

Center for Quality and Productivity Improvement
University of Wisconsin - Madison
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Report No. 18

**THE WORLD CLASS
QUALITY COMPANY**

William A. Golomski

December 1986

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PRACTICAL SIGNIFICANCE

The author of this report has been a consultant to leading companies for many years. In this report he draws upon his experience to provide directions for the remainder of this century in quality and productivity improvement. By his definition, world class quality companies can compete regardless of where they are located. Low labor wages aren't the determining factor; quality is. The author uses a variety of examples to illustrate the characteristics of world class quality companies.

Key Words: World Class; quality; quality improvement; pricing

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Introduction

One of the things that worries experts and craftsmen is that a part of their work might be assigned to others. Their competence might have been won through years of education and experience. Now it is to be given to others. This must be done if mankind is to develop. It must be done to be competitive. It must be done if jobs and profits are to stay at their current level or grow.

Recently, Florida pharmacists were given the authority to give health advice formerly restricted to physicians. Scientists and engineers are now using software for applications in which statisticians and mathematicians thought they should be personally involved. Union workers and other hourly workers in plants are now using statistical process control charts which were used only by quality control engineers in the past. Artificial intelligence (better called "competence") computer-based systems are now being used at all levels of organizations.

Credit card applications, loan applications and trust decisions in banks now use these systems. The more complex systems which involve the competencies of several experts now bring us gifted artificial competence. Typists can have some of the competency of an editor through the use of built-in dictionaries in word processors. We observe how change benefits society.

* Gaumnitz Lecture, "Quality and Productivity Improvement: Design for the Future" Conference, University of Wisconsin--Madison, June 25, 1986. Copyright © 1986 by W. A. Golomski & Associates, 59 East Van Buren Street, Chicago, Illinois 60605. All rights reserved. The Center for Quality and Productivity cares about your reactions to our reports. Please send comments (general or specific) to: Report Feedback, Center for Quality and Productivity Improvement, 610 Walnut Street, Madison, WI 53705. All replies will be forwarded to the authors.

Through the years we have examined a large number of companies to identify measures of success. Our earlier studies were of successful entrepreneurial firms. The reasons they were studied is because of their success in providing new jobs. Medium- and large-sized companies have tried to encourage that spirit with limited success. There are exceptions. There can and must be more.

When we think of how we would like governments to operate, we think of a town hall meeting in New England. All citizens who have an interest in how the government runs show up for the meeting, listen to the arguments and then vote. Large governments, with people scattered throughout a city, county, state, nation or world have never been able to continue that ideal.

When we think about businesses, we think about retailing and consumer goods and services for our model. The country store and neighborhood store where all were known on a first name basis is what we yearn for. We get close to it through franchising in fast foods. We get close to it during the lifetime of many founder-entrepreneurs. But, we are unusually critical of larger organizations. Smaller- to medium-sized ones, now in the second or third generation within a family, often don't seem to meet our expectations.

Do we have the right criteria? What can we say that is good about business? When executives earn as much as entertainers or sport figures, we call it greed. Why? Many companies in the top 500 at the turn of the century can no longer be found today. No, not even as a part of another company.

What is it that those who have survived and prospered do better than others? Much is found in the quality arena. Through the years, executives have wondered about what other more-successful companies were doing. Younger professionals and managers on the way up the

organization chart wanted to do the right things. Consultants and academics were looking for the secret equation that told us what to do, in which sequence, with which emphasis and with which weight. In the meantime, there are others in society looking for the equation for health, the equation for wealth, the equation for happiness and the equations for recognition and acceptance.

Is there anything new that we can say? Yes! Yes, based on the results of research and experience in our consulting practice. The purpose of this talk is to provide directions for the remainder of this century on quality and productivity improvement.

World Class. It has been over fifteen years since I introduced the concept of "World Class" into the American vocabulary. A world class organization need not be large. It is simply an organization which sets the standard for an activity, product or service which customers or users recognize as among the very best. It need not charge the highest price. It's an undisputed leader. Since my early use of the term it has been expanded to sports and the arts.

Some companies have products which are viewed as being best in class, while other of their products are far worse. We wouldn't call them a world class company.

A world class quality company can compete against competitors regardless of where they are located. Low labor wage rates aren't the determining factor. Hourly rates have often been brought up as an important consideration for the slowness of growth in the Midwest.

Quality is a key factor in helping an organization to be world class. Let's discuss what it means by using examples.

Quality. If we go to your bank to make a deposit there are several expectations. Some are

1. That there is no loss to your account; and no errors in the bank's favor;
2. That we don't have to wait too long;
3. That the teller is friendly, recognizes us if we have been there several times before and helps us if we have a question.

The definitions of "fitness for use" or "error free" do not apply easily to all three. These two definitions of quality are not universal.

The definition of "meeting the requirements of the customer" is not sufficiently encompassing. In the example above, errors in the customer's favor would be acceptable. Nonetheless, this does not establish the trust relationship that is needed between customer and supplier.

When people think about the quality of a product or service they usually choose a level which fits in with their rational expectations. That quality level must also be predictable and free them from damages which they can't anticipate. Physicians, as users of pharmaceuticals, choose products which meet their standards. These products are chosen for their safety and efficacy. Patients who receive harmful side effects might change their minds on the risks they are willing to take. Their former rational expectations change now that they are losers on the wheel of fortune.

Our evaluation of quality changes through several stages.

Media, word of mouth, or sensory exposure.

Understanding the product or service.

Developing rational expectations and deciding to buy it.

Buying it.

Using or experiencing it.

Attitude over time on the product or service not only relative to rational expectations.

We make comparisons with other similar products or services.

Our attitude toward quality at NASA has changed over time. Our attitude toward prime steaks as being healthful has changed during the last decade. Our attitude toward thalidomide has changed. All were "fit for use." All "satisfied the requirements of the customer." But these held for only certain phases in the life of those organizations and products.

Quality is a time-dependent measure of the conformance of a product or service to rational expectations. We judge organizations, products and services by the predictability of their quality.

World Class Quality. This is the quality of a product, service, activity or organization which occurs through a process based on prevention. It results in meeting rational expectations over its useful life. We recognize it as among the very best for the level we choose.

When we talk to our insurance agent or mortgage banker, we expect more than error-free and timely service. We don't want the confidential information on the application form of the prior customer visible to us, nor do we want it for ours. Privacy and confidentiality of information is of great importance, too. There can be many providers of world class quality insurance or banking services. This requires not just the will to succeed, but the positive results of that determination.

Among high school welding or mathematics students, some will be recognized as having world class quality. It is unlikely that any would rank as world class quality among the mathematicians or welders of the world today.

World Class Quality Companies

When we view world class quality companies, U.S. companies dominate most business categories. Some of those where the West is superior are:

Aerospace products

Pharmaceuticals

Foods

Clothing

Copiers

Hospital Care

Housing

Computers

Laboratory instruments

Chemicals

Telecommunications

Those where the Japanese are in a see-saw position are:

Consumer electronics

Electronic components

Plastic components

Those where the Japanese excel are:

Automobiles

Steel

Cameras

Ceramics

Leadership in any category can shift to the company with a carefully planned program, improved communications and the development of a team spirit. But, leadership in products is not enough. We must have quality improvement in everything we do. This holds true for how we work with each other as internal customers and suppliers.

Characteristics of a World Class Quality Company

The following list of world class quality companies is not magical, or even complete. As we gain new insights on success, we modify and add to the list.

1. Products do not have to be those of the price leader. The brand image is strengthened because of product and service quality.
 - a. Retailing--Marks & Spencer. The British counterpart of Sears is legendary for their midnight surprise quality audits of their suppliers. These, in addition to conventional quality audits, keep their suppliers alert to what causes the loyalty of their customers.

b. Consumer Goods--Procter & Gamble. Although the consumer is not aware that the various brands of the company are marketed by P&G, the retailer is. The reputation for product and service quality helps to gain shelf space much more easily than competitors can. For those cases in which the linkage with P&G is made, the consistency of product aids in the quality perception.

c. Business Products--IBM. Service quality has had more to do with the perceived image of IBM computers than the product itself. For years, the quality at installation start-up was mediocre. Customers were conditioned to expect little. The service organization saved the day to the extent that the product was perceived as superior.

2. There are a variety of pricing strategies. One that makes a great deal of sense is that you should be compensated when you have added value to a product and/or service. In those cases where there is intense price competition, you can prevent price erosion. In either case, sales increases can be supported and marketing investments made.

a. Business goods--Kodak Copiers are considered Best in Class. This enables the company to justify a premium price.

b. Consumer products--Sanyo TVs made in Arkansas are superior from the point of view of low costs of quality. This can enable a relatively unknown brand to justify above average pricing to support marketing investments or to be a high-quality, low-cost producer, with word-of-mouth promotion and low relative advertising support.

c. Consumer repair services--none. There is a great opportunity for someone to establish this business nationwide with satisfaction promised. A money back guarantee is not good enough to offset the inconvenience of poor quality.

3. Reduced quality--failure costs. The traditional wisdom in any industry is that costs between alert competitors seldom differ by more than 25%. When we look at component life, we are sometimes surprised.

a. David Garvin, Harvard Business School, has had a series of articles on comparing Japanese vs. American failure rates for various components of home air conditioners. He found that the best Japanese manufacturer had rates 1/500 or better than the worst of the American manufacturers. The opportunities to use concepts of reliability in design, and concepts of prevention in production are great, not only here, but also world-wide.

b. Electronic components--Hewlett Packard, John Young, CEO, reported recently that as a result of

(1) preventing defects instead of correcting them, and

(2) taking fast corrective action, costs of one of their small plants went down well over \$1,000,000 year. This money was there to be saved for several years.

c. Telephone systems --or-- European vs. South American. Anyone who has traveled

a great deal is astounded to get a correct phone number, or reliable service in South America.

Corrective action is slow. Detection is a skill being developed. More emphasis is needed on prevention.

4. Each step in an operation is evaluated for whether it adds to cost or value. There is the story of a group in France wondering why a guard was posted next to a bench at the Arch of Triumph. About 100 years ago, the bench was painted and a guard was posted to discourage people from sitting down or touching the paint. The paint dried. Now 100 years later, the guard was still there. Where is that guard in your operation? You had a problem, probably due to a complaint. You added a step. You fixed the problem, but the extra check is still there.

a. Replacement parts and OEM--General Motors, Rochester Products Division-Fuel Injectors. This division has done unusually well in creating an awareness of the problem and doing something about it.

b. Consumer Goods--Frito-Lay Sales Organization. Quality of service is extremely important to Frito-Lay. Each day, every retail outlet in the country is called on to assure that there is product, and that it is fresh. A careful analysis of route sequence, time in outlets and other costs is made on a periodic basis. The customer loves this attention by Frito-Lay.

5. Controlled and minimized product liability, regulatory action and executive liability exposure.

a. Pharmaceuticals and medical devices--Abbott Laboratories. Thorough quality auditing not only directs the effort of problem-solving, but is taken into account in executive compensation. This has resulted in very sound quality systems which set a standard for the industry.

b. Medical diagnostics--Kodak X-ray. One of the difficulties with some products is that they are used as part of a system. In X-rays, you have the camera, the developing chemicals and system, and the viewing apparatus. If you sell all parts, and there are problems, the product liability can be sorted out. If you don't get the order for all parts, you still have problems if you see misuse and don't forcefully warn the user. Kodak has done an admirable job world-wide in viewing their broad responsibility.

6. Never-ending improvement in process variation.

a. Nutritionals--Mead Johnson. Over the years, the company has carved out an important niche in this industry. Part of the product category is directed towards those in need of an extraordinary boost, infants allergic to milk and those who need a boost prior to surgery. All the care in the world must be given. Bad product doesn't get out. Reduction in variation of the process has occurred through a better understanding of the components of the raw materials and statistical techniques of optimization.

b. Services--Air Canada Reservation Services. Due to a concerted effort over the years by the current chairman, Claude Taylor, the quality of those services has improved steadily, year by year.

7. Ability to handle complex lines.

a. Automobiles--Ford. Due to a misunderstanding of what the Japanese do, American industry is moving toward plants with fewer product lines, rather than to have more versatile plants. Ford, who started giving people a choice as long as the Model T was black, has come a long way. The combinations can be gotten out quickly and with top quality in the U.S. industry.

b. Consumer Durables--Whirlpool Products. This consumer goods company has learned how to have a wide variety of product styles produced in its plants with no mix up, and the best value for the money.

8. Low absenteeism and turnover in the workforce. Many quality problems are due to untrained workers doing a job. When you buy a package of hot dogs, there isn't a note on the label that says, "Made on the third shift, by new hires, supervised by a recently promoted foreman, during a shift with no laboratory technical support, and after a snowstorm when not all workers came to work." As customers, we aren't the least bit sympathetic. The quality is right or it isn't. "We won't sell a wine before its time" is how one company says it.

a. Law offices--American law offices have the lowest absenteeism rate in the country. People know that their work is important and feel a sense of responsibility towards it.

b. Foundries--Precision Castparts. This high technology foundry communicates unusually well with its employees and has a massive employee training effort.

c. Automobiles--Mercedes-Benz. Craftsmanship training, intensive inspection and a flair for winning have kept the interest of the employees high.

9. Testing of prototypes and process validation. There is such a great hurry to get to the marketplace that many companies do an inadequate job of reliability testing of components from new vendors or for evolving new products. Further, there is such a rush to get chemical, electronic and electro-mechanical products to the marketplace that processes are "straightened out as you go." This results in high front-end costs and non-conforming products which slip through into the marketplace. Some companies are learning that there is a better way.

a. Automobiles--Ford. We have recently read about the retirement of the Chairman, Caldwell. One of his accomplishments was the introductory delay of several cars because they or the process weren't right. The Aerostar mini-van was being delayed because the new manufacturing process wasn't right.

b. Chemicals--Imperial Chemicals. This company has been a world leader in the use of statistical optimization techniques to improve quality. This has resulted in better process controls during the early stages of development and commercialization.

10. Senior management free to focus on business development, profitability, sustained company-wide quality improvement programs. Too often the primary interest in quality is

- To respond to a recall potential or product liability suit;
- To respond to a possible loss of business due to quality;
- To delegate all responsibility for it to some person and to feed the budget.

There is a better way. To use concepts of quality and quality improvement in your strategic business plan. To hold executive meetings dedicated to finding ways to improve share of market through quality.

a. Automobiles--Toyota. Top management ownership and involvement in the strategic quality plan.

b. Foods--Bryan Foods. Daily participation in prevention of problems with existing products and finding ways to use quality concepts to improve share of market.

Quality Management Throughout the World

There are a variety of assurance and improvement efforts going on throughout the world. The major categories of attention are those related to productivity and quality.

Quality

| Approaches | Assurance | Improvement |
|-------------------------|--|--|
| Behavioral & Managerial | QA, QC Systems | Employee Involvement Quality Objectives Incentive Systems Customer Focus |
| Analytical | Vendor Ratings Sampling Plans Statistical Process Control Reliability Tolerancing Time Series Feedback and Feedforward | Pareto Diagnostics Fishbone Diagrams Design of Experiments Quality Costs Conjoint Analysis |

The responsibility for steering the *quality assurance* efforts is with those in the assurance departments. Even some banks have a quality assurance officer to build systems and coordinate activities. The leadership for *quality improvement* is with the executives of the corporation and with managers of the various cost and profit centers of the firm.

The *productivity* movement is approached differently. To start with, most companies do not have productivity standards. They do have quality standards and specifications. Unlike the quality area, all efforts are referred to as *productivity improvement*. Perhaps as the field matures, the parts will be *productivity reassurance* and *productivity improvement*. The role of specialists in both fields is to improve reports and measurements, do training and keep up interest in the field.

Some companies have a third category which they call *performance*. For historical reasons, certain measurements (e.g., of timeliness) have been made. They would rather not refer to these as quality-of-service measures.

There are a variety of approaches being used to improve companies. The criteria used to promote them vary considerably.

The Role of Executives

Knowing characteristics of world class quality companies is necessary for success. It is not sufficient.

The CEO and/or the COO must give a clear signal as to the importance of quality as a commercial priority. (Certainly employee safety is an important internal objective and in no way conflicts with quality.) Being a CEO or COO does not automatically enable you to lead in this field. You have to be educated. You have to have an ongoing coach or counselor.

The elements of leading and coaching the organization must have four dimensions.

A. Changing the culture

- Prevention is more important than detection of problems
- Never-ending improvement must be fostered
- Sustained involvement and participation by executives in quality improvement
- Being customer-focused for both internal and external customers
- Improve quality in everything we do

B. Providing a vehicle for change

- Strategic quality plans (Practically non-existent in the U.S.)
- Annual quality improvement plans (With input of all employees. Non-existent in most companies)
- Improvement teams and councils
- Total quality assurance
- Increased efforts in science and technology

C. Upgrading education and training

- Leadership skills
- Technology
- Team building
- Statistical methods
- Other problem-solving methods

D. Improving the reward, recognition and ceremony systems

- Cost accounting (Review aberrations caused by it)
- Personnel performance appraisal (is quality a factor?)
- Relationship to the annual quality improvement plan (People are seldom awarded for achieving annual quality goals)
- Recognition of vendors, employees and others
- Celebrating successes

Summary

Quality improvement is not a spectator sport, it is not just the program of the year.

We find that although an immense amount of activity on quality improvement is going on, it is still at the minor league level in most companies. Gains have been made, executives have made speeches and videotapes, but the effort is still not of world class status. Costs can be reduced more. Share of market can be increased. Many, many benefits to companies are there. Unfortunately, many companies do not realize this.

A re-evaluation of current efforts is needed. Then we must reshape, refine and modify the quality management efforts of the Western world along the paths suggested. They will also lead to productivity improvement.

There are times when we are asked, "Where can we see these concepts in practice?" There are two answers.

1. No one company or governmental unit has done them all.

2. "Are you a leader or follower? Does somebody have to do something first before you will consider it?"

Acknowledgements

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