

Developments In Business Simulation & Experiential Exercises, Volume 19, 1992

SATISFYING THE UNIVERSITY'S CUSTOMERS THROUGH TOTAL QUALITY MANAGEMENT INSTRUCTION: A CASE STUDY

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ABSTRACT

In academics, as well as in industry, we must achieve quality instruction by exceeding the needs of our customers. Perhaps the most important of these customers are the future employers of our students. The majority of these employers are beginning to implement programs of total quality management (TQM) programs. As the suppliers of their human resources, universities must seek to provide graduating students who are well versed in the use of TQM. We describe initial attempts at the University of Idaho's College of Business and Economics to teach our students the principles of TQM. All students in the college are being introduced to the principles through a beginning production/operations management class, and many are gaining greater understanding through a quality management class. Resources such as the Application Guidelines for the Malcolm Baldrige National Quality Award are used to provide a frame of reference for ensuing course materials. Initial work is also being done to integrate TQM principles into other courses such as services marketing and human resource management. Although we are in the early stages of implementation, preliminary results look promising.

INTRODUCTION

Total Quality Management (TQM) is customer-driven. Managers and employees in all types of organizations need to focus their efforts on producing goods and/or services which satisfy- or better yet, delight- -the customer. In fact, quality is often defined as the extent to which a good or service exceeds the expectations of the customers (Gitlow et al., 1989, p. 3). Universities should realize the need to satisfy their 'customers.' As with manufacturing organizations, there are many customers, both internal and external, which a university is in the business to satisfy. Perhaps as educators, the most important of these customers are the potential employers of our students. In a very real sense, we are supplying them with some of the most important resources- -human resources- -that they will require to be successful in the future. If we are not satisfying the needs of these employers, we need to reevaluate the curriculum offered to students, and determine both content and teaching methods which will improve the educational process, and result in satisfied customers.

One way in which we can increase the level of customer satisfaction is to educate our students about TQM systems. Recently I received a letter from an engineering alumnus. He was concerned that in all of his years at the University of Idaho, which included time taking classes from the business school, he never was exposed to TQM. He states, "... please consider making these ideas [TQM principles] part of the orientation of the department in individual classes and as a whole." Another local company's quality philosophy reads, "We commit ourselves and our resources to accomplish the transformation to make total quality happen. . . . To ensure this success we will provide training to all employees in statistical employees in statistical methods and involvement with

quality teams." These concerns echo the concerns of alumni and employers across the nation. Companies are spending billions of dollars on training and much of the training time and money is devoted to teaching employees the principles of TQM. For example, IBM invests \$1 billion a year in education (Bemowski, 1991). Although training should be a part of any successful implementation of a total quality system, imagine the efforts and dollars which could be saved if newly hired employees came equipped with a knowledge of TQM, including the abilities to solve problems using such tools as statistical process control (SPC) charts, cause-and-effect diagrams, and pareto diagrams.

At the College of Business and Economics, we have realized the need to give our students such an education. We have begun to teach the principles of TQM in the production/operations management (POM) area, through an introductory POM course required of all majors; and in a subsequent Quality Management course required of all POM majors. We are also beginning to improve communication between functions. For example, an upper division marketing class now includes such materials as quality function deployment; and research is being done jointly with the mechanical engineering department to improve this material.

This paper describes the efforts, especially within the POM discipline, to integrate TQM materials into the curriculum. We describe the material, which is presented in the introductory POM class, and how this material is expanded in the Quality Management course. We also describe efforts to make the material cross-functional. Finally we present preliminary results, and examines future directions for the business curriculum within the college, including possible means for assuring that the modifications to class materials are actually satisfying the customer.

BREAKING THE ICE

Although TQM requires coordination of all functions, and thus should be included in many classes in the business school curriculum, a beginning POM class is perhaps the most natural place to introduce the principles of TQM. Traditionally, quality control has fallen under the umbrella of topics covered in POM. It has been a simple task for us to extend the quality control material to include TQM. We have introduced customer satisfaction as the goal of the organization, and quality as the strategy for reaching that goal. In our case, the textbook we have been using did not include a section on TQM, so we have supplemented the text with material concerning the Malcolm Baldrige National Quality Award.

We use two main sources to drive the discussion of the Baldrige Award. The first is videotape prepared by the U.S. Department of Commerce, which mainly describes the most recent winners of the award. The video is useful because it gives a visual presentation of companies' processes, and perhaps

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more importantly, because it shows the commitment and enthusiasm of the upper management of these companies to the principles of TQM. These videotapes are available, without charge, from Dr. Curt Reimann, at the National Institute of Standards and Technology.

The second source is the most recent set of Application Guidelines for the Malcolm Baldrige National Quality Award, also available from Dr. Reimann. Although some sections of the application give detailed information about how to apply, etc., the key concepts of the examination and the description of the 7 examination categories are enlightening, and essentially define a TQM system. The key concepts include the following: quality is customer-driven; the senior leadership needs to create clear quality values; continuous improvement must be part of the management of all systems and processes; design quality and defect and error prevention should be major elements of the quality system; and all employees must be suitably trained and involved in quality activities. The 7 examination categories, which are broken down further in the examination description, are; (1) Leadership; (2) Information and Analysis; (3) Strategic Quality Planning; (4) Human Resource Utilization; (5) Quality Assurance of Products and Services; (6) Quality Results; and (7) Customer Satisfaction. The last two categories account for nearly half of the total possible points, thus stressing the importance of a working system, which produces high quality output, which in turn satisfies the customer. Finally, the Application describes the winners of the award for the previous year, thus reinforcing the material from the videotape.

Using the Baldrige Award, and its associated philosophy, gives a frame of reference for much of the material that follows in the course, especially the traditional quality control material. We discuss statistical process control and product/process design as major components of a prevention-based quality system. Less emphasis is put on inspection and acceptance sampling plans, although they are treated since many customers still require such plans. In addition, quality function deployment and the house of quality (Hauser and Clausing, 1988) have been presented as methods to involve all functions of the organization to improve the timing and quality of product design. Diagnostic techniques such as brainstorming and pareto analysis are presented to illustrate methods for continual process improvement. Job design issues are discussed in the context of appropriate human resource utilization, where management satisfies the needs of one of its internal customers, the employee. Concepts such as employee empowerment, team participation and rewards, and employee training are not only job design issues, but part of the bigger picture of a new corporate culture, which stresses improving quality to exceed the expectations of all customers involved in the production process. Since the Baldrige Award can be given to service as well as manufacturing organizations, this approach has set the stage for discussing service operations management as well as more traditional manufacturing management.

A COURSE ON QUALITY MANAGEMENT

The Department of Business at the University of Idaho has traditionally offered a quality control course, one of the few business departments or schools with such an offering. However, the class material has, as the title indicates, mainly been based on statistical methods of process control and final inspection. Because of the recent push in U.S. manufacturing to improve quality throughout the organization, we have changed the title of the course to "Quality Management," and have changed the course material accordingly. We now consider the class an introduction to the principles of total quality management, with emphasis on problem solving techniques to reduce process variation and continually improve process output. Topics for the course now include customer-driven quality, management involvement and leadership, employee participation, statistical process control, product/process design, and process capability.

In order to make this transition, we first had to make a change in textbooks. We found that the text by Gitlow et al. (1989) was one, which met our needs because of its focus on the Deming style of management. Although we are not necessarily Deming disciples, we felt that the 14 points of management developed by Deming essentially outline a TQM program. The ensuing chapters present the traditional statistical methods of quality assurance in the context of the TQM system. We also supplement the textbook with the Baldrige Award Application, as with the beginning POM course. The Baldrige Award reinforces much of the material discussed in Deming's 14 points, and even adds in some areas such as the need for high quality information processes. As an assignment we have the student's contrast and compare the 14 points to the Baldrige Award philosophy in order to understand each individually, and to synthesize the two to form in the students' minds an understanding of TQM principles.

We spend more time on the Baldrige Award in the Quality Management course to discuss recent winners of the award. This material for this discussion we obtained from conferences and seminars devoted to TQM. For example, from the 5th Annual Conference on Making Statistics More Effective in Schools of Business (1990) we received a summary of characteristics of winning companies, compiled by judges of the Award competition. Similarly, from the 16th Annual Partners in Business Quality and Productivity Seminar sponsored by Utah State University (1991), representatives of recipients of the 1990 Baldrige Award (and the George M. Low NASA Excellence Award) discussed their corporate philosophies of satisfying the customer. There are a number of such seminars annually, and in general a great deal of information can be obtained to give examples of what companies are doing to produce quality parts and services through the successful implementation of TQM.

Besides the Baldrige Award, we use other current materials to supplement the textbook of the course.

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The majority of these come from publications of the American Society for Quality Control (ASQC). For example, the front page of the September 1991 issue of their newsletter *On Q* discussed the findings of a recent study of the General Accounting Office. The report stated that "companies that used total quality management practices experienced overall improvement in corporate performance, including better employee relations, higher productivity, greater customer satisfaction, increased market share, and improved profitability." Another publication from ASQC which is a steady source of material for a quality management course is *Quality Progress*. Recent issues have focused on variation, benchmarking, the ISO 9000 Series of standards, and quality management in the health care industry. Many articles are short and to the point, and are usually focused at practitioners rather than academics. In our experience, these are articles in which our students show more interest. *Quality Progress* also features discussions of companies who are world renowned for their quality and customer satisfaction, such as IBM and Disneyland (Notice, too, that service organization are profiled, as well as manufacturing organizations.).

We also attempt to make students involved in some problem solving of their own. For example, we use a small replica of an extrusion process (a Play Dough™ Fun Factory!) to show how brainstorming and cause-and-effect analysis can lead to process improvement. We also assign the students semester projects to allow them to work with processes with which they are familiar, to understand current quality programs, and to look for means of improving the process. In some cases the projects include students working with local companies who are implementing their own TQM systems, so students get first hand exposure of the issues in implementing such a system.

CROSS - FUNCTIONAL INVOLVEMENT

To this point, enrollment in the quality management class has been limited mainly to POM majors. Each year a few graduate students from engineering or the sciences attend. We are yet to see a student from another area in business takes the course. With the inclusion of TQM principles in the introductory POM class, we hope to see others interested in learning more. We are also beginning to work more closely as a faculty to include TQM concepts in non-POM classes. For example, our instructor for the services marketing class includes the ideas of quality function deployment (QFD) in her curriculum. She is beginning a joint research program with a faculty member from the mechanical engineering department in the area of product design. This research will add to her presentation to marketing and engineering students of the ideas behind simultaneous engineering and QFD. The human resource management (HRM) classes include discussions of leadership, employee motivation, and quality. Although these are traditional HRM topics, they are now being discussed in the POM class, and students can see that these principles affect all functions within the organization.

The low enrollment of other business majors in the quality management has to do with students' ignorance of the relevance of quality in today's world market place. In order to make them aware of the widespread application of TQM

in industry, the Department of Business offers two seminar series, "The World of Corporate Business" and "The World of International Business." These courses mainly consist of presentations from executives from regional companies who present various topics of interest to business students. Lately, many of them have been touching on quality management within their organizations. We anticipate that such unsolicited advertising will make students aware of the need to become educated in the area of TQM.

PRELIMINARY RESULTS AND FUTURE DIRECTIONS

As with TQM programs in industry, the results of changing to a curriculum, which includes TQM, do not come quickly. We are just in the infancy of teaching these principles, but we believe that the results will be positive. We have already seen some of the local employer's smile at the prospect of having students coming into their organizations with knowledge of TQM. They feel that such graduating seniors would have a tangible advantage over students without such experience. We anticipate that over the next few years, we will be hearing back from these employers about our success or lack of success in teaching their future employees what is important.

The other main customers of our teaching are the students themselves. Again we are in the early stages and don't have a lot to report. Students often don't realize the value of certain aspects of their education until years later. However, preliminary comments have been positive. For example, marketing students have remarked that they are interested to see how marketing and POM are interrelated. The POM students are happy to see a smaller emphasis on statistics and a greater emphasis on leadership, etc. in the Quality Management class.

Some of our future plans for the introductory POM and Quality Management classes are to include presentations from representatives of local or regional companies who have implemented TQM, and possibly field trips to see their facilities. We also plan to arrange opportunities for students to do internships at these companies. We also hope to involve students in the activities of the local ASQC section. In order to monitor the effectiveness of our teaching we plan to stay in close contact with our alumni. We plan to send surveys both to the alumni and to their employers. We will ask the alumni if they have found opportunity to use the problem solving skills in their work. We will ask the employers if these alumni came to work ready to improve the process and satisfy the customer. Through the surveys, we hope to obtain accurate measurements to determine if we are truly satisfying all of our customers.

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