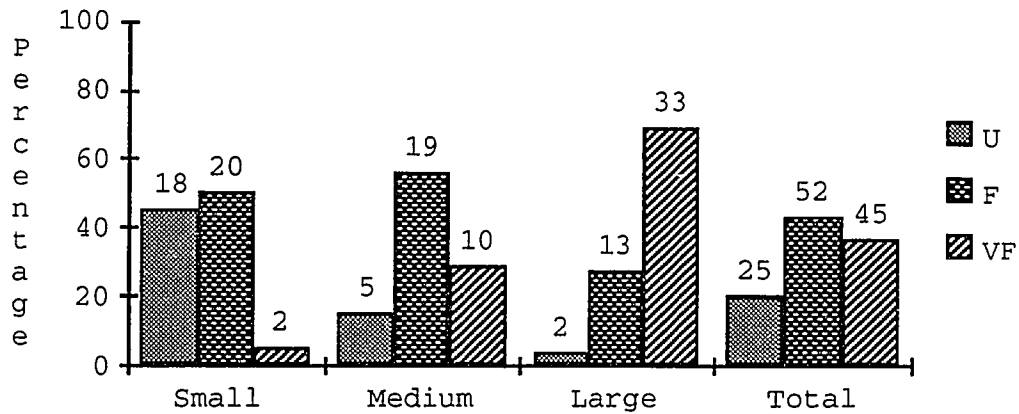
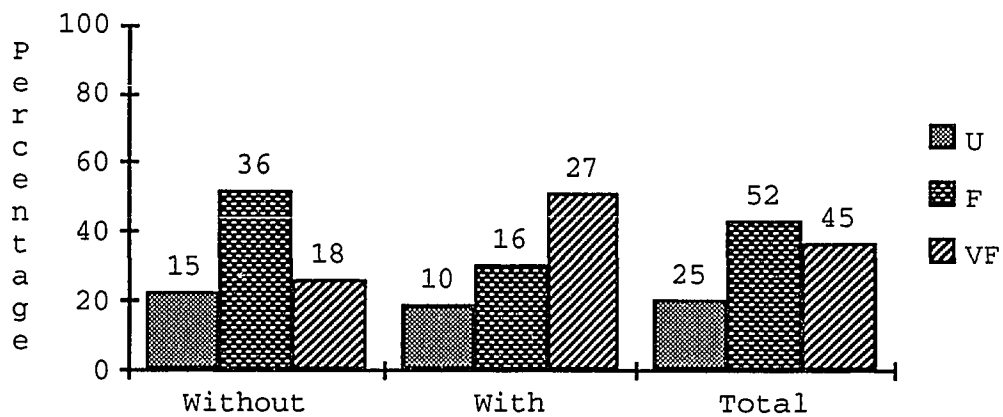


Figure 9
 Question 3
 "Familiar with MBNQA"
 by State Quality Award Status



It is interesting to note that there is very little difference in the percentage of respondents who are unfamiliar with the Award when viewed from an industry type perspective. Sixteen percent of the manufacturing companies responding were unfamiliar with the Award, while 25% of the service companies were similarly unfamiliar. However, when viewed from a company size perspective, only 4% of large companies and 15% of medium companies were unfamiliar with the Award, while 45% of the small companies were unfamiliar with it. As with previous questions, state quality award status seems to make little difference on the percentage of companies reporting unfamiliarity.

Question 4 asked "Are you using the Award criteria for internal assessment or evaluation of your quality efforts?" Results to this question appear in Figures 10, 11, and 12 and indicate that approximately 53% (42%, 63%) of those who responded to this question did so in the affirmative. It appears as if industry type does not significantly impact the response to this question. Manufacturing companies responded in the affirmative in 54% (40%, 68%) of the returned questionnaires, while service companies indicated a positive return response of 51% (36%, 66%). On the other hand, company size does play a role in determining if a respondent was using the Award criteria. The data clearly indicate that a small company is less likely to be using the Award

Figure 10
 Question 4
 "Using MBNQA for Internal Assessment"
 by Industry Type

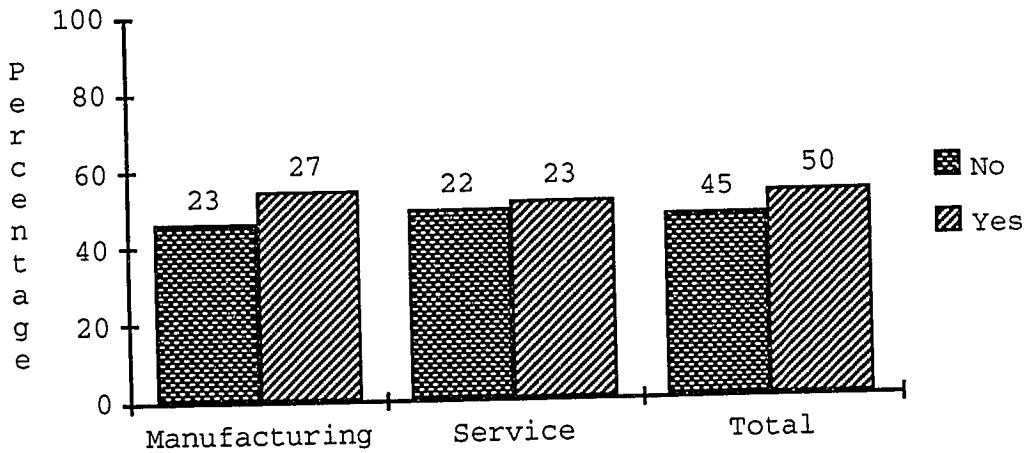


Figure 11
 Question 4
 "Using MBNQA for Internal Assessment"
 by Company Size

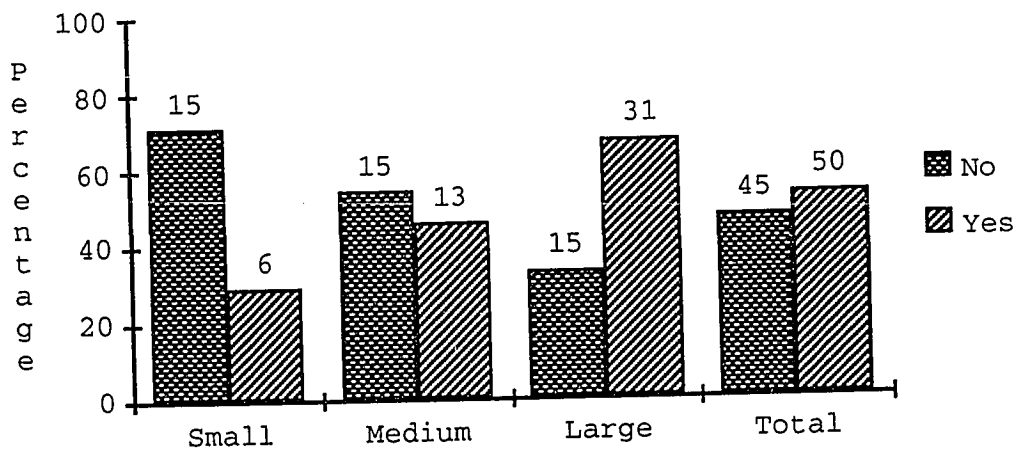
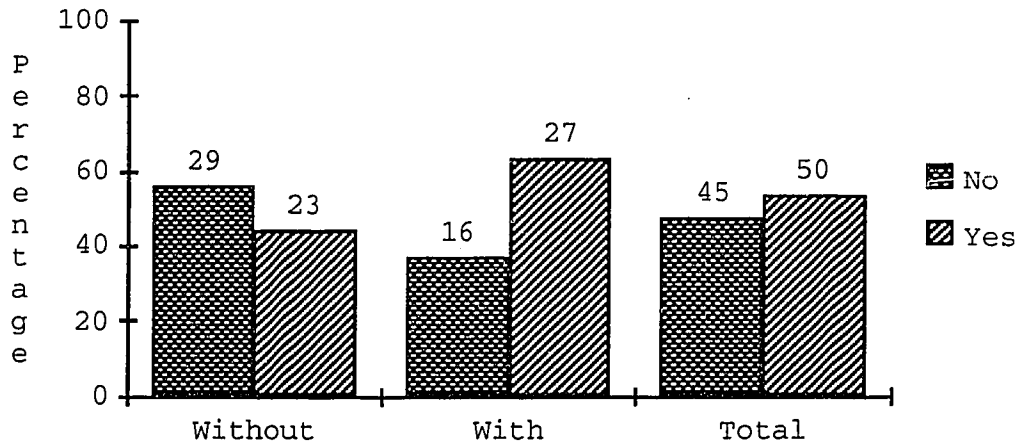


Figure 12
 Question 4
 "Using MBNQA for Internal Assessment"
 by State Quality Award Status



criteria than a large company. Twenty-nine percent (8%, 50%) of the small companies who responded indicated they used the Award criteria, while 67% (53%, 81%) of the large companies responded in the affirmative. There also seemed to be a slightly greater percentage of companies using the Award in states with quality awards than in states without: 63% (48%, 78%) vs. 44% (30%, 58%).

Question 5 asked "Has your organization ever applied for the Malcolm Baldrige National Quality Award?" and the related question "If yes, did you use a consultant or external expert to help gather information for the application?" It was not expected that a random sample of companies would result in very many positive responses to this question, but 7

companies responded that they had applied out of 96 companies who chose to answer this question (approximately 7%). Since it is probably more likely that a company receiving one of the questionnaires who had applied would respond by completing and returning the questionnaire, perhaps the number responding is not that unusual.

The related question raised in Question 5 concerning the use of a consultant was asked to analyze the criticism raised in the literature concerning application based consulting (Zemke, 1991). None of the companies who had applied used a consultant to assist in application preparation.

Question 6 asked "Are you considering applying for the Award in the future?" and if not, asked the replying company to identify its constraints. Additionally, as with Question 5, the company was asked if they would use a consultant or external expert to help them gather information for the application. Again, this additional question was asked to assist in the analysis of the criticism raised in the literature.

The results to the question "Are you considering applying for the Award in the future?" indicated that of the total of 93 companies who chose to respond to this question, only 30 or 32% (23%, 42%) replied in the affirmative. While the percentage of affirmative responses for large companies

Figure 13
 Question 6
 "Considering Applying for MBNQA"
 by Industry Type

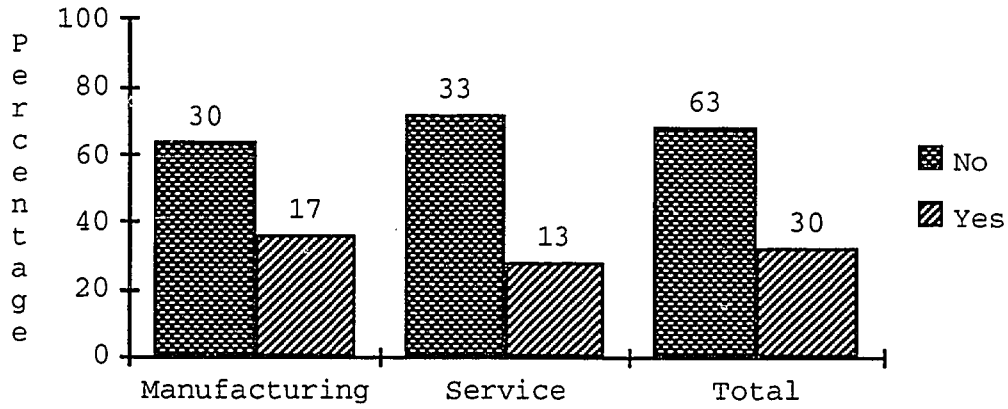


Figure 14
 Question 6
 "Considering Applying for MBNQA"
 by Company Size

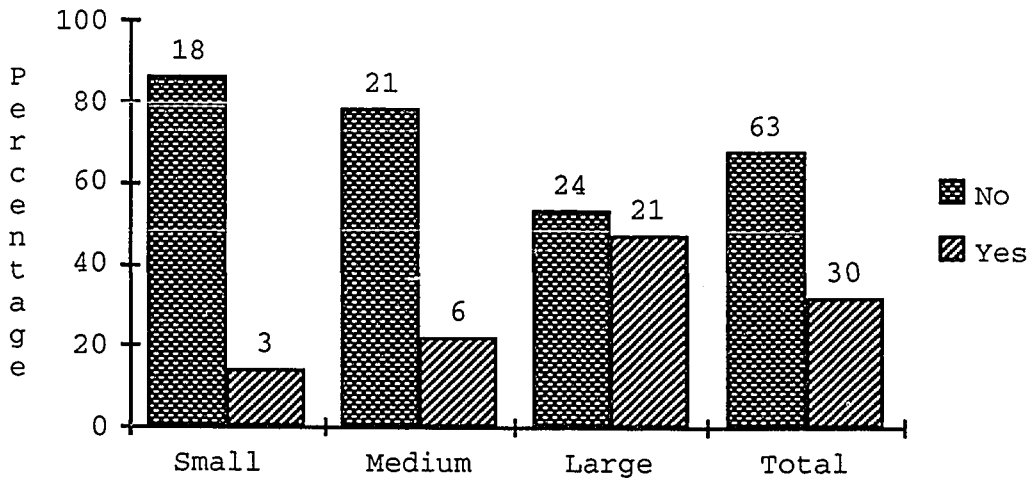
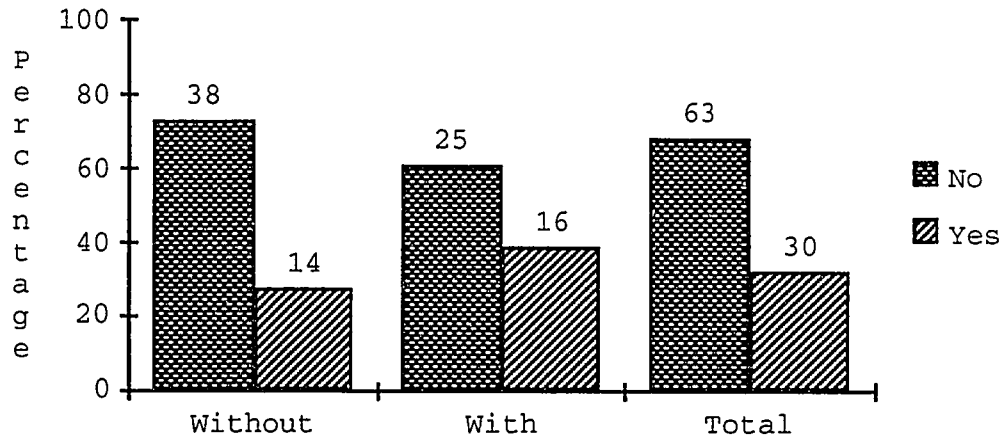


Figure 15
 Question 6
 "Considering Applying for MBNQA"
 by State Quality Award Status



was slightly greater than for small companies, 47% (32%, 62%) vs. 14% (0%, 31%), there was little difference in the response by industry type or state quality award status. These results appear as Figures 13, 14 and 15.

When viewed from a company size perspective, it is interesting to note the low number of responses in the small and medium size categories. A review of Question 3 indicated that since there was little familiarity with the Award in these categories, a low response to this question was expected.

Analysis of the data associated with the question of using a consultant indicated 15% would use one if they applied.

Comments from companies who were not planning to apply for the Award were varied. One common restraint centered around the time and cost involved in pursuing the Award. "Resources fully committed, effort huge," "Cost and time," "Time consuming and costly," were typical comments in this area. Another restraint focused on the value of pursuing the award. "See greater value in the process than the trophy," "Question its real value," "Relevance, manpower," were typical comments here. Another restraint commented upon was the process itself. One medium sized company said "Process too complicated and emphasis on certain areas makes it unusable." Some companies were focusing their efforts on accreditation of their quality efforts and indicated "Must have ISO-9000, cannot have both." Whatever the comment, as indicated previously, less than a third of the companies who are familiar with the Award are considering applying for it in the future.

A summary of the total companies responses to Questions 1, 2, and 4 through 6 are provided in Table 7. Question 3, since it was not a simple yes/no response question, is not included in this Table. It is of value to compare the results of Question 2 concerning promotion of a U.S. quality award (88% favorable) and results of Question 9 concerning the establishment of state awards (64% favorable) as seen in Table 19.

Table 7

Survey Instrument Summary of Results
Questions 1, 2, and 4 through 6

Question	Affirmative Response Percentage	95% Confidence Interval
1.) Does your company have a formal documented quality program?	71%	63% - 79%
2.) Should the U.S. promote quality through a national quality award?	88%	82% - 94%
4.) Are you using the Award for internal assessment or evaluation of your quality program?	53%	42% - 63%
5.) Has your organization ever applied for the MBNQA?	7%	2% - 13%
5a) If yes, did you use a consultant?	0%	0% - 0%
6.) Are you considering applying for the Award in the future?	32%	23% - 42%
6a.) If yes, will you use a consultant?	15%	2% - 28%

Scaled Responses to Suggested Changes--Question 7

Question 7 of the questionnaire contains a series of 10 suggested changes to the Baldrige Award. These changes were developed to test the validity of criticisms made in the literature and to test the value of some of the departures from the Baldrige Award process that states have made in their quality award approaches. The figures associated with

Question 7, which follow, show the percentage of responses falling into the descriptive categories of strongly disagree (SD), disagree (D), neither agree or disagree (N), agree (A), and strongly agree (SA). As with the yes/no responses, the scaled responses are separated by industry type, company size and state quality award status categories. Numbers at the top of the columns in the figures represent the frequencies associated with the percentages. Numbers in parentheses following the means represent the 95% confidence limits. In order to compute the means, it was necessary to change the descriptive scale to a numerical scale with SD=1, D=2, N=3, A=4, and SA=5. It was assumed that the differences between successive scale points were of equal weight, since no other assumption would appear to have any greater validity.

The responses to suggested change 7a, "The Application Report should be shortened and simplified," appear in Figures 16, 17, and 18. These charts indicate that there appears to be general agreement with this suggested change. Total response mean was 3.43 (3.19, 3.68) with a standard deviation of 1.16. While there appears to be little difference in the degree of support expressed by manufacturing or service companies, or companies in states with quality awards and those without, there seems to be a difference when looking at the company size. No small or medium sized companies strongly disagreed with this statement.

Figure 16
Suggested Change 7a
"Application should be Shortened/Simplified"
by Industry Type

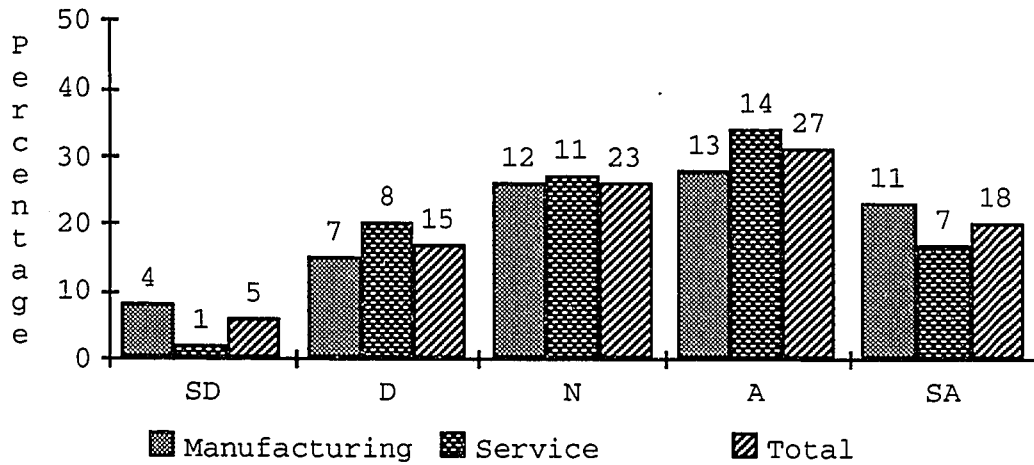


Figure 17
Suggested Change 7a
"Application should be Shortened/Simplified"
by Company Size

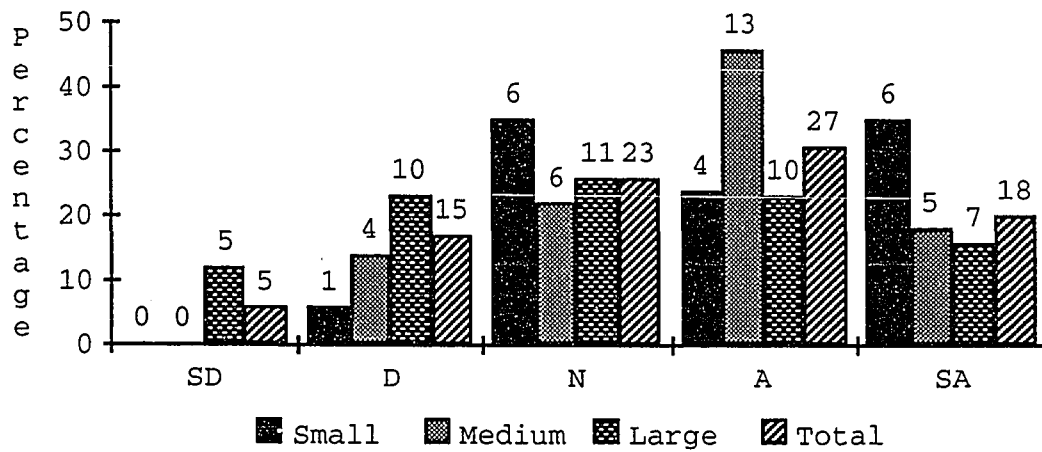
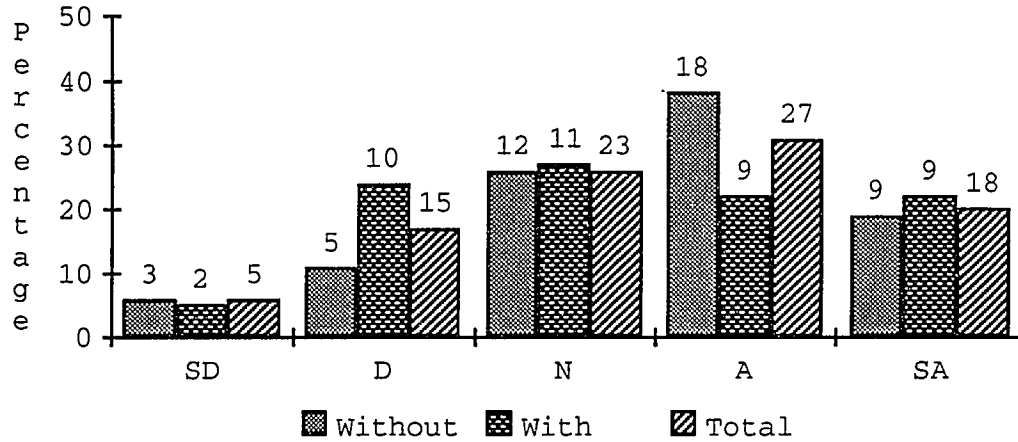


Figure 18
Suggested Change 7a
"Application should be Shortened/Simplified"
by State Quality Award Status



An analysis of variance (ANOVA) study performed using the Minitab statistical program mentioned earlier, indicated that company size was a more significant factor than industry type or state quality award status in determining the response to this suggested change. However, the "p" value (which should be less than .05) was not sufficiently small enough to indicate that the factor of company size was a determinant of the response to this suggested change. The ANOVA results for suggested change 7a, "The Application Report should be shortened and simplified," appear in Table 8.

Table 8

ANOVA Study for Suggested Change 7a
"Application should be
Shortened/Simplified"

Main Factors and Interactions	"p" Value
Industry Type	.580
Company Size	.087
State Quality Award (QA) Status	.415
Industry Type/Company Size	.303
Industry Type/State QA Status	.907
Company Size/State QA Status	.168
Industry Type/Company Size/State QA Status	.802

Figures 19, 20, and 21 provide the results from the responses to suggested change 7b, "More awards and recognition should be given." Analysis of these figures shows little indication that this suggested change is supported by the responding companies. Total response mean is 3.19 (2.92, 3.46) and the standard deviation is 1.28. A close examination of Figure 20 shows that small companies tend to agree with this suggested change to a greater extent than either medium or large companies. It is also interesting to note from the figures that responding companies were more inclined to either agree or disagree with this change rather than to express a non preference (N).

Figure 19
Suggested Change 7b
"Give More Awards and Recognition"
by Industry Type

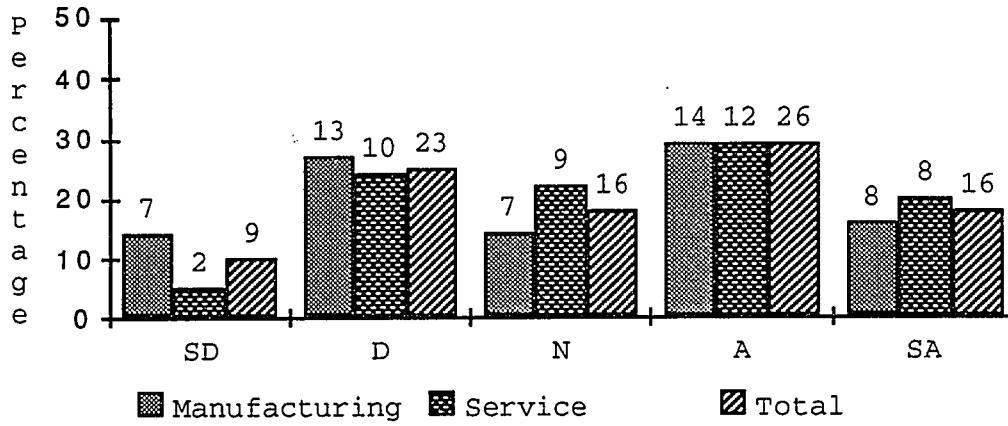


Figure 20
Suggested Change 7b
"Give More Awards and Recognition"
by Company Size

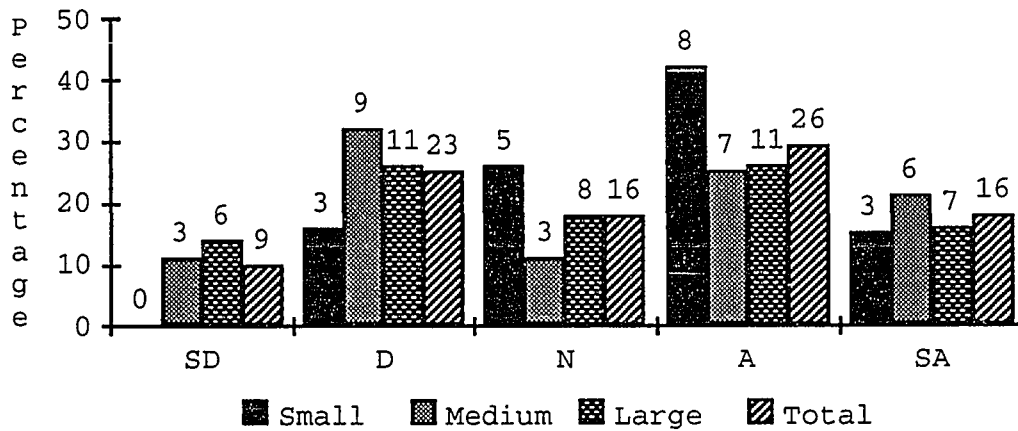


Figure 21
Suggested Change 7b
"Give More Awards and Recognition"
by State Quality Award Status



The ANOVA study, shown in Table 9, indicated that none of the factors were determinants of the response.

Table 9

ANOVA Study for Suggested Change 7b
"Give More Awards and Recognition"

Main Factors and Interactions	"p" Value
Industry Type	.288
Company Size	.462
State Quality Award (QA) Status	.642
Industry Type/Company Size	.877
Industry Type/State QA Status	.725
Company Size/State QA Status	.213
Industry Type/Company Size/State QA Status	.951

The responses to suggested change 7c, "The criteria should be rewritten to place equal emphasis on service as well as manufacturing," appear as Figures 22, 23, and 24. An analysis of the total responses to this change from any of the three figures shows general agreement with this change. Of the 98 companies responding to this suggested change, only one responded in the strongly disagree (SD) category, while 14 responded in the disagree (D) category. This was far outweighed by the number of favorable responses which totaled 54 (28 agree and 26 strongly agree). Total response mean was 3.70 (3.43, 3.92) with a standard deviation of 1.08.

Figure 22
Suggested Change 7c
"Place Equal Emphasis on Service &
Manufacturing"
by Industry Type

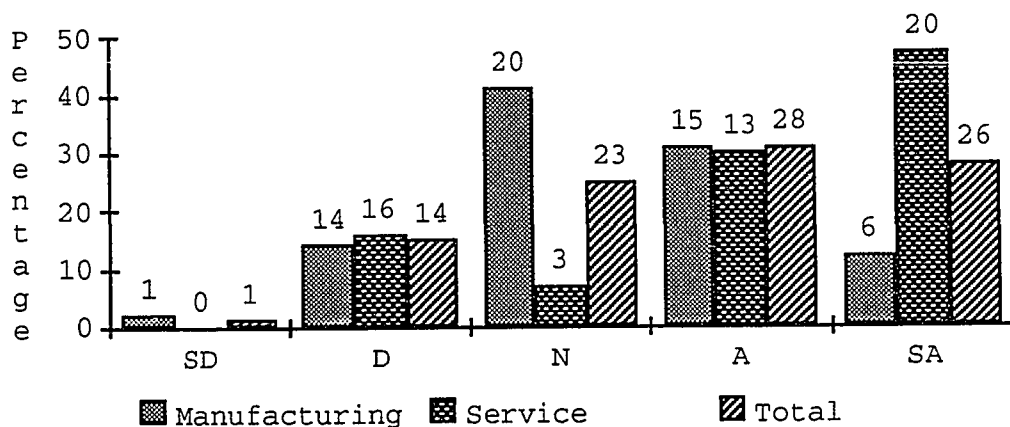


Figure 23
Suggested Change 7c
"Place Equal Emphasis on Service &
Manufacturing"
by Company Size

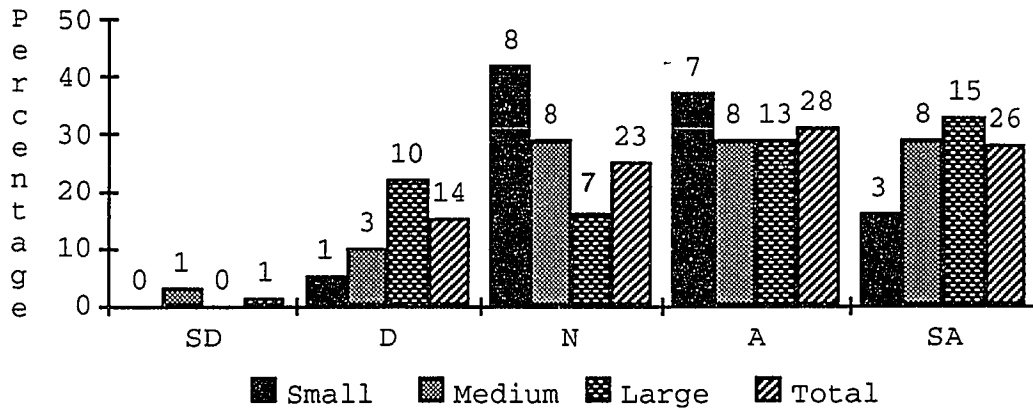
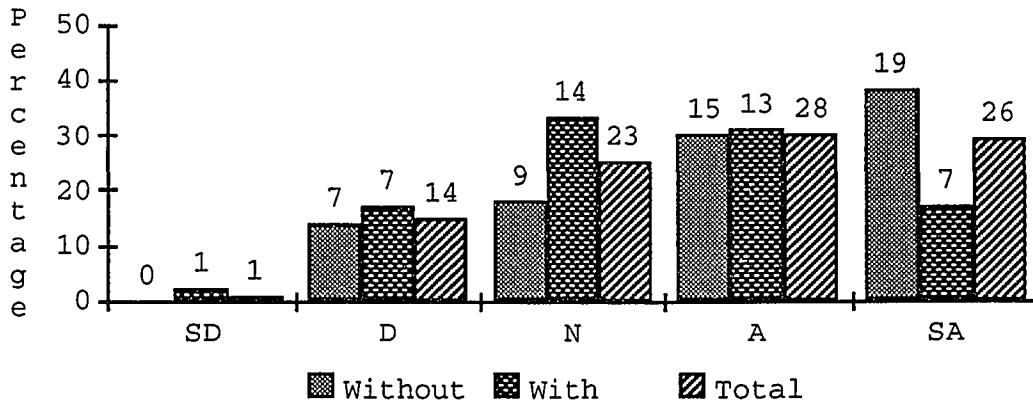


Figure 24
Suggested Change 7c
"Place Equal Emphasis on Service &
Manufacturing"
by State Quality Award Status



As might be expected, Figure 22, which plots the responses to this change by industry type, shows a strong level of support from the service sector. A review of Figure 24 shows that states without quality awards more strongly agree with the suggested change as well. An explanation for this relationship is not readily apparent.

The ANOVA study appears in Table 10. The ANOVA study indicates that industry type does significantly impact the response. However, as the ANOVA also shows, there is no impact by state quality award status.

Table 10

ANOVA Study for Suggested Change 7c "Place More Emphasis on Service & Manufacturing"	
Main Factors and Interactions	"p" Value
Industry Type	.052
Company Size	.429
State Quality Award (QA) Status	.723
Industry Type/Company Size	not available
Industry Type/State QA Status	.498
Company Size/State QA Status	.069
Industry Type/Company Size/State QA Status	.203

Figures 25, 26, and 27 indicate the summarized responses for suggested change 7d "The criteria should be more prescriptive in nature." The mean of the responses was 2.77 (2.55, 3.00) with a standard deviation of 1.05 indicating little support for this suggested change. Review of the figures shows all distributions slightly skewed toward the disagreement end of the scale. Figure 26, which is the chart by company size, shows that large companies are indeed less supportive of a change to make the criteria more prescriptive than other sized companies. Also, companies in states with their own quality awards were less supportive of this possible change.

Figure 25
Suggested Change 7d
"Criteria Should be More Prescriptive"
by Industry Type

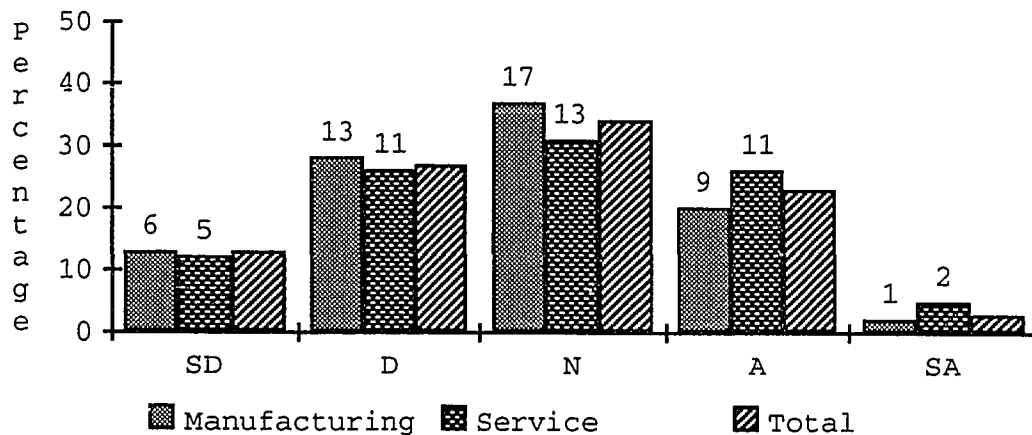


Figure 26
Suggested Change 7d
"Criteria Should be More Prescriptive"
by Company Size

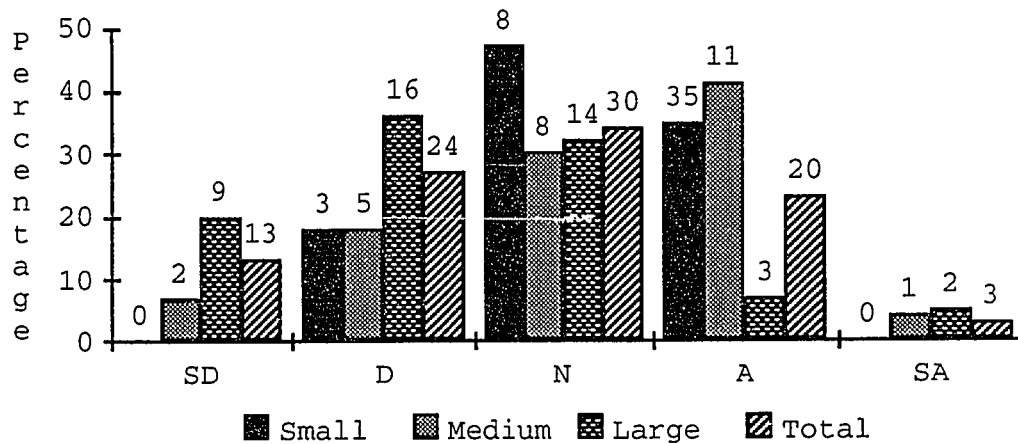
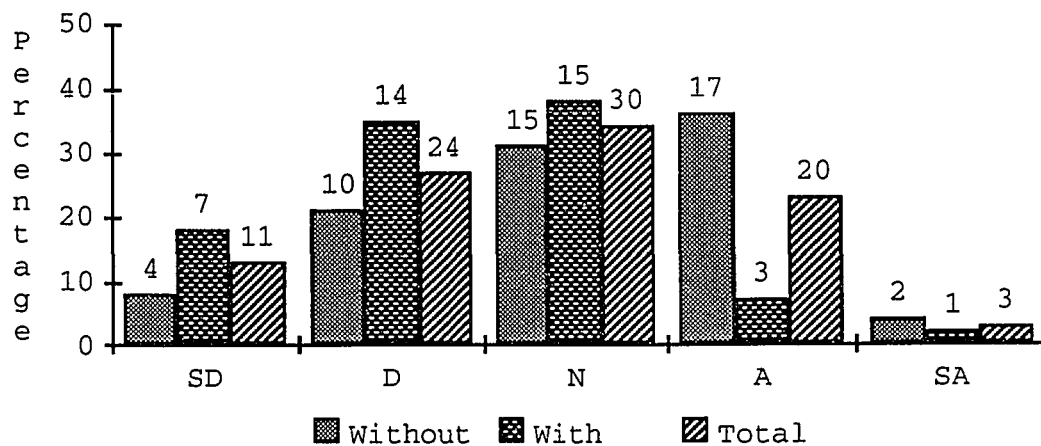


Figure 27
Suggested Change 7d
"Criteria Should be More Perscriptive"
by State Quality Award Status



The ANOVA indicates that company size and state quality award status factors have effects on the response. The ANOVA study appears in Table 11.

Table 11

ANOVA Study for Suggested Change 7d "Criteria Should be More Prescriptive"	
Main Factors and Interactions	"p" Value
Industry Type	.738
Company Size	.025
State Quality Award (QA) Status	.004
Industry Type/Company Size	.429
Industry Type/State QA Status	.538
Company Size/State QA Status	.020
Industry Type/Company Size/State QA Status	.731

Figures 28, 29, and 30 provide the results of responses for suggested change 7e, "The criteria should place more emphasis on recent financial performance." The mean of all responses for this possible change was 2.88 (2.62, 3.14) with a standard deviation of 1.25. While the mean indicates general disagreement with this suggested change, the degree of disagreement was not as marked as that for change 7d. Figure 29, which shows the distribution of responses by company size, seems to indicate that small companies are in

greater disagreement than large or medium companies with a change that places more emphasis on financial performance.

Figure 28
Suggested Change 7e
"Place More Emphasis on Financial Performance"
by Industry Type

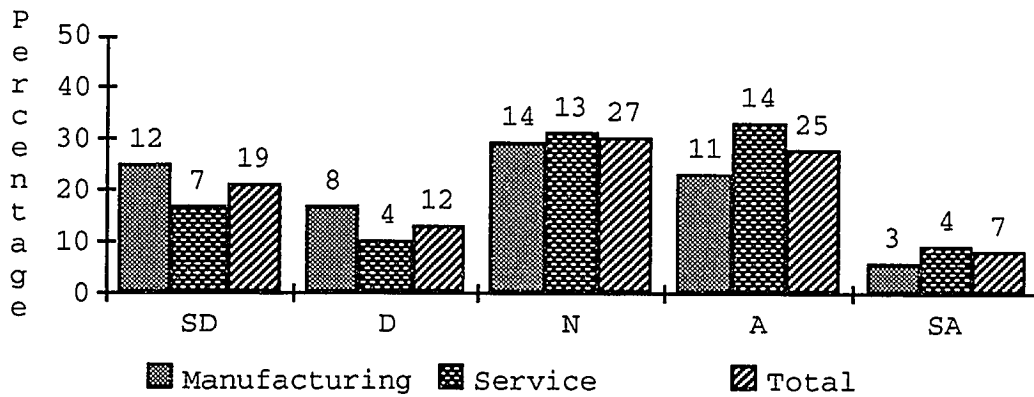


Figure 29
Suggested Change 7e
"Place More Emphasis on Financial Performance"
by Company Size

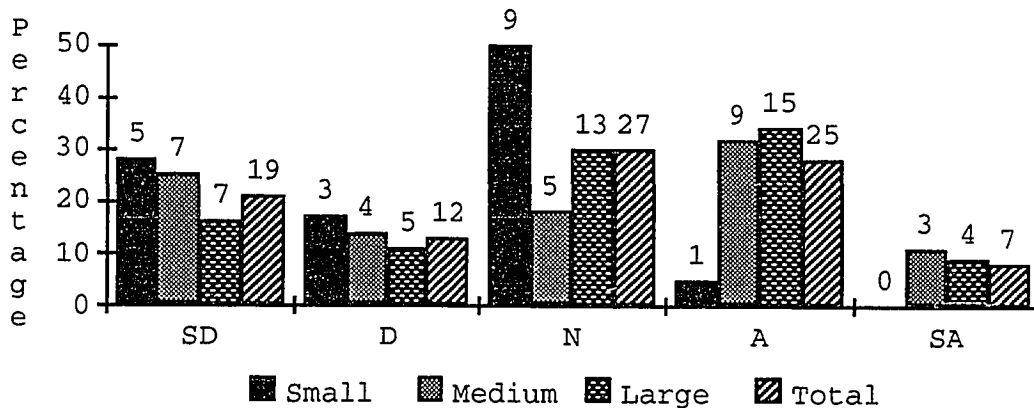
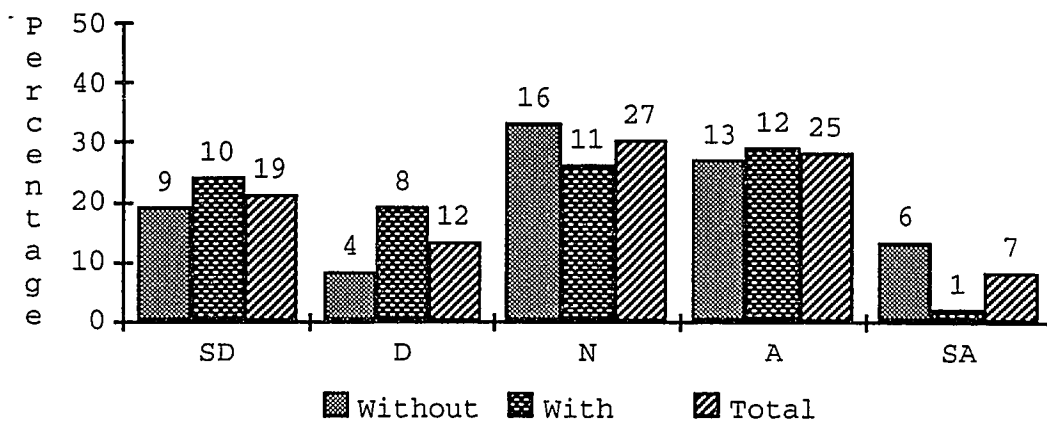


Figure 30
Suggested Change 7e
"Place More Emphasis on Financial Performance"
by State Quality Award Status



The ANOVA study, Table 12, shows that none of the three major factors impacts the response by companies.

Table 12

ANOVA Study for Suggested Change 7e "Place More Emphasis on Financial Performance"	
Main Factors and Interactions	"p" Value
Industry Type	.491
Company Size	.119
State Quality Award (QA) Status	.151
Industry Type/Company Size	.123
Industry Type/State QA Status	.390
Company Size/State QA Status	.497
Industry Type/Company Size/State QA Status	.669

The responses for suggested change 7f, "Nomination for the Award should come from the organization's customers" are presented in Figures 31, 32, and 33. The mean for the total of responses to this item was 2.75 (2.49, 3.00) with a standard deviation of 1.23, indicating that there is little support for this possible change to the Baldrige.

The ANOVA study also does not indicate that any of the three factors of industry type, company size, or state quality award status provide a significant impact on the response. The ANOVA study appears as Table 13 which follows Figure 33.

Figure 31
Suggested Change 7f
"Nomination by Organization's Customers"
by Industry Type

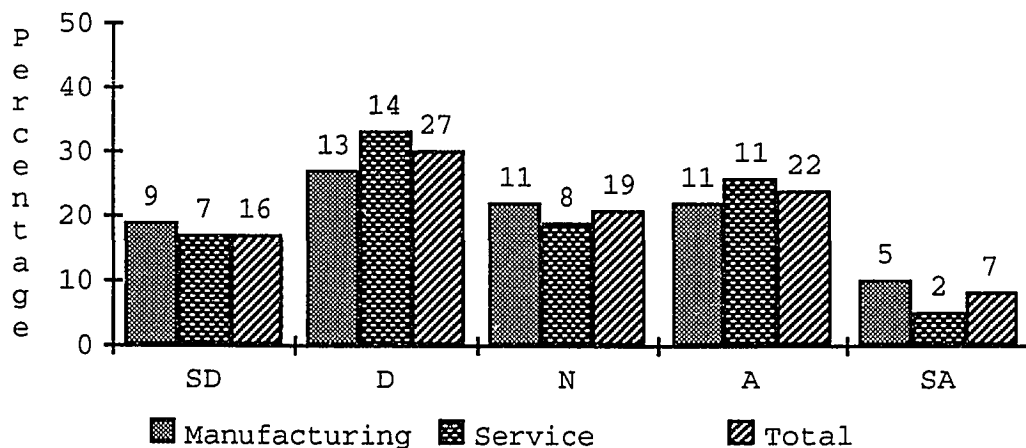


Figure 32
Suggested Change 7f
"Nomination by Organization's Customers"
by Company Size

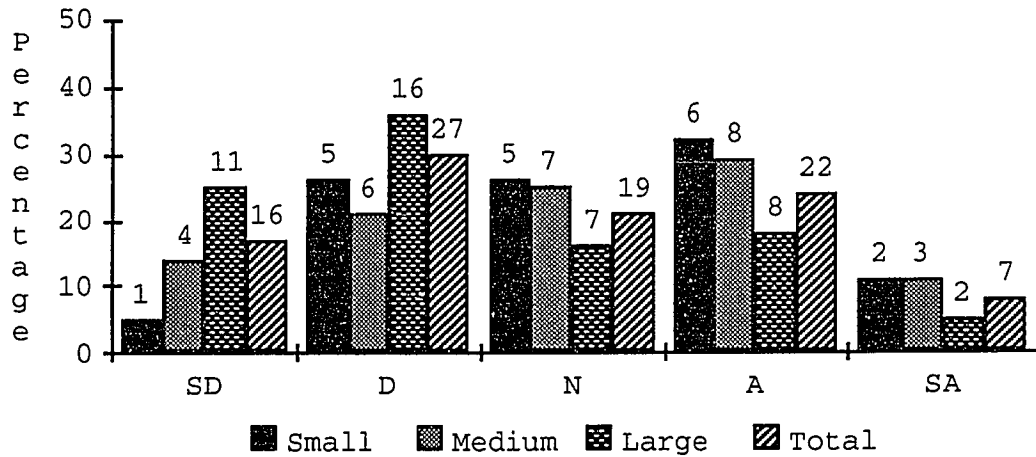


Figure 33
Suggested Change 7f
"Nomination by Organization's Customers"
by State Quality Award Status

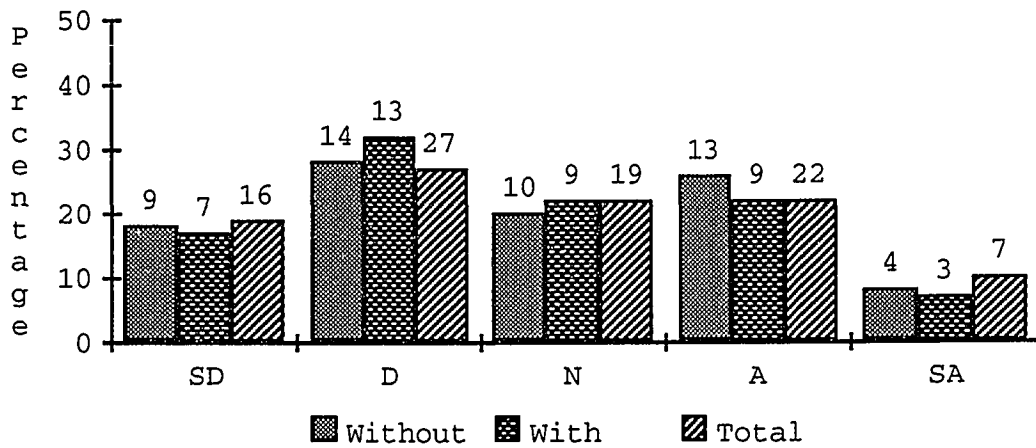


Table 13

ANOVA Study for Suggested Change 7f "Nomination by Organization's Customers"	
Main Factors and Interactions	"p" Value
Industry Type	.775
Company Size	.080
State Quality Award (QA) Status	.870
Industry Type/Company Size	.977
Industry Type/State QA Status	.789
Company Size/State QA Status	.932
Industry Type/Company Size/State QA Status	.902

Figures 34, 35, and 36 show the distribution of responses by factor for suggested change 7g, "The criteria should include independent measures of product and service quality." The mean of the total responses to this possible change was 3.67 (3.45, 3.88) with a standard deviation of 1.00. Of the ten suggested changes to the Baldrige, this item was one of those with a significant level of support as judged by rank ordering the means of the responses to each of the suggested changes. Indeed, a close inspection of Figure 35 shows a higher level of agreement to this suggested change among the small and medium sized companies. No small or medium sized company strongly disagreed with this change, and only one small company and no medium sized company registered a "disagree" rating.

Figure 34
Suggested Change 7g
"Include Independent Measures of Product & Service Quality"
by Industry Type

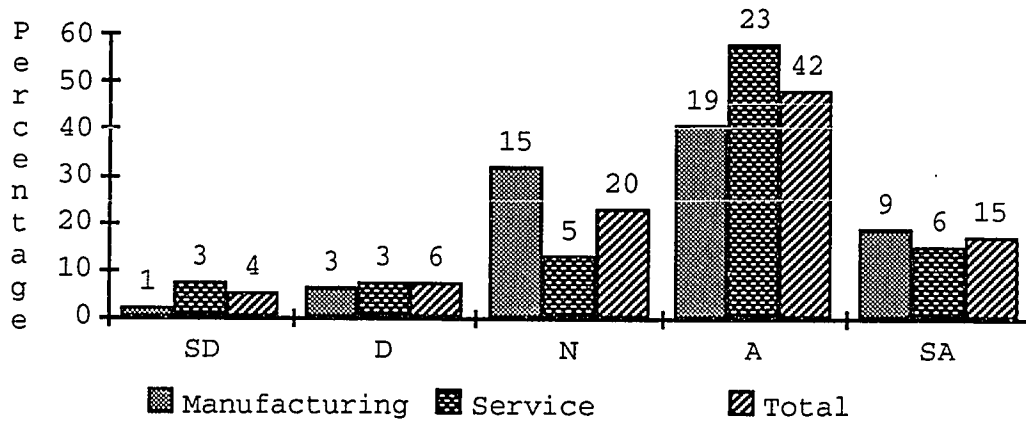


Figure 35
Suggested Change 7g
"Include Independent Measures of Product & Service Quality"
by Company Size

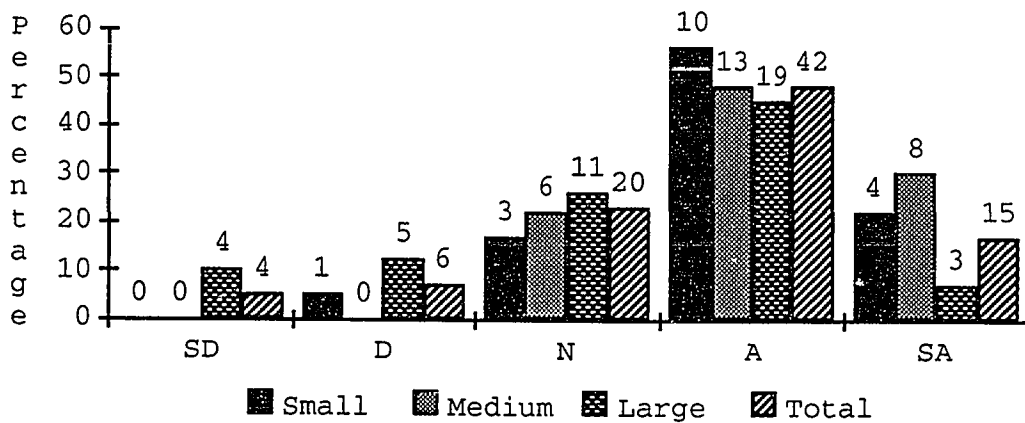
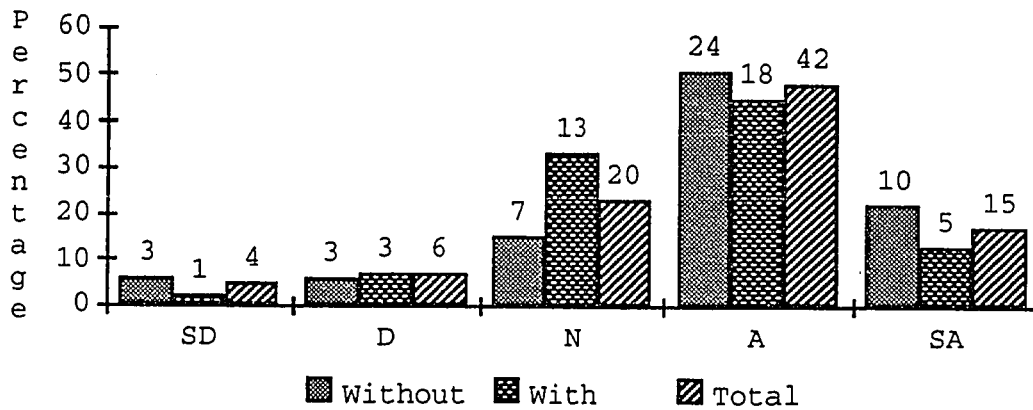


Figure 36
Suggested Change 7g
"Include Independent Measures of Product &
Service Quality"
by State Quality Award Status



The ANOVA study, Table 14, indicates that company size was a factor that influenced the response.

Table 14

ANOVA Study for Suggested Change 7g "Include Independent Measures of Product & Service Quality"	
Main Factors and Interactions	"p" Value
Industry Type	.953
Company Size	.003
State Quality Award (QA) Status	.742
Industry Type/Company Size	.700
Industry Type/State QA Status	.408
Company Size/State QA Status	.914
Industry Type/Company Size/State QA Status	.663

Responses to suggested change 7h, "Awards should be given to finalists as well as to the overall winner" appear as Figures 37, 38, and 39. The mean of the total responses for this item was 3.42 (3.18, 3.66) with a standard deviation of 1.17 indicating some general agreement with the possible change. The ANOVA study indicated that none of the factors of industry type, company size, or state quality award status was a significant determinant in the responses. The ANOVA study appears as Table 15 following Figure 39.

Figure 37
Suggested Change 7h
"Awards Given to Finalists"
by Industry Type

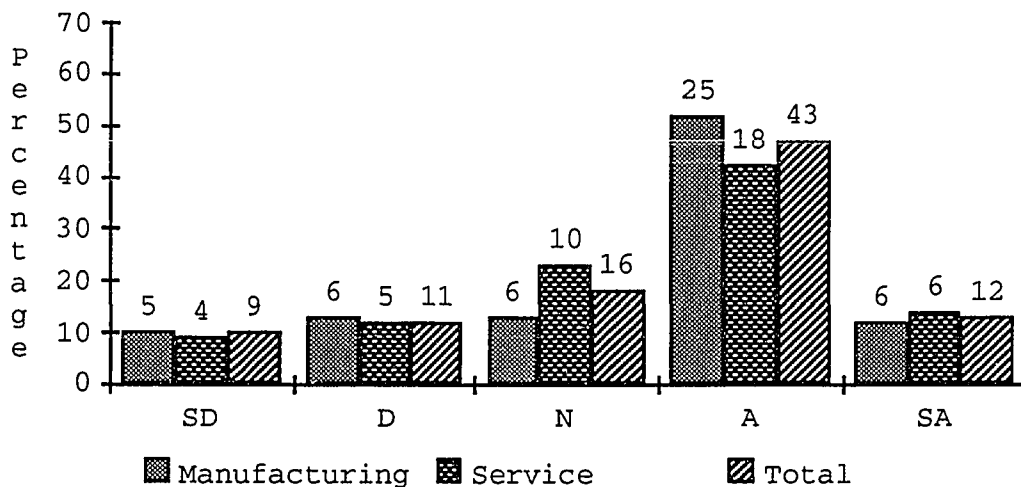


Figure 38
Suggested Change 7h
"Awards Given to Finalists"
by Company Size

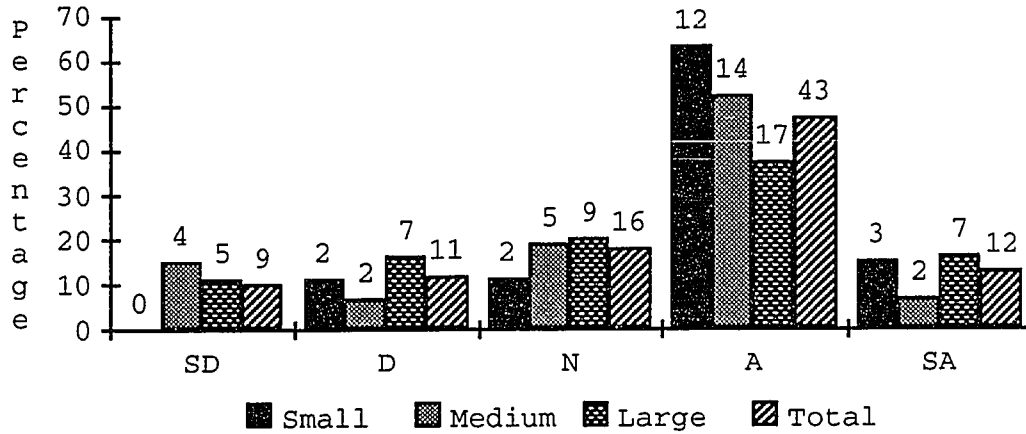


Figure 39
Suggested Change 7h
"Awards Given to Finalists"
by State Quality Award Status

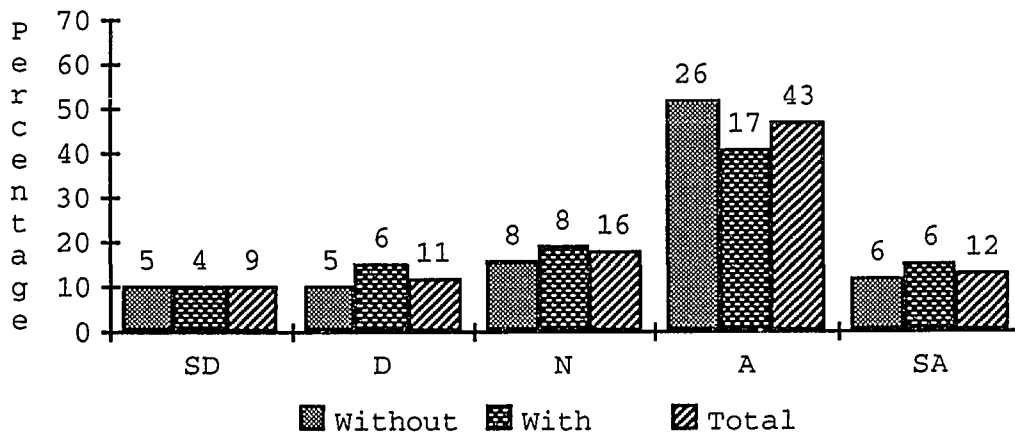


Table 15

ANOVA Study for Suggested Change 7h "Awards Given to Finalists"	
Main Factors and Interactions	"p" Value
Industry Type	.343
Company Size	.402
State Quality Award (QA) Status	.781
Industry Type/Company Size	.214
Industry Type/State QA Status	.236
Company Size/State QA Status	.573
Industry Type/Company Size/State QA Status	.043

Figures 40, 41, and 42 provide a representation of the responses to suggested change 7i, "Awards should be expanded beyond the private sector to include the public and educational sectors." The mean of the total responses to this suggested change was 3.93 (3.71, 4.16) with a standard deviation of 1.07. This possible change to the Baldrige received the highest mean score of any of the ten changes suggested. Of the 91 companies responding to this question, 40 agreed with the possible change and 30 expressed an opinion of "strongly agree." The strong support for this possible change was almost universal regardless of industry type, company size, or state quality award status.

Figure 40
Suggested Change 7i
"Expand Awards to Public & Education Sectors"
by Industry Type

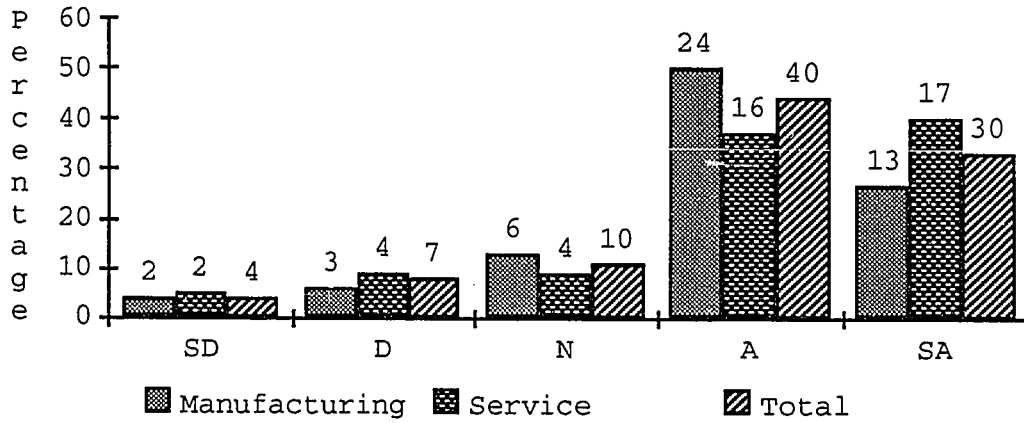


Figure 41
Suggested Change 7i
"Expand Awards to Public & Education Sectors"
by Company Size

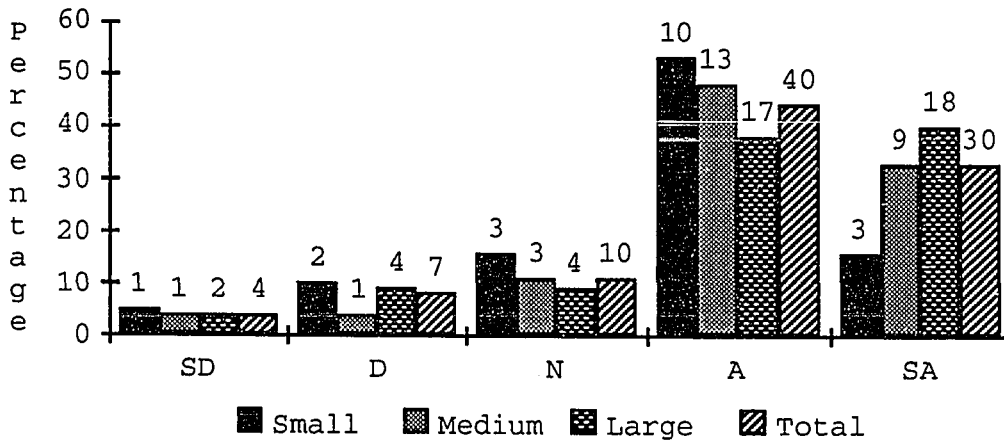
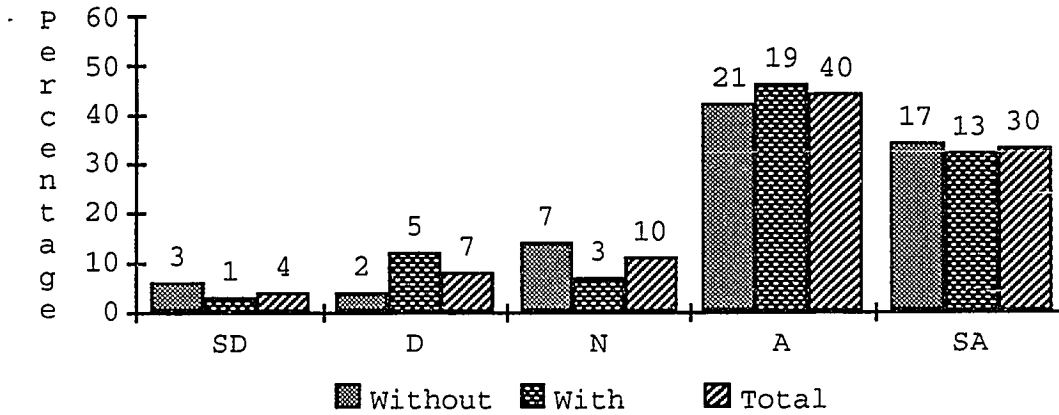


Figure 42
Suggested Change 7i
"Expand Awards to Public & Education Sectors"
by State Quality Award Status



The ANOVA study, Table 16, verified that none of the three main factors had an effect in determining the response.

Table 16

ANOVA Study for Suggested Change 7i "Expand Awards to Public & Education Sectors"	
Main Factors and Interactions	"p" Value
Industry Type	.944
Company Size	.352
State Quality Award (QA) Status	.762
Industry Type/Company Size	.985
Industry Type/State QA Status	.873
Company Size/State QA Status	.143
Industry Type/Company Size/State QA Status	.931

Finally, Figures 43, 44, and 45 indicate the company responses to suggested change 7j, "Scoring of the applications should be more objective." The mean of the total responses for this possible change was 3.32 (3.10, 3.54) with a standard deviation of 1.03. Judging from the mean of the data, there appears to be a slight overall agreement with the suggested change. The ANOVA study showed that none of the three main factors has a significant effect on determining the response. The ANOVA study appears as Table 17 and follows Figure 45.

Figure 43
Suggested Change 7j
"Scoring Should be More Objective"
by Industry Type

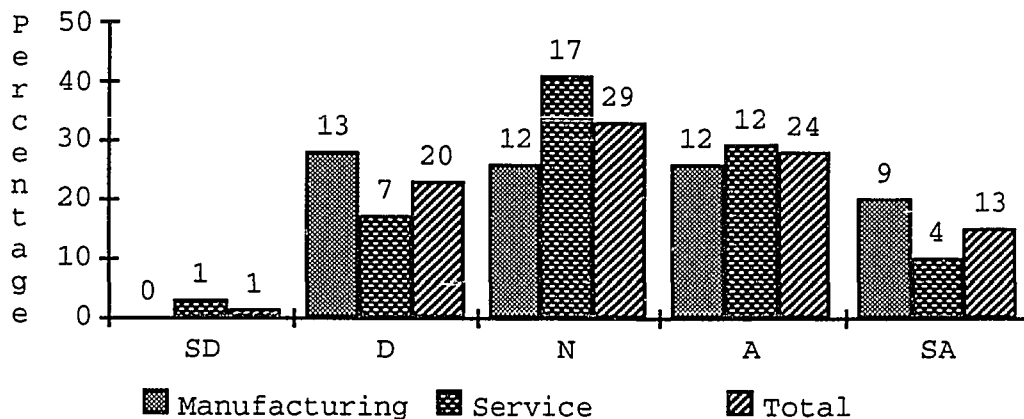


Figure 44
Suggested Change 7j
"Scoring Should be More Objective"
by Company Size

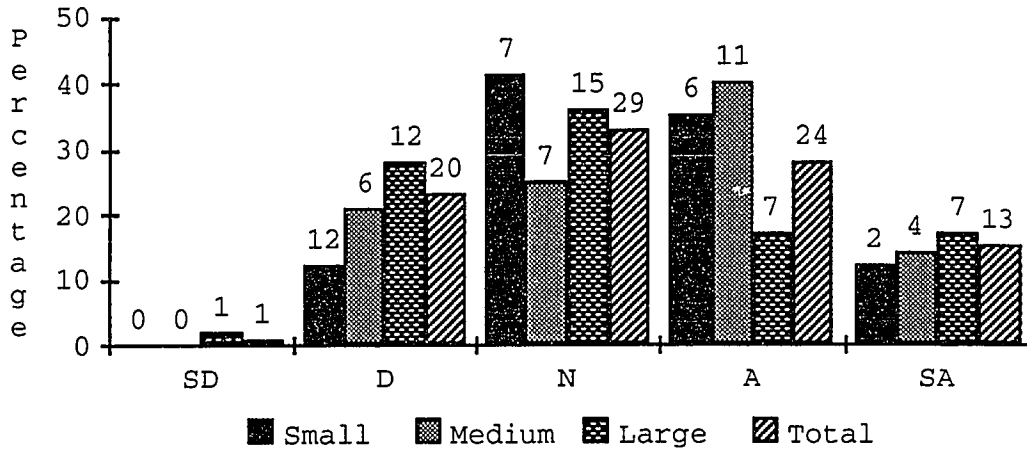


Figure 45
Suggested Change 7j
"Scoring Should be More Objective"
by State Quality Award Status

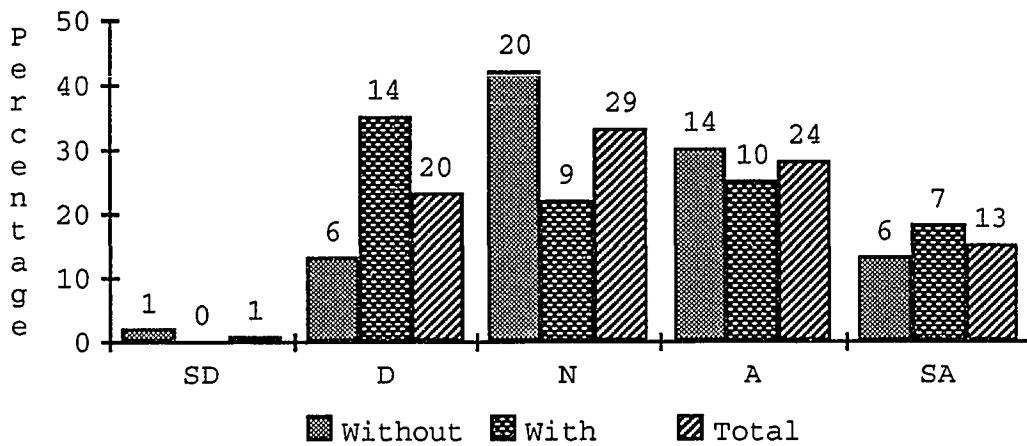


Table 17

ANOVA Study for Suggested Change 7i "Scoring Should be More Objective"	
Main Factors and Interactions	"p" Value
Industry Type	.283
Company Size	.659
State Quality Award (QA) Status	.394
Industry Type/Company Size	.178
Industry Type/State QA Status	.730
Company Size/State QA Status	.224
Industry Type/Company Size/State QA Status	.386

A summary of the means, standard deviations, and 95% confidence intervals for the ten suggested changes appears in Table 18. These values were computed from the total number of responses for each suggested change. The summary of suggested changes has been arranged by decreasing level of support using the means of the responses. For example, the suggested change with the most support from responding companies (that suggested change with the highest mean) appears at the top of the list of ten. The suggested changes have been slightly reworded to make them action oriented. The means, standard deviations, and 95% confidence limits of the responses for each of the ten suggested changes

stratified by industry type, company size and state quality award status appear in Appendix B.

Table 18

Survey Instrument Summary of Results
Question 7 - Suggested Changes

Suggested Change	Mean	95% Confidence Limit	Standard Deviation
1.) Expand awards to public & education sectors	3.93	3.71-4.16	1.07
2.) Change criteria -place more emphasis on service	3.70	3.47-3.92	1.08
3.) Include independent measures of product & service quality	3.67	3.45-3.88	1.00
4.) Shorten & simplify the application	3.43	3.19-3.68	1.16
5.) Give Awards to finalists	3.42	3.18-3.66	1.17
6.) Make scoring more objective	3.32	3.10-3.54	1.03
7.) Give more awards & recognition	3.19	2.92-3.46	1.28
8.) Place more emphasis on financial performance	2.89	2.62-3.14	1.25
9.) Make criteria more prescriptive	2.77	2.55-3.00	1.05
10.) Obtain nomination by organization's customers	2.75	2.49-3.00	1.23

Survey Instrument Results--Questions 8 - 10

Question 8 asked "If you were not considering applying for the Award in the future, would you be more likely to apply if the preceding changes were made?" The changes referred to in the question were the suggested changes of Question 7. Question 8 was asked to help answer the research question concerning the specific changes to the Baldrige that might increase participation. More will be said about the analysis of the associated research question later.

Figures 46, 47, and 48 indicate the response to this question analyzed by industry type, company size, and state quality award status. Seventy companies responded to this question. Of the 70 companies, 37 indicated a favorable

Figure 46
Question 8
"Would Apply if Changes Made"
by Industry Type

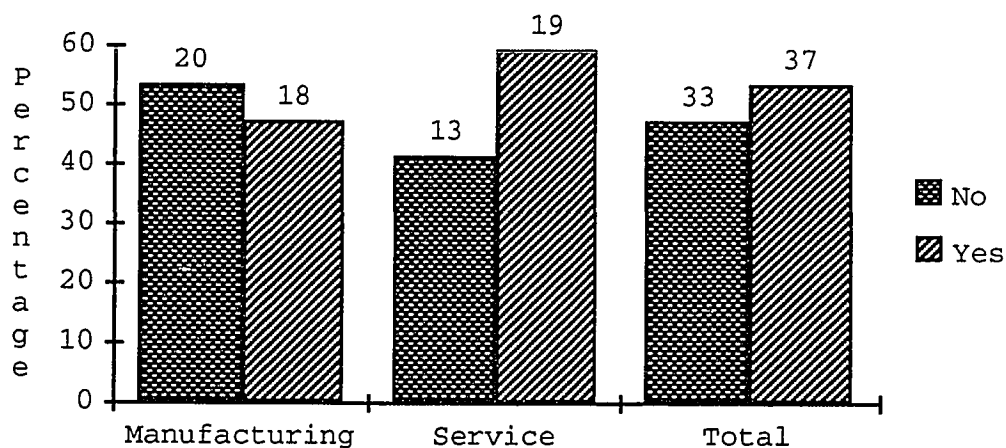


Figure 47
Question 8
"Would Apply if Changes Made"
by Company Size

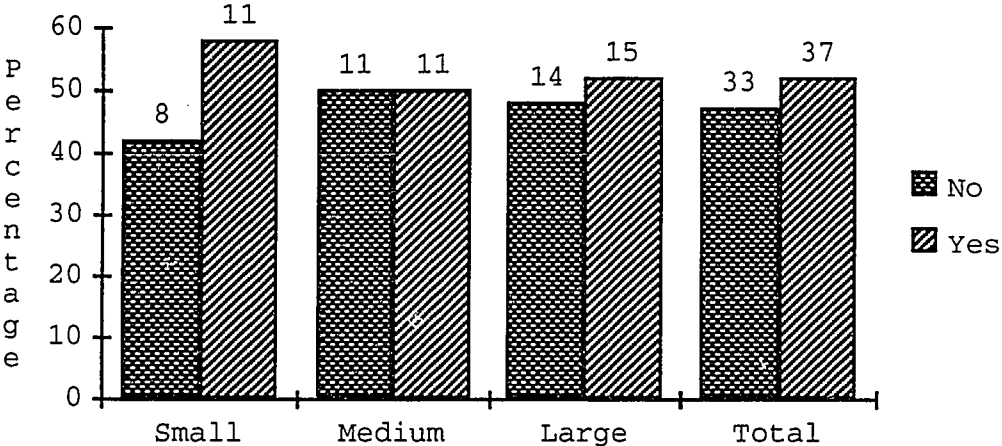
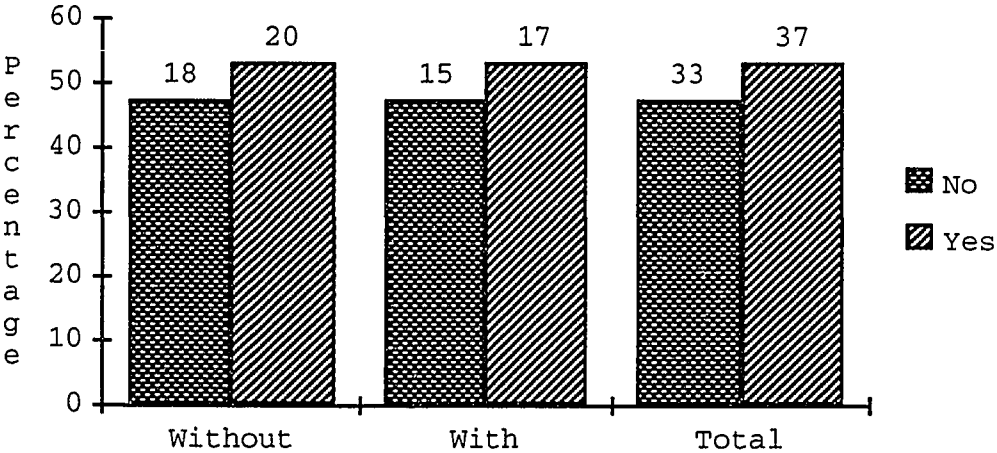


Figure 48
Question 8
"Would Apply if Changes Made"
by State Quality Award Status



response which represented 53% (41%, 65%). Analysis of the figures shows very little difference in the responses when the data is segmented according to the three factors of interest.

Question 9 asked "Should states have quality award programs of their own?" Graphical representation of the responses to this question by industry type, company size, and state quality award status appear as Figures 49, 50, and 51. Of the responding companies, 64% (55%, 73%) believed that states should have their own quality award program.

Figure 49
Question 9
"Should States have a Quality Award"
by Industry Type

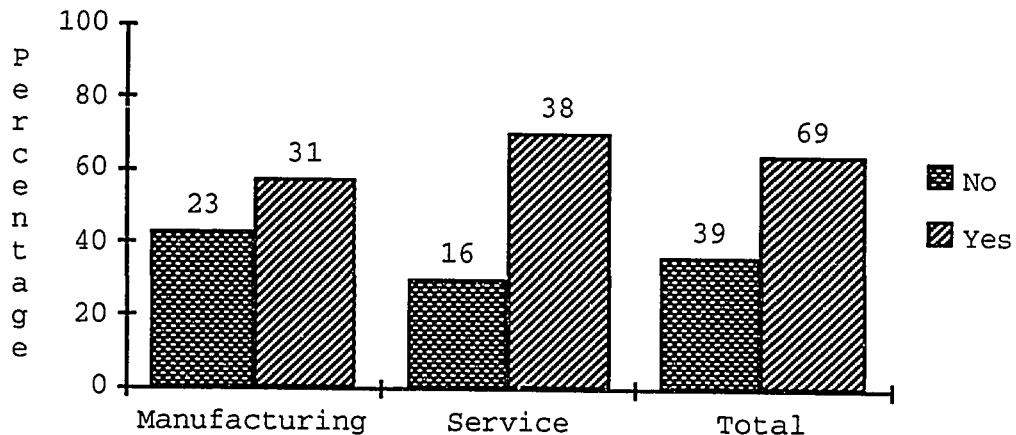


Figure 50
 Question 9
 "Should States have a Quality Award"
 by Company Size

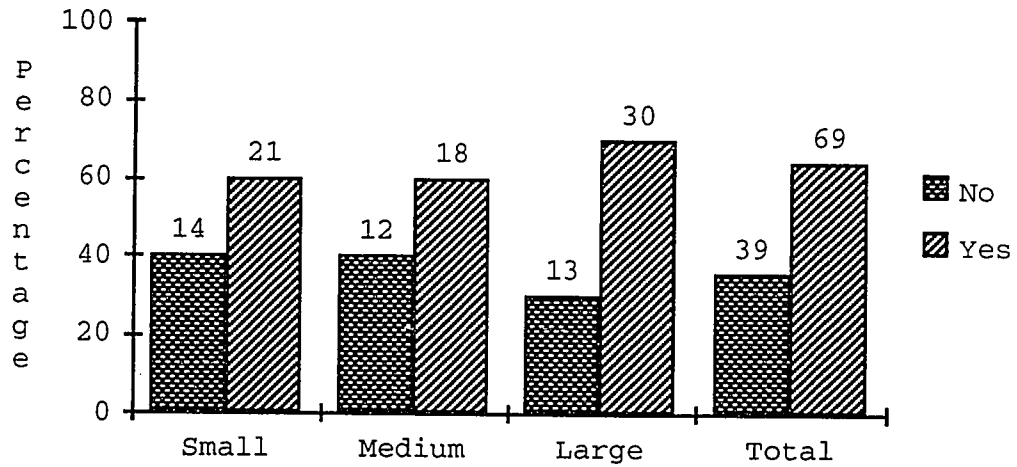
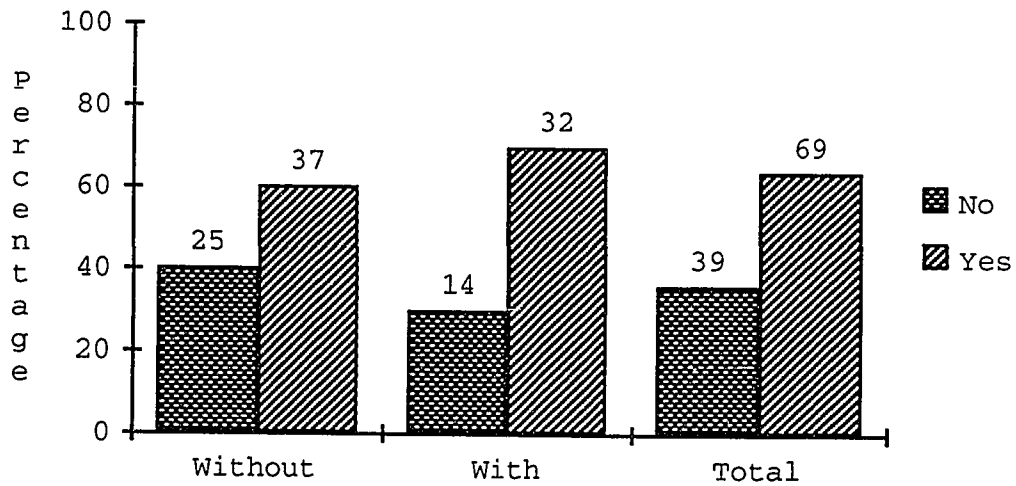


Figure 51
 Question 9
 "Should States have a Quality Award"
 by State Quality Award Status



Companies supporting the creation of state awards believed they would be a valuable adjunct to the Baldrige, "fostering quality at a lower level" and "providing a tune-up for the Baldrige." Companies who disagreed with the idea of having state quality awards believed there would be "too small a competition pool to be relevant" and that "most state budgets are strained and this would just add to the problem."

It is interesting to note from Figure 51 that there is only a slight difference in response to this question in states with a quality award already in place, 70% (56%, 83%) favorable, as opposed to those without, 60% (47%, 72%) favorable.

Question 10, which was composed of three sub questions, was directed at companies in states with existing quality awards. After listing the states of Connecticut, Maine, Massachusetts, Minnesota, New York, North Carolina and Wyoming, Question 10a asked, "Are you aware of any of these state quality awards for which you may be eligible?" Respondents answering in the affirmative were then asked Question 10b, "Have you applied or do you plan to apply for this award?" Finally, the respondents were asked in Question 10c, "Does this quality award suit your needs better than the Baldrige Award?"

While Question 10 obviously appeared on each survey instrument that was distributed, the responses of interest

were from states with established quality awards so that a comparison could be made between the success of their state award and the Baldrige. Therefore, the analysis that was performed for Question 10 did not segment the data by industry type or company size. Only data from states with quality awards was analyzed. For this reason, no graphical summarization of the data for Question 10 is provided.

Fifty three companies responded to the survey instrument from states with existing quality awards. Of these, 35 of those companies choosing to answer Question 10a, "Are you aware of any of these state quality awards for which you may be eligible?" did so in the affirmative. This represents an affirmative percentage response of 70% (57%, 83%). Of the 35 companies responding in the affirmative to question 10a, 14 responded in the affirmative to Question 10b, "Have you applied or do you plan to apply for this award?" These 14 respondents represented 42% (25%, 60%) of the total number of respondents to question 10b. Further, of the 35 companies, 9 responded in the affirmative to Question 10c "Does this quality award suit your needs better than the Baldrige Award?" These 9 respondents represented 35% (15%, 54%) of the total number of respondents to question 10c.

Table 19 provides a summary of results from the survey instrument Questions 8 through 10.

Table 19

Survey Instrument Summary of Results
Questions 8 - 10

Question	Affirmative Response Percentage	95% Confidence Limits
8.) If you were not considering applying for the Award in the future, would you be more likely to apply if the preceding changes were made?	53%	41% - 65%
9.) Should States have quality award programs of their own?"	64%	55% - 73%
10a.) Are you aware of any of these state quality awards for which you may be eligible?	70%	57% - 83%
10b.) Have you applied or do you plan to apply for this award?	42%	25% - 60%
10c.) Does this quality award suit your needs better than the Baldrige Award?"	35%	15% - 54%

Note: Data analyzed for Questions 10a, 10b, and 10c was from 53 companies who responded from states with existing quality awards.

Research Questions--Associated Results

Research question one asked "Are companies using the Baldrige criteria for self-assessment and evaluation?" Question 4 of the survey instrument addressed this issue directly when it asked "Are you using the Award criteria for internal assessment or evaluation of your quality efforts?"

Of the 122 companies responding to the questionnaire, 95 responded to this question. Fifty of the 95 responded positively to this question, representing about 53% (42%, 63%). On the surface this number appears quite encouraging. However, it should be noted Question 3 indicated to the respondent that "If you are unfamiliar with the Malcolm Baldrige National Quality Award go to Question #9." Twenty seven of the 122 responding companies did not respond to Question 4, and it is assumed that, because of Question 3, these companies were not using the Baldrige criteria for self-assessment and evaluation. This assumption then reduces the percentage of companies using the Baldrige criteria from 53% to 41% (32%, 50%).

Research question two asked, "Will those companies who are using the criteria apply for the Award?" The responses to two questions in the survey instrument bear on the answer to this research question: Question 5, "Has your organization ever applied for the Malcolm Baldrige National Quality Award?" and Question 6, "Are you considering applying for the Award in the future?" Of the 50 companies indicating they were using the award, 5 indicated they had applied for the Award in the past (Question 5) and 22 indicated they are considering applying for the award in the future (Question 6). Of the 50, there were two companies who chose not to respond to either Question 5 or 6. Combining the positive

responses to Question 5 and 6, and dividing by the number of responding companies (48), indicates that 56% (42%, 71%) either already have applied or will apply for the Award in the future. If only the affirmative responses to Question 6 are used to answer research question two, the percentage indicating they will apply drops to 46% (31%, 60%).

Research question three asked, "Would more companies apply for the Award if changes were made to the criteria or processes?" To answer this question, an analysis of survey instrument Question 8, "If you were not considering applying for the Award in the future, would you be more likely to apply if the preceding changes were made?" was undertaken. Figures 46, 47, and 48 indicate the responses to this question. As can be seen, there is no difference in response when analyzed by the three categories of industry type, company size, or state quality award status. The responses are rather evenly divided with a little more than half, 37 out of 70 companies, saying they would apply if changes were made.

But a positive response to research question three is not valuable unless specific changes to the award can be identified. Research question four asked, "What specific changes might increase Baldrige participation?" In an attempt to answer this question, the responses to the ten suggested changes for the 37 companies who responded in the

affirmative to Question 8 was undertaken. Table 20 indicates the means, 95% confidence limits, and the standard deviations for the ten suggested changes by the 37 companies. They are

Table 20

Changes to Encourage Participation			
Suggested Change	Mean	95% Confidence Limit	Standard Deviation
1.) Give Awards to finalists	3.95	3.69-4.21	.78
2.) Include independent measures of product & service quality	3.95	3.67-4.22	.82
3.) Change criteria--place more emphasis on service	3.92	3.56-4.28	1.09
4.) Shorten & simplify the application	3.91	3.56-4.29	1.10
5.) Expand awards to public & education sectors	3.87	3.50-4.23	1.08
6.) Make scoring more objective	3.62	3.25-3.98	1.05
7.) Give more awards & recognition	3.60	3.18-4.01	1.24
8.) Make criteria more prescriptive	3.29	2.97-3.59	.91
9.) Obtain nomination by organization's customers	3.14	2.75-3.52	1.16
10.) Place more emphasis on financial performance	3.08	2.66-3.51	1.28

listed in rank order of the mean response with the suggested change having the highest mean listed as number one.

It is interesting to compare Table 18 and Table 20. Generally, the rank order of the suggested changes as determined by all companies who responded vs. those that responded positively to Question 8 was similar. The exception is the change that would expand the awards to the public and education sectors and the change that would give awards to finalists as well as the overall winner. When analyzed using data from all responding companies, the suggested change that would expand the Award to the public and education sectors was ranked first and the change that would give awards to finalists was ranked fifth. Analysis of data from the 37 companies who answered positively to Question 8 placed the suggested change to give more awards to finalists, first, and the change to expand the Award to the public and education sectors, fifth.

An additional analysis step was taken. The means, 95% confidence intervals, and standard deviations of the responses to the changes for the 37 companies were determined by the three categories of industry type, company size and state quality award status to see if there were significant differences. Not surprisingly, for suggested change 7a, "The Application Report should be shortened and simplified," small companies' mean response was 4.10 (3.39, 4.81) with a

standard deviation of .99. For suggested change 7c, "The criteria should be rewritten to place equal emphasis on service as well as manufacturing," service companies' mean response was 4.58 (4.21, 4.95) with a standard deviation of .77. Regarding suggested change 7g, "The criteria should include independent measures of product and service quality," the service company responses indicated the highest desire for this change with a mean response of 4.10 (3.75, 4.46) and a standard deviation of .74. For suggested change 7h, "Awards should be given to finalists as well as to the overall winner," the service company mean response was 4.00 (3.61, 4.39) with a standard deviation of .82. This analysis indicated certain suggested changes were more important than others to different categories of companies in order to increase their participation.

Research question 5 asked, "Will state quality award programs prove to be a valuable addition to the national TQM movement?" Data from survey instrument Questions 9 and 10 were used to provide an answer to this research question. As indicated earlier, 64% (55%, 73%) of the responding companies believed that states should have their own awards. Further, 42% (25%, 60%) of the companies in states with known quality awards who were aware of those awards had applied or were planning to apply for them.

It is interesting to compare the response to the similar question on the survey instrument related to the Baldrige Award, Question 6, which asked, "Are you planning to apply for the Award in the future?" Those companies indicating they would apply in the future represented 32% (23%, 42%) of the responding companies. This can be compared to the 42% (25%, 60%) for the state award question.

Chapter 5

Conclusions and Implications for Further Research

Research Question One--Are Companies Using the Award?

Research question one asked, "Are companies using the Baldrige criteria for self-assessment and evaluation?" The results in Chapter 4 indicated that 53% (42%, 63%) of the companies who answered Question 4, "Are you using the Award for internal assessment or evaluation of your quality program?", responded positively. However, when considering the number of non responses for this question (27) caused by Question 3 which asked companies unfamiliar with the Baldrige to skip to Question 9, the percentage of companies using the Baldrige dropped to 41% (32%, 50%).

Certainly, this number is not totally discouraging. To have 41% of U.S. industry using the Award criteria for some guidance in their TQM efforts is a positive sign that progress is being made to instill the concepts of quality. The message of the quality imperative may be succeeding. However, the numbers from this study must be put into perspective.

Only 122 companies responded to the 1008 distributed questionnaires. Why such a low return? Could it be that much of U.S. industry is too preoccupied with day to day crisis management to be bothered with replying to a questionnaire that perhaps disturbs their conscience? With all the attention quality has received in the literature, it is, perhaps, difficult to admit that one's company focus is elsewhere.

It should be noted the overall response to Question 1, "Does your company have a formal documented quality program?", indicated that 71% (63%, 79%) had formal quality programs. One hundred twenty-one of the 122 responding companies answered this question. Manufacturing companies indicated the presence of a formal program in over 88% (80%, 97%) of the responses, while the service companies reported having one only 54% (41%, 67%) of the time. Clearly, more must be done to touch the service side of the U.S. economy with the concepts of quality. Only one large service company has ever won the Award, and the results of this study support the contention that service companies are lagging behind manufacturing companies in terms of adopting TQM approaches.

To those companies with a quality program, it is clear that the Baldrige criteria have proven valuable in providing a benchmark for their efforts. Almost half (42 out of 86) of the companies with quality programs are using the criteria

for internal assessment or evaluation. From these results it is easy to conclude that the Baldrige is performing its intended function. But it is just as easy to conclude that the Baldrige has a lot more it can do to capture the attention of U.S. industry, especially the service sector.

One additional analysis was performed on companies with formal quality programs and who also indicated they were using the Baldrige Award criteria for internal assessment. Data was compiled separately for those companies who indicated they had had a quality program for more than five years and those who indicated they had had one for less than five years. The analysis indicated that there was generally no difference between these two groups. Slightly more than half of each group indicated they were using the Baldrige criteria for internal assessment. Before this analysis, there was a suspicion on the part of this researcher that companies with formal programs in place prior to the Baldrige Award (about five years ago) would be reluctant to change to the Baldrige criteria. The data, however, does not support this suspicion. Regardless of how long a company has had a quality program, the Baldrige appears to be providing an equal amount of guidance in self-assessment and evaluation.

The answer to the research question "Are companies using the Baldrige criteria for internal assessment and evaluation?" is "yes," but it is not a "resounding yes."

Research Question Two--Will the Users Apply?

Research question two asked, "Will those companies who are using the criteria apply for the Award?" The answer to this question was analyzed using the responses to survey instrument Question 5, "Has your organization ever applied for the Malcolm Baldrige National Quality Award?" and Question 6, "Are you considering applying for the Award in the future?" The results of Chapter 4 indicated that about half of those using the Award criteria either already have applied or will apply for the Award in the future.

But this is not the full story. A review of total company data masks an important finding. Small companies, those with fewer than 500 employees, are not using the Award criteria as much as larger companies. Forty of the 122 responding companies were small. Of these 40 small companies, 18 were unfamiliar with the Baldrige. Of the companies who were familiar, only 6 were using the criteria for assessment, and of these, 3 will eventually apply for the Award. It has been reasoned that the success of small companies in America is vital to continued U.S. economic growth. Adoption of TQM approaches will assist in their success. It can be concluded from the data that more must be done to encourage greater awareness and participation by small companies. While about half of those using the

criteria will eventually apply, the small company is unlikely to be included in the applying universe.

Research Question Three--Will Changes Increase Participation?

Research question three asked, "Would more companies apply for the Award if changes were made to the criteria or processes?" The results from the analysis of survey Question 8, "If you were not considering applying for the Award in the future, would you be more likely to apply if the preceding changes were made?", were used to answer this research question. These results indicated that about 53%, or an additional 37 companies, would be encouraged to apply if the changes suggested in item 7 of the questionnaire were made. Recalling that the results of Question 6 indicated that only 30 of the 93 responding companies were already planning to apply, the additional 37 would mean an increase to 67. These 67 companies would represent a doubling of the number of companies planning to apply for the Award. Indeed, more companies would apply for the Award if changes were made.

This response, however, begs the next question: What changes will increase participation? To answer this Question, an analysis of the ten suggested changes to the Baldrige Award is necessary.

Research Question Four--What Changes Will Increase Participation?

Research question four asked, "What specific changes might increase Baldrige participation?" Question 7 of the survey provided ten suggested changes that were derived from the literature and departures from the Baldrige taken by states in the creation of their awards. It is an analysis of Question 7 that must be performed to answer research question three.

Change 7a suggested that "The Application Report should be shortened and simplified." There was general support for this change especially by small companies and it was clear from the analysis of responses that simplification would increase participation by small companies.

Recall that two of the criticisms in the literature were that the Baldrige process was too bureaucratic (Main, 1991) and the cost of applying and winning was too high (Zemke, 1991). These criticisms are supported by the responses to the proposal to shorten and simplify the Application Report. Companies responding positively to the suggested change indicated they felt that there was a need to "Reduce the cost to compete." Comments regarding this suggested change included statements that "the criteria is overwhelming and should be prioritized" and that it is "currently a deterrent." "Too involved," "very time consuming," and "too

bureaucratic" were typical comments from companies who responded concerning the way they felt about the suggested change to shorten and simplify the Application Report.

Perhaps a lesson can be learned from the state awards. In Chapter 2, the discussion on state quality award departures indicated that several of the states had used a shortened version of the Baldrige Application Report in their process. Massachusetts, Maine, and Minnesota, for example, have shorter versions. It is too soon to know if this has been successful for them in terms of increased participation, but the results of this study support such an approach.

Change 7b suggested, "More awards and recognition should be given." This possible change was closely aligned with change 7h which suggested "Awards should be given to finalists as well as the overall winner." While there was no clear support for change 7b indicated by the data, there was support for possible change 7h. These suggested changes were implied by several of the state quality award programs which provide recognition for finalists. The results associated with change 7h indicate that its adoption would stimulate increased participation in the Baldrige process by the service sector. Companies in support of these changes responded that more recognition should be given because "many do well and don't get anything for their effort" and the current process makes it "too difficult to be recognized."

Change 7c which suggested "The criteria should be rewritten to place equal emphasis on service as well as manufacturing" was strongly supported, especially by the service sector. Indeed, one of the criticisms reported on in the literature was the feeling that the criteria of the Baldrige did not fit the service sector well (Main, 1990). This criticism is supported by the results of the study and it can be concluded from the data that by modifying the criteria so that it more closely addresses total quality in the service industry, more service companies would apply. One large service company commented that the current criteria "is almost totally geared to the manufacturing environment" and another commented that the current manufacturing focus of the criteria was the main reason why they would not apply.

Change 7d suggested "The criteria should be more prescriptive in nature." The analysis of the results indicated that this possible change was not well supported. The majority of responding companies did not believe this change was worthwhile. This was especially true when analyzing the large company responses. The criticism raised in the literature that the Baldrige should provide more guidance on how the core values should be implemented ("Does the Baldrige," 1992) is not supported by the data from the survey. Companies prefer the freedom to interpret the guidelines to fit their particular circumstances. As one

large company responded "the best feature of the criteria is its broad application to many organizations and its flexibility to organizational needs."

Change 7e suggested, "The criteria should place more emphasis on recent financial performance." This possible change was not supported by the responding companies and therefore would not be expected to increase participation if it were adopted. The criticism mentioned in Chapter 2 indicated several critics felt the Baldrige should directly measure a company's financial performance ("Does the Baldrige," 1992). But this position is not shared by responding companies who indicate that "financial goals, short term ones, have driven U.S. companies into the ground!"

Change 7f suggested "Nomination for the award should come from the organization's customers." This change was not supported by the majority of the responding companies. Some felt opening this avenue of nomination would "create a PR gimmick" and the "current method is less able to be compromised and burdensome." The criticism made in the literature was that the Baldrige Award process requires self nomination and is therefore flawed since the real determiners of a company's quality performance should be its customers (Crosby & Reimann, 1991). However, this position is not supported by the replying companies. It can thus be

concluded that this possible change would not spur participation.

Change 7g suggested "The criteria should include independent measures of product and service quality." The criticism made in the literature, sometimes referred to as the Cadillac argument, was that winning the Award did not guarantee that the company produced a quality product. Based on the data, it can be concluded that responding companies would agree with the criticism (Crosby & Reimann, 1991). There was strong support for a change in the Award process which would allow independent measures of product and service, especially by small and medium sized companies and those which fall into the service sector. It can be concluded from this support that such a change would help increase participation. Comments, however, indicate that while it is supported, it would be "difficult to establish."

Change 7i suggested "The Award should be expanded to the public and educational sectors." This possible change was one that has been adopted by New York in their state quality award program. Based on the data from the responding companies, it can be concluded that this possible change would be successful. There was considerable support across all categories that were examined with this suggested change receiving the highest overall acceptance. The responding companies generally felt that the same quality principles

should be applied to the public and educational sectors.

"Government needs TQM worst of all" replied one respondent.

Change 7j suggested "Scoring of the applications should be more objective." There was mixed support for this possible change and it was not clear from the data that a change to make the scoring more precise, predictable, and less subjective, would be worthwhile. The belief held by many companies is that the current system is satisfactory. "Consensus works," claimed one respondent. It therefore cannot be concluded that something should be done to make the scoring more objective.

After reviewing the results of the responses to the ten suggested changes, it is concluded that the five following changes would increase participation.

1. Give awards to finalists as well as the overall winner.
2. Include independent measures of product and service quality.
3. Change the criteria to include more emphasis on the service industries.
4. Shorten and simplify the Application Report.
5. Expand the Award to include the public and education sectors.

It should be noted at this point that most of the criticisms regarding the Baldrige mentioned in Chapter 2 have

been addressed by review of the suggested changes. There is one other criticism made, however, which is addressed by the data associated with Question 5 and 6 of the questionnaire. The criticism was that the Baldrige Award had spawned a number of "quick fix" consultants who would try to help companies prepare winning applications ("Does the Baldrige," 1992). As provided in Chapter 4, data from these two questions do not support this contention.

Research Question 5--Will State Quality Award Programs add to the TOM Movement?

Research question five asked "Will state quality award programs prove to be a valuable addition to the national TQM movement?" The data from Question 9 and 10 of the questionnaire were used to answer this question. Results from Question 9 indicated 64% (55%, 73%) of the responding companies supported the idea of states having their own awards. Companies in states with awards already in place were generally more supportive of a state level quality award. Question 10 included a sub-part, 10c, which asked if the state award satisfied their needs better than the Baldrige. The purpose of this question was to see if there were changes that states had made which might be appropriate for the Baldrige. There was not enough data from this

question to indicate any changes not already mentioned in the suggested changes of item 7 of the questionnaire.

From the data of Question 9 and 10, it can be concluded that state quality award programs can provide additional focus on the TQM movement. The success of the state programs in terms of increased participation in the TQM movement is yet to be determined, however, since their establishment is relatively new. The answer to research question five is therefore undetermined. Not enough data exists to determine if state quality award programs are a valuable addition to the national TQM movement.

Implications for Future Research

This study has uncovered many areas for further investigation and research. It was clear from the study that small companies and those in the service sector are lagging behind the large companies and the manufacturing sector in terms of adopting TQM strategies. Fewer formal quality programs, less knowledge about the Baldrige, and from those with knowledge of the process, a stronger message for change was clearly evident. It should be remembered that the Baldrige has no medium sized company category. Its categories are small business (less than 500 full time employees), manufacturing companies, and service companies. Two of these three may feel disenfranchised.

Success of the Baldrige Award seems to have been gaged in terms of the involvement of large manufacturing companies. Future studies should be directed specifically at the small and medium sized companies to obtain their input. Further, more investigation is needed to determine how to involve the service sector of U.S. business in the TQM movement.

State quality awards appear to be developing rapidly across the U.S. Most are copies of the Baldrige criteria with small process changes. It is too early to determine from the level of participation in state awards whether the changes made will be successful. Some of the changes made by the states are supported from the data of this study, but more information on successful strategies is clearly needed. Future investigation should explore the success of the various state strategies as they evolve. An in depth analysis of state programs and their success two years from now would be valuable. By that time more awards will be in place and some history will exist on various state strategies.

For those who would try to further engage U.S. industry in the practices of TQM, there are limitless possibilities for additional research. Each sector of the American economy can and should be treated as a separate and distinct customer when considering possible changes to a national award. For example, what changes might the insurance industry need to

encourage their involvement? Whatever the next area for research, as always, the aim should be for continual improvement in the process of involving U.S. industry in the TQM movement.

It should be noted before closing, that it is not only U.S. industry that should be involved in the TQM movement. The suggested change receiving the most support on the survey instrument was the change to expand the Award to the public and education sectors of the economy.

Indeed, there has been a call to academic leaders to learn, teach, and practice total quality management along with the business community. This call suggests that companies and institutions of higher education must accelerate the application of total quality management on U.S. campuses if the American education system and economy are to maintain and enhance their global positions ("An open letter," 1991).

This partnership in accelerating the total quality movement is exemplified by the recent establishment of the Total Quality Management Certificate Program at San Jose State University. This program, sponsored by the College of Business and the Office of Continuing Education, broadcasts via live television from the San Jose State campus to businesses in the San Jose area, a 12 unit certificate program. It is this kind of partnership between business and

academia that will accelerate the TQM movement. Future research in TQM should be directed at the partnership arrangements between business and academia to determine specific courses of action which may be most effective.

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Appendix A--Cover Letter
and Questionnaire

The following cover letter and questionnaire were sent to 1008 United States companies in two phases during the summer of 1992. Phase one consisted of a mailing of questionnaires to 96 companies and phase two consisted of a mailing to 912 companies. The actual letter and questionnaire used smaller font and single line spacing so they would each fit on a single page.

Cover Letter

<<DATA final mailing>>

August 17, 1992

<<name>>

<<title>>

<<company>>

<<street>>

<<city>>, <<state>> <<zip>>

Dear <<last name>>:

As you are probably aware, many U.S. companies have focused on a strategy of improving the quality of goods and services they provide as a response to increased global competition. Improvement of the quality of U.S. products and services is an increasingly important element in maintaining world economic leadership.

In recognition of this truth and to encourage and promote total quality management practices in the U.S., the Malcolm Baldrige National Quality Award (MBNQA) was created. The principles embodied by the Award criteria provide a definition of a total quality management organization. Additionally, some states have created their own quality award programs to further encourage the implementation of quality management practices.

However, some say the MBNQA can be more effective in encouraging positive change in U.S. quality management methods. Annually, hundreds of thousands of Award guidelines are distributed, but only about 100 organizations actually apply for the Award. Recognizing that many organizations use the criteria for internal assessment purposes only and do not plan to apply, there are those organizations who, after reviewing the criteria, are discouraged from applying. Perhaps there are changes in the criteria or the process itself which could increase participation and effectiveness. The purpose of this letter is to ask for your help in exploring this question.

You may ask, "Why is this person addressing this issue?"

Recently I retired from Pacific Bell, a Pacific Telesis Company. During my last year at Pacific Bell, I assessed an internal organization against the criteria of the MBNQA and realized some changes might improve its effectiveness. Coincidentally, I enrolled in a Masters Degree Program in Quality Assurance and decided to explore the issue of improving the Award as a thesis topic. But in order to accumulate data for possible recommended changes, your input is essential.

I believe the Award criteria and processes should be tailored to meet the needs of its customers. In the case of the MBNQA, you are its potential customer. Your input is essential in gathering information on needs and expectations regarding the Award criteria and processes.

The enclosed questionnaire is designed to obtain information from you and other organizations regarding possible Award

upgrades. The data compiled from the questionnaire will be used to recommend changes.

Your schedule is obviously busy, full of activities which probably do not include time for completing a questionnaire with little apparent immediate return on your investment. However with your help, improvements can be made to the Award which will improve its effectiveness in encouraging participation in total quality management practices. All responses will be treated confidentially. If you would like a copy of the compiled data, please so indicate on the questionnaire. Should you have questions or wish clarification, I can be reached at (510) 838-5949. I would greatly appreciate you or your staff taking a few moments to answer the questionnaire and returning it to me in the enclosed self-addressed envelope by September 11, 1992.

Thanks in advance for your help.

Sincerely,

C. M. Bish
2125 Shady Creek Place
Danville, Ca. 94526 Tel. (510) 838-5949

Enclosures

Company Questionnaire

The purpose of the following questionnaire is to obtain information from manufacturing and service companies who are potential customers for the Malcolm Baldrige National Quality Award or a State Quality Award. Please indicate:

Company name: _____ Primarily engaged
in: Manufacturing _____ Service _____

Approximate number of Company employees: _____

Name and Title of respondent: _____

Address: _____

Telephone: _____

Would you like a copy of the compiled questionnaire
results? yes _____ no _____

1.) Does your Company have a formal documented quality
program? yes _____ no _____

If yes: Who administers the program? Title _____

How long has your organization had a quality program?

2.) Should the United States promote quality through a
national quality award? yes _____ no _____

Why? _____

3.) How familiar are you with the requirements of the Malcolm
Baldrige National Quality Award?

very familiar _____ familiar _____ unfamiliar _____

If you are unfamiliar with the Malcolm Baldrige
National Quality Award go to Question #9.

4.) Are you using the Award criteria for internal assessment
or evaluation of your quality efforts?

yes _____ no _____

5.) Has your organization ever applied for the Malcolm Baldrige National Quality Award? yes_____no_____ If yes, did you use a consultant or external expert to help gather information for the application? yes_____no_____

6.) Are you considering applying for the Award in the future? yes__no__ If not, what restraints do you have?_____

If you are planning to apply, will you use a consultant or external expert to help gather information for the application? yes_____no_____

7.) The following table suggests changes which could be made to the Award. Please indicate your opinion by checking the appropriate box: SD =strongly disagree, D =disagree, N =neither agree or disagree, A =agree, SA =strongly agree

	SD	D	N	A	SA	Why do you feel this way?
The Application Report should be shortened and simplified.						
More awards and recognition should be given.						
The criteria should be rewritten to place equal emphasis on service as well as manufacturing.						

	SD	D	N	A	SA	Why do you feel this way?
The criteria should be more prescriptive in nature						
The criteria should place more emphasis on recent financial performance.						
Nomination for the Award should come from the organization's customers.						
The criteria should include independent measures of product and service quality.						
Awards should be given to finalists as well as to the overall winner.						
Awards should expand beyond the private sector to include the public and educational sectors.						
Scoring of applications should be more objective.						

Other suggested changes I have for the Award are: 1.) 2.)	These changes should be made because --
---	---

8.) If you were not considering applying for the Award in the future, would you be more likely to apply if the preceding changes were made? yes__no__

9.) Should States have quality award programs of their own? yes_____no_____Why?_____

10.) According to the National Institute of Standards and Technology, the following States have quality awards in place-Connecticut, Maine, Massachusetts, Minnesota, New York, North Carolina and Wyoming. With the exception of Wyoming, these States use the Baldrige Award criteria as their foundation. Are you aware of any of these state quality awards for which you may be eligible? yes_____no__

If yes: Have you applied or do you plan to apply for this award? yes__no_____ Award name_____

Does this quality award suit your needs better than the Baldrige Award? yes__no__If yes - Why?_____

11.) What other comments do you have about national and/or state quality awards and how they might be improved to better suit your needs as the customer?_____

Appendix B--Statistical Analysis
of Suggested Changes

Included within this appendix are the means, 95% confidence intervals, and standard deviations of the responses to the suggested changes included in item 7 of the questionnaire. The five level descriptor scale, which ranges from strongly disagree to strongly agree in the questionnaire, was changed to a numerical scale for computational purposes with strongly disagree equalling one and strongly agree equalling five. The Minitab, release 8, statistical software package was used for computation.

The application report should be shortened and simplified.

		Suggested Change		
		7a		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.43	3.06-3.79	1.25
	Service	3.44	3.10-3.78	1.07
Company Size				
	Small	3.88	3.37-4.39	0.99
	Medium	3.68	3.31-4.05	0.95
	Large	3.09	2.70-3.48	1.27
State Status				
	Without	3.53	3.20-3.86	1.12
	With	3.32	2.93-3.70	1.21
Total Response		3.43	3.19-3.69	1.16

More awards and recognition should be given.

		Suggested Change		
		<u>7b</u>		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.06	2.68-3.45	1.35
	Service	3.34	2.96-3.72	1.20
Company Size				
	Small	3.58	3.12-4.04	0.96
	Medium	3.14	2.61-3.68	1.38
	Large	3.05	2.64-3.46	1.33
State Status				
	Without	3.22	2.88-3.57	1.21
	With	3.15	2.71-3.58	1.37
Total Response		3.19	2.92-3.46	1.28

The criteria should be rewritten to place equal emphasis on service as well as manufacturing.

		Suggested Change		
		7c		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.37	3.09-3.64	0.95
	Service	4.07	3.73-4.41	1.10
Company Size				
	Small	3.63	3.23-4.03	0.83
	Medium	3.68	3.24-4.11	1.12
	Large	3.73	3.39-4.08	1.57
State Status				
	Without	3.92	3.62-4.22	1.37
	With	3.43	3.11-3.75	1.07
Total Response		3.70	3.47-3.92	1.08

The criteria should be more prescriptive in nature.

		Suggested Change		
		7d		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	2.70	2.40-3.00	1.01
	Service	2.86	2.52-3.20	1.10
Company Size				
	Small	3.18	2.80-3.55	0.73
	Medium	3.15	2.74-3.55	1.03
	Large	2.39	2.07-2.70	1.04
State Status				
	Without	3.06	2.76-3.36	1.04
	With	2.43	2.12-2.73	0.96
Total Response		2.77	2.55-3.00	1.05

The criteria should place more emphasis on recent financial performance.

		Suggested Change		
		7e		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	2.69	2.32-3.05	1.26
	Service	3.10	2.71-3.48	1.23
Company Size				
	Small	2.33	1.85-2.82	0.97
	Medium	2.89	2.35-3.44	1.40
	Large	3.09	2.72-3.46	1.22
State Status				
	Without	3.06	2.69-3.43	1.29
	With	2.67	2.29-3.04	1.20
Total Response		2.89	2.62-3.14	1.25

Nomination for the Award should come from the
organization's customers

		Suggested Change		
		7f		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	2.80	2.43-3.16	1.27
	Service	2.69	2.32-3.06	1.18
Company Size				
	Small	3.16	2.62-3.70	1.12
	Medium	3.00	2.52-3.48	1.25
	Large	2.41	2.05-2.77	1.19
State Status				
	Without	2.78	2.43-3.14	1.25
	With	2.71	2.33-3.09	1.21
Total Response		2.75	2.49-3.00	1.23

The criteria should include independent measures
of product and service quality.

		Suggested Change		
		<u>7g</u>		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.68	3.41-3.96	0.94
	Service	3.65	3.31-3.99	1.08
Company Size				
	Small	3.94	3.55-4.34	0.80
	Medium	4.07	3.79-4.36	0.73
	Large	3.29	2.95-3.63	1.09
State Status				
	Without	3.75	3.43-4.06	1.25
	With	3.58	3.29-3.86	1.21
Total Response		3.67	3.45-3.88	1.00

Awards should be given to finalists as well as to
the overall winner.

		Suggested Change		
		<u>7h</u>		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.44	3.09-3.78	1.18
	Service	3.40	3.04-3.75	1.16
Company Size				
	Small	3.84	3.44-4.24	0.83
	Medium	3.30	2.82-3.77	1.20
	Large	3.31	2.94-3.68	1.24
State Status				
	Without	3.46	3.13-3.79	1.15
	With	3.37	2.99-3.74	1.20
Total Response		3.42	3.18-3.66	1.17

Awards should expand beyond the private sector
to include public and educational sectors.

		Suggested Change		
		<u>7i</u>		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.90	3.60-4.19	1.02
	Service	3.98	3.63-4.33	1.14
Company Size				
	Small	3.63	3.12-4.15	1.07
	Medium	4.04	3.65-4.43	0.98
	Large	4.00	3.66-4.34	1.13
State Status				
	Without	3.94	3.63-4.25	1.10
	With	3.93	3.59-4.26	1.06
Total Response		3.93	3.71-4.16	1.07

Scoring of applications should be more objective.

		Suggested Change		
		7j		
		Mean	95% Con. Interval	Std Dev
Industry Type				
	Manufacturing	3.37	3.04-3.70	1.10
	Service	3.27	2.97-3.57	0.95
Company Size				
	Small	3.47	3.02-3.92	0.87
	Medium	3.46	3.08-3.85	1.00
	Large	3.17	2.82-3.51	1.10
State Status				
	Without	3.38	3.11-3.66	0.95
	With	3.25	2.89-3.61	1.13
Total Response		3.32	3.10-3.54	1.03