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EXPECTANCY THEORY PREDICTIONS OF MIDDLE MANAGEMENT'S COMMITMENT TO TOTAL QUALITY MANAGEMENT

A DISSERTATION

PRESENTED TO THE FACULTY OF

THE CALIFORNIA SCHOOL OF PROFESSIONAL PSYCHOLOGY

In Partial Fulfillment of

the Requirements for the Degree

DOCTOR OF PHILOSOPHY

By

Susan Beth Stern, MA

1995

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Susan Beth Stern, MA

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Approved by:

Delbert Nebeker, Ph.D. Chairperson

Richard C. Sorenson, Ph.D.

Joyce Shettel Dutcher, Ph.D.

Received by:

Richard C. Sorenson, Ph.D., Director, Organizational Psychology Programs

DEDICATION

This dissertation is dedicated to

my mother and my father

without whose support, encouragement, and unconditional love,

it could not have become a reality.

ACKNOWLEDGEMENTS

"How poor are they that have not patience. "
-Iago to Roderigo, in Shakespeare's Othello, II.iii.

Before beginning this project I tried to imagine what the next few of years of my life would be like, I was wrong. One could never imagine what actually goes into a document such as this before doing it. The experience is a lonely one, but ironically, it could not be done alone. I've needed the help and inspiration of many people and would like to let them know they have my gratitude forever.

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A very special thank-you goes to the most important people in my life. They have been both the driving force to help me begin this venture and the driving force to help me complete it. To my sister and my very best friend, Laurie, who encouraged me and supported me but never let me forget that there is much more to life than the book stacks of a library; to my parents who inspired me and helped me stay focused, and showed me that anything is possible, all you have to do is believe, and they always believed in me. And finally, to the one lady who taught me what true courage and dedication is all about. Although she did not see this dissertation to its final form, her lessons remain with me forever. I love you "Grams", thank-you.

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CHAPTER I

Introduction

Statement of the Problem

Forty years ago the label 'Made in Japan' made a statement to a buyer about the quality of the product. Usually it was associated with a trinket or knickknack made of plastic, usually it was thought to break easily. Over the last 40 years the Japanese have turned into an economic powerhouse. Today, when a buyer purchases a product, such as a VCR or even a car, and it has the label 'Made in Japan', a very different statement is made about the quality of that product. This time, Japanese quality stands for improved products, lower costs and improved services. Over the last 40 years, Japanese industry has turned to Total Quality Control. For U.S. and European companies to compete in today's global business market, building quality must become the priority.

During the postwar years, productivity growth in Japan has exceeded the rate of productivity growth in the United States by as much as 400% (Ouchi, 1981). According to J.M. Juran, as much as 30% of U.S. products are presently failures where only 3% of Japanese products fail (Port, 1991). A. V. Feigenbaum (1991) estimates that from 15% to 40% of the manufacturing costs of almost any American

product bought today is for waste embedded in it. This includes waste of human effort, of machine time, and of nonproductive work.

The American style of management remained unchallenged between the years 1950 and 1968 when American manufactured products held the market (Deming, 1982). At one point after World War II, the United States controlled a third of the totai world economy and made half of all the manufactured goods sold anywhere in the world. Anyone in the world was privileged to buy an American product, but by 1968, forces of competition could no longer be ignored. The decline in the rate of productivity growth put pressure on American management to improve productivity. Today, Americans buy more from other countries than they can sell to them (Dobyns & Crawford-Mason, 1992).

From 1973 to the 1990s, industrial productivity in the United States has been essentially flat. As a result, the median family income was also flat. Adjusted for inflation, the average American worker actually lost money. According to the Bureau of Labor Statistics, the average American worker in private industry made $187.00 a week in 1970. Nineteen years later, the same worker made about $167.00 a week, a loss of $20.00 a week (Dobyns & Crawford-Mason, 1992).

The demand for higher quality products and services has led many U.S. firms to adopt new management practices. Industries realized that the Western style of management must change to halt the decline of Western industry and turn it upward.

Dr. W. Edwards Deming writes that "With the storehouse of skills and knowledge contained in its millions of unemployed, and with the even more appalling underuse, misuse, and abuse of skills and knowledge in the army of employed people in all ranks in all industries, the United States may be today the most underdeveloped nation in the world" (Deming, 1982, p. 6).

Judith Waldrop, research editor of American Demographics writes that Americans will know it's the twenty-first century when "...parents no longer dream of better lives for their children" (Waldrop, 1980). A television documentary which aired in the 1980's called, If Japan Can, Why Can't We? ended with the statement: "Unless we solve the problem of productivity, our children will be the first generation in the history of the United States to live worse than their parents". (Dobyns & Reuven, 1980). The only way a worker can make more money and live better is for productivity to go up. Simply, productivity is how much you can make divided by how much it costs to make it. The more you can make for less, the higher productivity will be.

Industries are now recognizing that the key to success in competitive and international markets is to provide excellence in products and services. Total Quality Management (also known as Total Quality Control by the Japanese, Total Quality Leadership by the United States Navy, and Continuous Quality Improvement in American health care systems) is simply the application of quality principles to all

aspects of a company's existence. Juran (1989) defines Quality as the function of a product that (a) meets customers' needs and thereby provides customer satisfaction, and (b) is free from deficiencies. Traditionally, U.S. companies have controlled for quality by having one group of workers inspect products after they are completed. This separated the concern for quality from other employees working in areas such as planning, design, production, distribution and even service. The Quality movement transfers the responsibility of assuring quality to every member of the organization.

After World War II, many Japanese companies began rebuilding themselves. Lead by Drs. W. Edwards Deming and Joseph M. Juran, the Japanese began using statistical quality control techniques to achieve Quality. In 1948 and 1949, management in some companies in Japan observed that improvement of quality naturally and inevitably leads to improvement of productivity. This observation came from the work of a number of Japanese engineers who studied literature on quality control supplied by engineers from the Bell Laboratories then working on General MacArthur's staff (Deming, 1982). In 1951, the Union of Japanese Scientists and Engineers, a private organization formed by engineers and scholars, provided a forum for the widespread dissemination of these statistical control techniques. They also established the Deming Prize. This award, given annually to companies that have reached excellence in quality in all areas of their business, is intended to raise the quality levels of all Japanese industry.

In the 1970's and early 1980's, U.S. markets became saturated with Japanese firms that greatly improved their quality levels, both in terms of products and services. These included the automotive and electronic industries which began taking business away from U.S. companies. Reacting to competitive pressure, many U.S. firms started examining TQM systems for their own benefit.

Attraction to Japanese management principles was stimulated when experts such as Deming, Juran, Armand V. Feigenbaum, and Philip B. Crosby reported that firms can actually reduce production costs by increasing Quality. Companies began citing large dollar savings from the elimination of poor quality products and services. These savings came from decreases in rework, downtime, warranty fees, and lost customers due to poor quality, as well as decreases in absenteeism, tardiness and turnover. Some experts report that a company can reduce manufacturing costs by more than 30% simply by the elimination of scrap and rework (Port, 1991).

So what exactly is Quality? Quality is meeting customer's expectations. Quality is only as good as the customer says it is. It is not what the numbers show on an engineer's quality-control chart. Customer satisfaction goes beyond the company's external customer. It also refers to internal members of the organization. A customer may be a coworker on an assembly line or in the next office. To practice 'Quality' is to design a system of production methods which economically produces goods or services that consistently meets the requirements of consumers. Modern quality

control utilized statistical methods and is often called statistical quality control." Kaoru Ishikawa states: "To practice quality control is to develop, design, and produce a service or a quality product which is most economical, most useful, and always satisfactory to the consumer. To meet this goal, everyone in the company must participate in and promote quality control, including top executives, all divisions within the company, and all employees" (Ishikawa, 1985, p. 44).

Companies all over the United States have been reporting huge successes after implementing TQM. Hewlett-Packard Co., for example, reports that a decade ago, four out of every 1,000 soldered connections were defective. After a group of engineers modified their work process, only two out of every 1,000 solder connections were defective. Later, Hewlett-Packard Co., had a group of workers try to further decrease the number of defective connections using quality tools and principles. Defects decreased to under two per million soldered connections.

Cabot Corp. saved $1 million a year and freed new production capacity by cutting defects 90% at its Franklin Carbon Black Plant over a period of 2 years. In the mid 1980's, Du Pont tried to cut its manufacturing wastes 35% by the end of the decade. Initially Du Pont approached this problem with technical solutions and failed. In 1987, Du Pont changed its attack. Management had quality teams add waste reduction to their agendas. By making modest changes in production and shipping procedures, one plastics plant saved 15 million pounds of plastic a year that now goes

into products, not landfills (Port, 1991). By 1990, Du Pont met its waste reduction goal.

Business schools are revamping their MBA programs to reflect this new direction in management. Some schools of business are offering courses in the transformation of American style of management (Deming, 1982). Some U.S. companies are establishing an office called "Vice-President for Quality," and even companies such as Ford Motor Co., are teaching their engineers the Taguchi method, a statistical method to measure quality.

As we can see, the quality movement has been rapidly growing. Achieved correctly, quality becomes a competitive weapon. According to Armand V. Feigenbaum of General Systems Co., "...companies that embrace quality have an edge of up to 10 cents on every sales dollar over rivals"..."that's because fewer defects mean less rework and wasted management time, lower costs, and higher customer relation rates" (Port, 1991, p. 16).

Although the application of TQM is unique to each organization, the tools and philosophy of TQM remain similar. In May 1991, the United States General Accounting Office examined the impact of formal TQM practices on the performance of selected U.S. companies. They found that TQM is useful for companies of all sizes and for service as well as manufacturing companies. "TQM serves to improve their competitive position in both the domestic and world market place" (GAO, 1991 p. 36).

In addition, the GAO outlined characteristics of companies that have successfully implemented TQM:

- "These organizations spend much effort looking at what customers want and what processes must be in place in order to meet those customer needs. Customer satisfaction, both internal and external, drives their quality efforts.
- Top executives provide active leadership to establish quality as a fundamental value to be incorporated in the company's management philosophy.
- Quality concepts are clearly articulated and thoroughly integrated throughout all activities of the company.
- Top executives establish a corporate culture that involves all employees in contributing to quality improvements.
- These companies focus on employee involvement, teamwork and training at all levels. This focus strengthens employee commitment to continuous quality improvement.
- The total quality management system is based on a continuous and systematic approach of gathering, evaluating, and acting on facts and data.

- Suppliers are full partners in the quality management process. There is a close working relationship between suppliers and producers that is mutually beneficial."

These characteristics are similar to those stressed by Ishikawa in 1985. Ishikawa reported that companies that have applied Total Quality principles have transformed themselves in six ways (a) they view quality as their most important goal, (b) they have adopted a consumer (customer) orientation, (c) they have broken down the barriers between work groups, (d) they use statistical processes to measure quality, (e) they solve problems using a cross-functional approach, and (f) participatory management is stressed (Ishikawa, 1985).

After more than three decades of actual observation, Dr. Ishikawa has described the results of Total Quality Management or Total Quality Control:

- "It provides true quality assurance. It is possible to build quality at every step in every process and attain 100 percent defect-free production. This is achieved through process control. It is not enough just to find defects and flaws and to correct them. What one must do is determine the causes which create these defects and flaws. TQC and process control can help workers to identify and then remove these causes.

- TQC opens up channels of communication within a company, filling it with a breath of fresh air. TQC allows companies to discover a failure before it turns into a disaster, because everyone is accustomed to speaking to one another truthfully, frankly, and in a helpful manner.
- TQC makes it possible for the product design and manufacturing divisions to follow the changing tastes and attitudes of customers efficiently and accurately so that products can be manufactured to meet customer preference consistently.
- TQC fosters probing minds that can detect false data. It can help companies to avoid relying on false sales figures and false production figures. 'Knowledge is power,' and that is what TQC can provide" (Ishikawa, 1985, p. vii).

Middle management and TQM. Corporate Total Quality Management (TQM) efforts have not yet faded away like other 1980's phenomena, such as management by objectives and matrix management. Nearly 75% of 1,000 companies surveyed by Achieve International, the strategic consulting division of Zenger-Miller Achieve, are currently pursuing quality initiatives. Unfortunately, more than one-third of these companies report sabotage or internal resistance to these efforts. Out of this third, 75% of the companies blame middle managers for impeding quality (Brecka, 1994).

Most research on TQM focuses on the characteristics of the organization as an entirety. Although this research is important, it fails to consider the individual components of the initiative, namely the people who run it. Management has been identified as the major driver in the success of quality improvement efforts, as well as the major driver for its failure (Sheposh & Shettel Neuber, 1986). Otis Port (1991) reports that Deming and Juran have both estimated as much as 85% of quality problems in American industry are caused by management. Taking this one step further, Oshry (1982) reports that no attempts are made to address the dilemma faced by middle managers. This dilemma puts middle managers in the position of coaching subordinates who are taking on more responsibility and of reporting to top managers who continue to push for bottom-line results.

In October of 1993, the Health Care Advisory Board, in Washington, D.C. published a report where they reviewed failed attempts at implementing TQM. The Board concluded that among the pitfalls, one of the top five is the resistance from middle mangers because of the threat of power loss and the concern about distraction of employees from their "real" jobs (Health Care Advisory Board, 1993). According to Professor Janice Klien of Harvard Business School, only one-third of middle mangers believe that TQM is personally beneficial (Harrington, 1987).

Linda Moran, co-author of the Achieve International survey findings offers this warning: "Our research confirms that executive and middle manager resistance and

even sabotage can significantly influence the success of a company's quality, team, and process management strategies. Because these strategies are crucial techniques for achieving global competitive advantage, we [Achieve International] recommend specific interventions early on to wear down these pockets of resistance, whether they involve individual personalities, the protection of turf, or lack of buy-in to a broad portion of the effort" (Brecka, 1994).

Expectancy theory of work motivation. In his article on improving the quality of work life, Lawler (1982) observed that a major obstacle to the voluntary adoption of such programs by employers is the priority given to economic performance and that it would therefore be strategic to promote programs that aim to improve quality and productivity. Katzell (1983) extends that theme further by noting that it would be even more strategic to promote such programs principally on the basis of their demonstrable impact on productivity, with their Quality effects as secondary but welcome by-products. This is, in fact, only an application of the expectancy theory to which Lawler subscribes: The motivation to act is proportional to the valence attached to the expected outcomes of the act.

Work Motivation Theory literature has in the past, looked at individual decision making styles in regards to organizational development interventions. These theories examine the beliefs and attitudes of individuals and the performance that results from them. The most influential of these models is called Expectancy Theory. Expectancy

Theory has been useful in many areas of work motivation. It suggests that people will choose a level of performance based on its perceived benefit when compared to other performance levels. The value of different performance levels is determined by the assessment of (a) the probability that a particular performance level will lead to various outcomes, (b) the value of those outcomes, and (c) the probability that a person can perform at that particular level.

Expectancy Theory rests on the assumption that if performance is the result of motivation and ability, then any attempt to influence performance must be geared toward influencing one of these two constructs (Ilgen, Nebeker, & Prichard, 1981). Of the two, motivation is much more influenced by environmental stressors once a person is settled in a job. Therefore, it makes sense that to effectively influence performance, one must influence motivation (Ilgen et al., 1981).

Expectancy Theory has frequently been used with a number of specific motivational techniques used in business today. These procedures include contingency management (incentive systems), job enrichment, goal setting and management by objectives. Its primary value, however, is in the area of diagnosing motivational problems in specific organizations or subparts of an organization. The theory leads to the examination of things such as the types and amounts of intrinsic rewards available; the values people place on organizational and social rewards; the extent to which higher performance is seen as a way to gain specific rewards; and the extent to which

individuals believe they have the ability to reach these performance levels (Ilgen et al., 1981). According to Steers and Porter (1987), the Expectancy Theory of Motivation offers a comprehensive approach to understanding motivational processes in the work organization and in addition, appears to hold promise for increasing the effectiveness of managers.

There is extensive literature on expectancy theory in both applied and theoretical contexts (Vroom, 1964; Galbraith & Cummings, 1967; Porter & Lawler, 1968; Campbell, Dunnette, Lawler, & Weick, 1970; Graen, 1969; Lawler, 1971, Ilgen et al., 1981). To date, however, there has not been any literature discussing the validity of Expectancy Theory in predicting commitment to Total Quality Management, especially in predicting middle managers' commitment to TQM. According to DeSantis (1983), there is a need for research to test the expectancy model in real organizational settings to determine whether its validity is generalizable to business settings and managerial populations. In addition, field-based research should provide insight into the implications of the expectancy model for design and implementation of decision support systems.

The Integrated Model of Motivation. Past research has suggested that goal-setting theory and expectancy theory make opposite predictions about the relationship of expectancy to performance (Locke, Motowidlo, & Bobko, 1986). In attempts to resolve this conflict, the authors demonstrated that self-efficacy theory, which is

similar in some important aspects to both goal-setting theory and expectancy theory, can be used to resolve this conflict. It is done by showing that when the measurement process enlarges subjects' frames of reference to include perceptions about all possible goals or performance levels the apparent conflict disappears. The results suggest that an integration of goal-setting theory, expectancy theory, and self-efficacy theory is clearly possible, where, expectancy/self-efficacy, along with valence, would affect goal choice or goal commitment. In turn, performance would be affected by expectancy/self-efficacy, goals, and perhaps valence.

The Integrated Model of Motivation (Nebeker, 1992) is an elaboration of the recommendation proposed by Locke et al. (1986). The model proposes that various theoretical and empirical relationships exist between expectancy theory constructs, goal setting, and self-efficacy. It suggests that work performance is determined by a cognitive process where an individual chooses a performance goal from a number of levels based on the perceived attractiveness of the alternatives. The attractiveness of the alternatives is based on the beliefs the individual has that performing particular performance goals will lead to valued outcomes. Further, the model suggests that performance goals influence the amount of effort a person exerts.

Prediction rules. In the expectancy theory models, goal choice is determined by an individual's evaluation of the attractiveness of different performance levels.

Several hypothesized mechanisms for choice selection have been suggested, including the "maximization rule" and the "matching law".

Riedel, Nebeker, and Cooper (1988) demonstrated that the construct 'attractiveness of the performance level' predicts an individual's choice of a performance goal. There can be different assumptions about how people evaluate the attractiveness of different performance levels and thereby choose their goals. If the assumption is made that people try to maximize gains, an assumption common in the expectancy theory literature, then the model predicts that the performance level having the highest perceived attractiveness will be chosen as the performance goal. This assumption is referred to as the maximization rule. Alternatively, there is some evidence that supports the hypotheses that the frequency of a response at some level of performance is proportional to the value of the reinforcement at that level. The model predicts, then, that goal choice is the weighted average of the attractiveness of performance across performance levels. Formally, the process of this distinction is defined by what is called the matching law (Herrnstein 1974). For example, if an individual has the option of performing at a high level of performance, level 10, with a reward of $10, and the option of performing at a lower level, level 5 with a reward of $5, then both the maximization rule and the matching law can be used as the prediction rules. Over repeated choices the maximization rule predicts the person would always choice level 10. The matching law predicts that level 10

would be chosen 67% of the time and level 5 x 33% of the time. As a result the single best predictions for the maximization rule is 10 while the best single prediction from the matching law is 8.33 (.33 x 5 + .67 x 10).

Situational performance constraints. Most researchers and managers would admit that contextual influences impact work-related outcomes. Peters and O'Connor (1980) stress that an emphasis on work-setting characteristics for explaining performance and satisfaction is not new. However, in spite of their obvious importance, the managerial implications have frequently been overlooked. In order to motivate employees, managers must consider motivational issues and in addition, contextual determinants of performance and satisfaction. Since TQM has become a strategic initiative in organizations, researchers must begin to examine the potential effects of situational performance constraints in order to help practitioners structure work environments in away that is not only effective, but also satisfying to employees.

In an organizational setting, constraints may affect any or all the variables of Expectancy Theory. Peters and O'Connor (1980) argue that the existence of situational performance constraints reduces motivation to perform. Additionally, these constraints seem to decrease satisfaction. The researchers identified these situational performance constraints as (a) lack of job related information, (b) the lack of available materials and supplies, (c) limited budgetary support, (d) poor service from others, (e) inefficient task preparation (training), (f) limited time availability, (g) unacceptable physical work

environments, and (h) the unavailability of necessary tools and equipment. In work settings where these constraints exist, employees experience considerable frustration because their attempts at goal attainment are continually blocked. As predicted by expectancy theory, this frustration should lead to lower levels of motivation since there may no longer be a relationship between effort and performance.

Several studies have examined the effects of situational constraints on performance (Peters, Chassie, Lindholm, O'Connor, & Kline, 1982; Peters, O'Connor, & Rudolf, 1980). Collectively these studies have provided consistent support for hypotheses derived from the Peters and O'Connor taxonomy. This suggests that an understanding of the effects of such constraints may facilitate our ability to meaningfully explain employees' reactions to their jobs. It is, therefore, important that research continue to explore the joint influences of situational constraints and other motivational strategies used by organizations to improve employee satisfaction (Peters et al., 1982).

Job satisfaction. In 1968, Porter and Lawler insisted that there is no inherent relationship between job satisfaction and performance without contingent-reward conditions. In 1971, Cherrington, Reitz, and Scott, set out to investigate the relationships between these variables. The results of their research supported the suggestion that the nature and magnitude of the relationship between satisfaction and performance depends heavily upon performance-reward contingencies. Their findings

are consistent with the predictions of Porter and Lawler (1968) although the theoretical basis is different. Porter and Lawler implied that under contingent-reward conditions, performance causes satisfaction because performance leads to rewards which, in turn, cause satisfaction. Cherrington et al. (1971) imply no cause-effect relationship between performance and satisfaction; and instead stress the performance-reinforcing as well as the satisfaction increasing potential of contingent reinforcers or rewards.

Purpose and Objectives

TQM requires major operational changes, major culture changes, and even value changes in an organization. The process is time consuming and very costly. This study was designed to investigate why middle managers are willing to or not willing to perform behaviors which illustrate commitment to a TQM intervention. With this information, organizations can better invest time, money and energy to increase commitment. If middle managers are willing to accept TQM, organizations can enter the intervention with confidence and enthusiasm, in addition to being aware of the possible turbulence that may occur. If middle managers are not willing to accept TQM, organizations can readdress the intervention and make changes to increase the likelihood of securing the desired commitment behaviors.

The present study contributes both theoretically and methodologically to TQM and Work Motivation literature. Theoretically, this study assessed whether expectancy theory can account for the behavioral outcomes, which suggest commitment of middle

managers to Total Quality Management, in a real organizational setting. In addition, the effects of situational performance constraints on motivation to perform was assessed, as well as the relationship between displaying commitment behaviors and general job satisfaction. Methodologically, this study compared traditional methods of measuring the expectancy construct of expectancy theory to a method based on self-efficacy theory. Further, the effects of using both the maximization rule and the matching law as predictions rules were assessed.

Because the concept of self-efficacy is similar in meaning to the expectancy concept in expectancy theory it is included in this research to test their equivalence. Typically expectancy is measured for each of several performance levels. In this research expectancy is measured as an expected performance at maximum effort. This measure is then compared to self-efficacy measures. If there is a high correlation between the expectancy construct and the self-efficacy construct one can conclude that (1) expectancy theory predictions are indeed valid, and (2) self-efficacy can be used as well as expectancy in future research. This study compared traditional methods of measuring the expectancy construct of expectancy theory to this method based on self-efficacy theory.

Definition of Significant Terms

Attractiveness of performance. According to Riedel et al. (1988), attractiveness of performance is a hypothetical construct representing the expected value a person

associates with a given level of performance. The current study defines it as a computed variable which is a function of the products of performance valences and expectancies (and performance valence and self-efficacy measures). This definition is equivalent to the construct force, which was proposed by Vroom in 1964.

Behavioral commitment to TQM (BC-TQM). Behavioral Commitment to TQM is a construct developed for this study. It describes behaviors which demonstrate commitment to TQM. For the purpose of this study, BC-TQM is defined as a numerical score on a commitment scale developed specifically for the organization in which this study took place.

Comfort level. For the purpose of this study, comfort level refers to how comfortable, or how qualified a rater feels judging a particular middle manager.

Commitment. According to Keidel (1982), commitment refers to the degree to which management has internalized the humanistic values underlying a quality improvement effort. A serious commitment implies appreciation of the effort's intrinsic worth. TQM is valued for its own sake, irrespective of its instrumental role in improving organizational performance; hence, TQM is regarded as a legitimate end in itself. In sum, commitment describes individuals' core convictions.

Expectancy. "The strength of a person's belief about whether a particular outcome is possible" (Steers & Porter, 1987, p. 72). It represents a person's belief that given a certain level of effort a particular level of performance will occur.

Force. For the purpose of this study, force is synonymous with attractiveness of performance. As defined by Vroom (1964, p. 18) "The force on a person to perform an act is a monotonically increasing function of the algebraic sum of the products of the valences of all outcomes and the strength of his expectancies that the act will be followed by the attainment of these outcomes". Force can be viewed as the energizing and directing of behavior (Tatum, Nebeker, & Cooper, 1986).

Instrumentality. The expectancy that different performance levels will be associated with different outcomes (Riedel et al., 1988). It is the subjective link between performance and outcomes. There are multiple links through which different outcomes, or performances, may be associated (Ilgen et al., 1981).

Middle management. For the purpose of this study, middle management is defined by the company in which the study took place. Middle managers are those employees who have supervisory responsibilities and directly report to a divisional vice president.

Outcome valence. The anticipated satisfaction from the attainment of any given work-related outcome (Pinder, 1984). It is the perceived attractiveness or desirability of potential job outcomes (Schmidt, 1973).

Performance level goal. According to Riedel et al. (1988) there are three types of performance goals. These goals include production goals, error

rate goals, and effort goals. As with the Riedel et al. study, this research only used production goals to define performance level goal. Performance level goals were measured by asking participants to select from a list of goal statements the option that best reflects their personal production goal.

Performance valence. A construct that represents the anticipated satisfaction from displaying a specific behavior. In this study the behaviors are those which demonstrate commitment to Total Quality Management. This definition is similar to the Riedel et al. (1988) definition of Performance Valence. It is a computed construct which is the function of the products of outcome valence and instrumentality.

Quality. The degree to which the output of any process is free from deficiencies and meets customers' needs. Quality can be generalized by the expression: Quality = Frequency of deficiencies/Opportunities for deficiencies (Juran, 1989).

Self-efficacy. Self-efficacy is defined as one's judgment of "how well one can execute courses of action required to deal with prospective situations" (Bandura, 1982, p. 122). It is alleged to be the result of past performance, modeling, persuasion, autonomic arousal, and individual's cognitive processing of all of the above. Bandura has asserted that self-efficacy is significantly and positively related to future performance, even more so in some cases than to

past performance. Self-efficacy is similar in meaning to expectancy except that Bandura views his concept as broader because self-efficacy includes such factors as beliefs about one's ability to function under stress, one's ingenuity, and one's adaptability (Locke et al., 1986).

Situational performance constraints. Peters and O'Connor (1980) define Situational Performance Constraints as environmental conditions which act as obstacles for performing one's duties.

Top management. For the purpose of the study, top management refers to the corporate officers and the divisional vice presidents in which this study took place.

Total Quality Management (TQM). The application of quality principles to all company endeavors, including satisfying internal "customers" (Port, 1991). For the purpose of this study, a company engaged in TQM is identified as one which is actively applying quality principles as defined by the Malcolm Baldrige Application Criteria. For this study, TQM is used interchangeably with the terms Total Quality Control (TQC), Total Quality Leadership (TQL), and Continuous Quality Improvement (CQI).

Hypotheses

The first eleven hypotheses are intended to gain support for The Integrated Model of Motivation (Nebeker, 1992) which proposes various

theoretical and empirical relationships between expectancy theory constructs, goal setting, and self-efficacy which operate within the work environment. Hypotheses 12 and 13 analyze the relationship between situational performance constraints and expectancy theory components, and Hypothesis 14 investigates the relationship between job satisfaction and BC-TQM.

BC-TQM variables and expectancy theory. Hypothesis 1 through Hypothesis 5 address whether behaviors, which demonstrate BC-TQM, are related to the component parts of expectancy theory. Hypothesis 4 and Hypothesis 5 follow up on recommendations from researchers, such as Ilgen et al. (1981), and Locke et al. (1986), to determine the feasibility of changing the traditional measurement procedure of the expectancy construct to one much like the procedure used to measure the self-efficacy construct for future expectancy theory research.

H1: Predicted BC-TQM based on the valence of performance levels will be positively related to the actual BC-TQM level.

H2: Predicted BC-TQM based upon expectancy for performance levels will be positively related to the actual BC-TQM level.

H3: Predicted BC-TQM based upon self-efficacy will be positively related to the actual BC-TQM level.

H4: The expectancy measure will be positively related to the self-efficacy measure.

H5: The correlation between self-efficacy and BC-TQM will be significantly different than the correlation between expectancy and BC-TQM.

Expectancy and self-efficacy. Hypotheses 6 through Hypotheses 8 analyze the constructs self-efficacy and expectancy when predicting performance by investigating the relationship between attractiveness of performance and self-efficacy, and by investigating the relationship between attractiveness of performance and expectancy.

H6: Predicted BC-TQM based on the attractiveness of performance using expectancy ($Attractiveness_E$) will be positively related to the actual BC-TQM level.

H7: Predicted BC-TQM based on attractiveness of performance using self-efficacy ($Attractiveness_S$) will be positively related to the actual BC-TQM level.

H8: The correlation between $Attractiveness_E$ and BC-TQM, will be significantly different than the correlation between $Attractiveness_S$ and BC-TQM.

Attractiveness of performance and performance goal. Hypothesis 9 through Hypothesis 11 are intended to elaborate the findings of Riedel et al. (1988) which demonstrated that attractiveness of performance levels predicts an

individual's performance goal and that the attractiveness score based on self-efficacy measures is equally as predictive in determining performance as the attractiveness score based on expectancy measures.

H9: Predicted BC-TQM based on $Attractiveness_E$ will be positively correlated with the BC-TQM goal.

H10: Predicted BC-TQM based on $Attractiveness_S$ will be positively correlated with the BC-TQM goal.

H11: BC-TQM goal will be related to the BC-TQM level.

Situational performance constraints. Hypothesis 12 and Hypothesis 13 are intended to find support for Peters and O'Connor's (1980) argument that the presence of situational performance constraints reduces motivation to perform.

H12: Perceived Situational Performance Constraints will be negatively correlated with self-efficacy and expectancy.

H13: Perceived Situational Performance Constraints will be negatively correlated with the BC-TQM level.

Performance and job satisfaction. Hypothesis 14 is intended to support the research of Cherrington et al. (1971), which suggests that the nature and magnitude of the relationship between satisfaction and performance depend upon performance-reward contingencies. Because there is the intent to reward

people who perform at high levels of BC-TQM, there is an expectation that BC-TQM will be related to job satisfaction.

H14: BC-TQM will be positively correlated with job satisfaction.

CHAPTER II

Literature Review

Total Quality Management

Dr. W. Edwards Deming can be thought of as the 'voice of quality' worldwide. An American with a mission to make industry more efficient, he became an internationally known business consultant whose writings have revolutionized the Japanese industry into a world class competitive market. Deming's theory of quality control focused heavily on worker involvement, goal setting and communication within corporate structures, as opposed to competition among workers and management control. Across the Pacific, Japanese corporations seized Deming's gospel of corporate quality control. Implementing these ideas and theories after World War II, were so successful that the Japanese were able to transform themselves from a bombed out country into an economic superpower.

Deming (1982) states that there are 14 points which are the foundation for the transformation of American industry. The adoption and action on the 14 points are a signal that management intends to stay in business and protect investors and jobs. Additionally, Deming reports that these 14 points apply anywhere. They apply to small as well as large organizations, to manufacturing as well as to service industries,

and to whole companies as well as just single divisions. Deming's 14 Points for Management include:

"1. Create constancy of purpose toward improvement of product and service, with the aim to become competitive and to stay in business, and to provide jobs.

2. Adopt the new philosophy. We are in a new economic age. Western management must awaken to the challenge, must learn their responsibilities, and take on leadership for change.

3. Cease dependence on inspection to achieve quality. Eliminate the need for inspection on a mass basis by building quality into the product in the first place.

4. End the practice of awarding business on the basis of price tag. Instead, minimize total cost. Move toward a single supplier for any one item, on a long-term relationship of loyalty and trust.

5. Improve constantly and forever the system of production and service, to improve quality and productivity, and thus constantly decrease costs.

6. Institute training on the job.

7. Institute leadership. The aim of supervisor should be to help people and machines and gadgets to do a better job. Supervision of management is in need of overhaul, as well as supervision of production workers.

8. Drive out fear, so that everyone may work effectively for the company.

9. Break down barriers between departments. People in research, design, sales, and production must work as a team, to foresee problems of production and in use that may be encountered with the product or service.

10. Eliminate slogans, exhortations, and targets for the work force asking for zero defects and new levels of productivity. Such exhortations only create adversarial relationships, as the bulk of the causes of low quality and low productivity belong to the system and thus lie beyond the power of the work force.

11a. Eliminate work standards (quotas) on the factory floor. Substitute leadership.

b. Eliminate management by objective. Eliminate management by numbers, numerical goals. Substitute leadership.

12a. Remove barriers that rob the hourly worker of his right to pride of workmanship. The responsibility of supervisors must be changed from sheer numbers to quality.

b. Remove Barriers that rob people in management and in engineering of their right to pride of workmanship. This means, *inter alia,* abolishment of the annual or merit rating and of management by objective.

13. Institute a vigorous program of education and self improvement.

14. Put everybody in the company to work to accomplish the transformation. The transformation is everybody's job" (Deming, 1982, p. 23-24).

Middle Management and TQM

One of the premises underlying TQM is participative management and

empowerment of the worker. TQM allows workers to perform production functions more effectively and efficiently by opening up new avenues for them to apply their skills, knowledge and abilities (SKAs) to their work. TQM encourages workers to increase their participation in the management of the organization by directing their intelligence and expertise to areas such as job design, performance measurement, reward distribution, the distribution of authority and status symbols, and in defining career paths. In addition, employees are asked to address problems concerning relationships among themselves and with management (Schlesinger & Oshry, 1984). Total Quality Management is a way of managing employees which recognizes each individual employee's contributions to Quality. It means a participative management style in which individuals are asked their opinions in all phases of a process. In effect, TQM is transferring primary responsibility for quality away from the quality control department to the individual.

Schlesinger and Oshry (1984) interested in finding obstructors to successful implementation of TQM, reviewed 25 organizations implementing Quality and found middle mangers to be one of these obstructors. When they asked about resisters to the successful implementation of the system a common theme emerged and they heard statements such as:

- "Middle managers are interfering with the success of their program."
- "Middle managers just won't buy into this Quality of Work Life stuff."

- "They (middle managers) are resisting any encroachments on their authority."

To assume that a Total Quality Management initiative can be successful without the support of middle management can be extremely costly. If TQM activities are to be useful over the long term, the middle manager must play a central role. To date, the middle management role has been fraught with problems, dilemmas, and frustrations. Schlesinger and Oshry (1984) outline three premises that underlie the middle managers' resistance to TQM:

1. Quality principles provide a mechanism for increasing the power of the work force. They enable workers to change aspects of their jobs or organizations, and to influence others to assist them in making changes and improve their productive function.

2. The sources of the problems experienced by middle managers are usually attributed to their loss of power as workers increase their own influence capabilities. The problems are exaggerated when middle managers lose control over information and resources and find themselves bypassed in the process of increasing employee involvement.

3. Most middle managers cannot readily address the questions of where their influence base lies and how it is used. While it is clear that the power of the workforce and its influence comes from production, it is difficult to identify a parallel power base for the many layers of middle managers in organizations.

The structure of an organization can also influence middle management's resistance to TQM. Despite the wide variety of organizations in the U.S. today, most share a relatively common hierarchy consisting of three layers. The top layer, is made up of the top mangers who run the organization. They define who and what the organization is and where it is going. They reshape the organization as needed. The lowest level contains the workers who produce the organization products and supplies its services. These workers use their proximity to the production process to gain power and influence the ways in which work is performed. Between these two layers are the middle managers whose primary function is to act as organizational integrators. They act as liaison between top management and workers, they transfer information and materials to different parts of the organization, and they coordinate organization activities.

Each level has unique power and one can not function without the other. Therefore, if middle managers integrate well, they can enhance top management's ability to shape and direct, and they can also enhance the work force's ability to produce. However, middle managers cannot integrate organizations unless top management and the workforce allow themselves to be influenced.

As workers are given the opportunities to participate in decision making, traditional perceptions of hierarchical roles and responsibilities become ambiguous. Middle managers are given more responsibilities such as providing guidance for the

use of tools and for monitoring new activities. Additionally, middle mangers are frequently provided with little or no positive support and recognition from top management or workers. Middle managers are often identified as "barriers" to the success of TQM and described as people who "selfishly" refuse to share their decision-making perquisites (Schlesinger & Oshry, 1984). If middle management makes a decision, top management holds them responsible for problems, but middle management usually receives little or no credit for successes.

In addition to the demands of TQM activities, middle mangers must meet production demands on the short term. With Quality processes come the expectations among the workforce that there will be increased opportunities for involvement, growth, and career development. Workers are taken off the job for training and at the same time, middle managers are being pushed to have their workers produce more and in a quality fashion. Because of all these issues it is easy to see why middle mangers may believe that they have no influence in the organization. Many state that they feel like nothing more than messengers in the communication between top management and the work force.

There is obviously some evidence to show that many middle managers view the growth of TQM with alarm for fear that their own power might be weakened or that their own managerial positions might be eliminated. However, when implemented correctly TQM activities allow managers to fulfill their own job responsibilities more

effectively. When subordinates are given the opportunity to take care of the details of daily work activities, the responsibility of solving the problems is taken away from managers. "This will relieve the mangers from the trivial day to day problems of the work place and free them to do the work for which they are hired". For example, these managers can spend time dealing with issues of new product development and technology development. "They can spend their time confidently looking forward into the future" (Ishikawa, 1985, p. 150-151).

Research frequently looks at mangers as resisters to TQM but fail to look at the cognitive processes managers may go through when making the decision to accept and support the new processes. Many believe that empowering workers may eventually give U.S. companies the competitive edge they need to compete in the global market because it is the employees themselves who have the best opportunity to solve most of the problems in work processes. Without the support of middle management however, there is little chance that this effort will succeed and TQM will fail.

Expectancy Theory of Work Motivation

With its roots in the work of Tolman (1962), Victor Vroom (1964) developed a cognitive theory of work motivation, formally called, the Expectancy Theory of Work Motivation. Since then, the expectancy theory has undergone many modifications by researchers such as Porter and Lawler (1968); Graen (1969); Mitchell (1974);

Campbell and Pritchard (1976); and Ilgen et al. (1981). It has become the most widely accepted approach used in understanding work motivation and it has the greatest empirical support (Mitchell, 1979). In Vroom's original model, the main idea was that "the strength of a tendency to act in a certain way depends on the strength of an expectancy that the act will be followed by a consequence (or outcome) and on the value or attractiveness of that consequence (or outcome) to the actor" (Lawler, 1971, p. 45). The theory was primarily concerned with predicting the amount of effort a worker would extend on various tasks associated with his job, his motivation to work. Subsequently, the theory has been expanded in an attempt to predict job performance (Galbraith & Cummings, 1967; Porter & Lawler, 1968) as well as other job related activities.

Expectancy theory is based on the principle of expected value and suggests that work motivation and performance are the result of a process through which individuals cognitively or acognitively "compare" the courses of action open to him or her to perform an action with the greatest positive or smallest negative force. Through this process, a person chooses a performance goal from alternative performance levels based on the perceived attractiveness of the alternatives (Riedel et al., 1988). The perception of attractiveness is based on an individuals belief that the likelihood of performing at particular levels will lead to particular job outcomes.

Expectancy theory proclaims that work behavior is determined by the valences, instrumentalities and expectancies associated with items in the individual's decision space (Behling & Starrke, 1973). Vroom defines valence as "...the affective orientation toward particular outcomes" (p. 15). It assumes that people have preferences for different outcomes at any given moment in time. These preferences are related to a person's attraction or strength of attraction for a given outcome. When measured, valences are scaled over a range of positive and negative values. A positive valence for an outcome represents a person's preference for attaining that outcome. A valence with a value of zero for an outcome indicates a person's indifference for attaining that outcome, and a negative valence for an outcome indicates an outcome which a person prefers to avoid. The strength of a person's preference for attaining a given outcome depends on the anticipated satisfaction or dissatisfaction which results from the outcome (Vroom, 1964).

Outcome valence, the anticipated satisfaction from an outcome is different from value, the actual satisfaction an outcome provides. Outcome valence is future oriented, where value, is past oriented (Vroom, 1964). Researchers subsequent to Vroom did not always follow his formulation of valence. An examination of the literature reveals that the concept has been operationalized in a number of different ways, including (a) as responses on a rating scale of importance (Lawler & Porter, 1967), (b) by asking subjects to rank rewards according to preference and than rate the

degree of preference (Galbraith & Cummings, 1967), (c) by asking subjects to evaluate modified paired comparisons according to importance in an ideal job (Schwab & Dyer, 1973), (d) using ratings of desirability (Lawler & Suttle, 1973), and (e) employing a Likert scale of attractiveness (Pritchard & De Leo, 1973).

The most commonly employed operationalization, though, has been importance (Connolly, 1976; Michell, 1974), which potentially represents an alternative construct. Connolly (1976) consequently argues that unless the use of importance can be justified on the basis of the amount of variance explained, there is "a good argument for returning to the original conceptualization of valence as anticipated satisfaction, or a close analog such as attractiveness, desirability, or anticipated utility" (Connolly, 1976, p. 40).

Although this controversy exits in the expectancy theory literature regarding the operationalization of valence, Pecotich and Churchill (1981) revealed that subjects perceive little difference in alternative operationalizations and correlations across operationalizations are uniformly high (.98).

When choosing among several alternative levels of performance, an individual's belief that outcomes are associated with behaviors is just as important as the anticipated satisfaction with that outcome. This belief is called instrumentality and is defined as the momentary belief in the likelihood that a particular act will be followed by a particular outcome. Additionally, instrumentality is the belief that different

performance levels may be associated with different amounts or levels of outcomes. The strength of an instrumentality can be defined in terms of maximal and minimal strength where maximal strength of an instrumentality is the subjective certainty that a particular performance level will be followed by the particular level of outcome. Minimal strength of an instrumentality is the subjective certainty that performance at a particular level will not be followed by the particular level of outcome.

Outcome valence and instrumentality combine multiplicitively to determine the 'performance valence', a hypothetical construct that represents the anticipated satisfaction of performing at a given level of performance. This performance valence is a function of the algebraic sum of the products of the valences for each outcome and the instrumentality for the attainment of each outcome. The result predicts a person's preference among several alternatives.

Expectancy is the belief one holds concerning his or her own ability to achieve a certain performance level (Riedel et al., 1988) and can be viewed as a person's perceived connection between effort and job performance (Ilgen et al., 1981). The expectancy value associated with any effort-performance link may range from 0.00 (complete certainty that they are not able to perform at the specified level) to 1.00 (complete certainty that they are able to perform at the specified level). Expectancy combines multiplicatively with performance valence to produce a

perception of attractiveness associated with each performance level. This construct is called 'attractiveness of performance' (Riedel et al., 1988).

The three components of Vroom's model interact to create a motivational force that directs behavior to bring fourth pleasure and to avoid pain (Steers & Porter, 1987). In essence, each possible level of performance acquires valence through its association with specific job outcomes and the anticipated satisfaction associated with those same outcomes. Performance valence is then modified by expectancy, or the person's belief regarding the likelihood of achieving that level of performance. The result of this combination is the perceived attractiveness a person has for each level of task performance. Expectancy theory can therefore be used to predict an individual's intention to perform a behavior.

Since attractiveness of performance is defined in terms of a multiplicative relationship between performance valence and expectancy, it is implied that unless one's expectancy, or one's belief concerning his or her ability to achieve a certain performance level, is greater than zero, a high positive or a high negative performance valence will not have an impact on the force to perform an act. Furthermore, as the expectancy increases, the effects of the variations in the performance valence on the force increases. If the performance valence is zero, neither the variations in the expectancy nor the absolute value of the expectancy will have an effect on the force (Vroom, 1964).

In sum, expectancy theory claims that the force toward a particular course of action (e.g., a goal, a choice, a level of effort) is based on the product of three variables. They are (a) expectancy, a person's perception of the probability that expending a given amount of effort on a task will lead to a particular level of performance, (b) instrumentality, a person's perceptions that the relationship, or link between a particular level of performance and the attainment of particular outcomes that are of value (e.g., pay, promotion), and (c) valence, a person's perception of the desirability of receiving these outcomes (Pecotich & Churchill, 1981). It is possible that there are many outcomes and therefore, many instrumentalities and valences corresponding to a certain performance level. It follows that performing at a high level on a job may lead to more recognition, more money, and even a promotion. Choosing to perform at a high level is the product of the expectancy that one can reach this level, the belief that performing at this level will lead to rewards, and that these rewards are valuable (Locke et al., 1986).

In recent years different expectancy formulations have appeared. These include (a) Porter and Lawler's (1968) Expectancy Model, (b) Graen's (1969) Modified Instrumentality Model, and (c) House's Path-Goal Contingency Theory (House, Shapiro, & Wahba, 1974). It can be argued that all of these approaches accept the basic expectancy formulation elaborating and refining it by:

- identifying different types of valences and making explicit the ways in which they operate, for example, by identifying extrinsic and intrinsic rewards,
- expanding the basic valence x expectancy statement by (a) indicating the nature of some of the factors leading to the assignment of specific valences and expectancies, and (b) identifying some of the factors moderating the relationship between $\Sigma(E_{ij}V_j)$ and performance,
- drawing implications for managerial practice from the basic and extended versions of the model (Behling & Starrke, 1973), and
- substituting effort for force. Effort refers to behaviors of the individual and force more closely refers to the economist's propensity, and bares many of the limitations attached to that concept. Porter and Lawler (1968) and Graen (1969) use the concept 'effort' (Graen refers to effort as "gain in performance"),

Expectancy, Self-Efficacy and Goal-Setting Theory

The predictive validity of expectancy has been questioned by several researchers (Kopelman & Thompson, 1976; Reinharth & Wahba, 1975) who report that methodological issues used to measure the expectancy construct, along with boundary conditions, such as time and task specific ability, weaken the predictive power the expectancy theory model has of work motivation and performance. These

researchers suggest using Bandura's (1977) concept of self-efficacy in place of the expectancy concept to increase the model's predictability.

Self-efficacy is a key concept in Bandura's social learning theory. It is defined as "the conviction that one can successfully execute the behavior required to produce [certain] outcomes" (Bandura, 1977, p. 122). It is the result of past performance, autonomic arousal, persuasion, modeling, and the cognitive processing of all of the above. Bandura claims that self-efficacy is positively and significantly related to future performance and in some cases, more so than to past performance (Bandura, 1982). In this respect, the prediction is the same as for expectancy theory.

The similarities and differences between expectancy and self-efficacy have been studied by many researchers (Bandura, 1984; Locke & Henne, 1986; Locke et al., 1986; Gist, 1987; Gist & Mitchell, 1992). According to Locke and Henne effort-performance expectancy in expectancy theory is similar to self-efficacy expectancy in self-efficacy theory because both represent beliefs about the ability to perform a behavior. According to Bandura (1984) efficacy expectations refer to the exercise of control over one's behavior and actions. In this sense, self-efficacy has an obvious relationship to effort-performance expectancies. Expectancy and self-efficacy do however, have notable differences. Effort-performance expectancy focuses on the belief that effort will lead to desired performance. Self-efficacy focuses on a conviction that one can execute required behaviors and implies that judgments of

efficacy depend on more than effort considerations. These considerations are not included in the expectancy construct and may involve factors such as coping abilities under stress or various internal motivational states. Therefore, effort-performance expectancies may predict that effort will lead to desired performance, while self-efficacy may predict that desired performance will not occur because of an individual's conviction that he or she is not motivated to perform the required behavior (Bandura, 1978).

Another distinction between effort-performance expectancy and self-efficacy is the measurement differences between the two constructs. Several measurement differences have been noted (Locke et al., 1984). These differences include (a) the expectancy measures typically assess effort-performance expectancy for one assigned performance goal level, while self-efficacy measures assess expectations for a wide range of performance levels, (b) the self-efficacy assessments involves two types of ratings: a dichotomous capability rating for each level of performance and a confidence rating for positive responses, and (c) the use of confidence ratings may generate different results than the probability of success estimates used in effort-performance assessments.

Researchers such as Ilgen et al. (1981) and Locke et al. (1984) report that the most successful expectancy theory studies assess expectancies with a method similar to that of self-efficacy measurement and that the differences in the measurement may

affect the explanatory and predictive abilities of the two constructs. Locke et al. (1984) suggested that further research is needed to determine what effect these differences may have on the validity of expectancy and self-efficacy constructs.

Research in goal-setting theory has illustrated that the expectancy construct and the self-efficacy construct influence the predictive validity of the expectancy theory model differently. Goal-setting theory has, in the past, been compared to expectancy theory and has been accused of making opposite predictions regarding the relationship of expectancy to performance than does expectancy theory (Locke et al., 1986). Goal-setting theory asserts that much of human behavior is goal-directed and that the individual's conscious goals are the most direct and immediate regulators of this behavior. There is extensive research literature on goal-setting (Locke, 1968; Locke & Latham, 1984; Locke, Shaw, Saari, & Latham, 1981) which reveals that specific, hard and challenging goals lead to higher levels of performance on tasks than do easy or vague goals (e.g., "do your best"), or no goals. Additionally, the more difficult a goal is, the better the performance will be. In other words, goal level is positively related to performance. This basic finding has been observed consistently both in laboratory settings and field setting, when using both quantity and quality criteria, and with both individual goals and group goals (Latham & Lee, 1986).

There has been some objections to the above findings. Motowidlo, Loehr, and Dunnette (1978) report that expectancy is negatively correlated with goal difficulty.

These researches hypothesize that the probability of success in attaining more difficult goals is lower than in attaining easy goals. Therefore, the expectancy to attaining these (the more difficult goals) is related negatively to performance.

In an attempt to resolve the conflict between goal-setting theory and expectancy theory, Locke et al. (1986) proposed two methods to investigate the relationship. The first was based on distinguishing between within-group and between-group levels of analysis and the second method was based on measuring expectancy in relation to the total range of goal or performance levels, instead of the traditional measure of expectancy where expectancy is measured in relation to only one goal or performance level. Since the concept of expectancy is clearly similar in meaning to the self-efficacy concept (Locke et al., 1986), it makes sense to measure expectancy in the same way.

Locke et al. (1986) demonstrated that the negative relationships found previously between expectancy and performance in goal-setting research were artifacts of inappropriate levels of analysis and poor construct measurement. Typically, different groups of subjects are assigned different goals and are asked to rate their expectancies of reaching them. Additionally, subjects rate their own expectancy of attaining only one level of performance, the one that corresponds to the goal assigned to that individual. Since different groups of subjects are assigned different goals, they report expectancies of attaining different levels of performance. As a result, every

subject is rating the expectancy of goal attainment and this means different things to different groups. They are, therefore, actually rating expectancies of different performance outcomes. By controlling performance goals and assigning subjects to either high performance goals, medium performance goals, or low performance goals, subjects were able to rate the probability of attaining only one goal level, the assigned goal. Results revealed that goal-setting theory and expectancy theory do in fact make similar predictions regarding the relationship of expectancy to performance.

Utilizing Bandura's (1982) self-efficacy theory, Locke et al. (1986) provided evidence that it is also possible, and preferable, to measure expectancy using a process that enlarges a subject's frame of reference to include perceptions about all possible goal or performance levels rather than just the assigned goal level. This is the same method used to measure self-efficacy. When expectancy is measured with respect to all goal levels (or a wide range of performance levels) and goals are assigned to particular groups (as mentioned above) the artifact which created the inappropriate levels of analysis is avoided because all expectancy ratings are made with respect to the same referent. Therefore, subjects with high goals will perform better than those with low goals, they will perceive this difference, and thus they will have higher overall expectancy ratings. The researchers suggest that this effect becomes stronger with repeated trials and when subjects are provided with performance feedback. Since individuals with high goals perform at high levels, feedback gives the opportunity to

recognize that they are performing at levels that make it probable that they can reach all levels of performance. Because they are performing well on the task, they become more confident than people with lower goals, who perform at lower levels, in reaching their desired level of performance.

Presently, there is little integration of goal setting with other motivational theories. Goal-setting, in work motivation and performance literature is one of the most under researched and least understood areas in organizational behavior (Lawler, 1981; Opsahl & Dunnette, 1966; Riedel et al., 1988). More specifically, attempts to measure goal commitment are scarce (Latham, Mitchell, & Dossett, 1978; Pritchard & Curts, 1973; Riedel et al., 1988).

The results of the Locke et al. (1986) research suggest that an integration of goal-setting theory, expectancy theory, and self-efficacy theory is possible where expectancy/self-efficacy, along with valence, would affect goal choice or goal level. Performance would then be affected by expectancy/self-efficacy goals and perhaps even valence.

The Integrated Model of Motivation Theories

The Integrated Model of Motivation Theories (Nebeker, 1992) examines the origins of the components of the above stated theories. It looks at the nature of the relationship between expectancy theory, goal-setting theory, and need theories.

This model explains work performance as it relates to this study, as a cognitive process where an individual chooses a performance goal from a number of levels based on the perceived attractiveness of the alternatives. Attraction to a performance level is based on the beliefs and feelings a person has that performing at a particular level will lead to a certain outcome. This model suggests that a performance goal will influence the amount of effort a person is willing to exert.

Since the concept of goals is considered a determinant of effort in this model, it is important to understand the way people choose goals. The Integrated Model of Motivation looks at how contextual factors (e.g., reward systems) influence valence, instrumentality, and expectancy. Similarly, Peters and O'Connor (1980) argue that situational performance constraints (e.g., time availability, work environment) can reduce motivation to perform and these constraints seem to decrease satisfaction. Phillips and Freedman (1984) found partial support for these statements and also stated that the perceived existence of high constraints was found to be significantly related to negative affective reactions.

The Integrated Model of Motivation Theories (Nebeker, 1992) also looks at the process by which performance goals become the motivation to perform. Riedel et al. (1988) reports that this transference is based on the position that performance equals the product of ability and motivation. This latter hypothetical construct is labelled 'effort' and this effort is the result of goal choice and one's self-assessment of one's

ability. Based on this assessment, individuals will adjust the amount of effort they expend in order to accomplish one's goal (Riedel et al., 1988).

Ability plays a key role in most models of work performance and it can be measured either subjectively or objectively (Tatum et al., 1986). Subjective ability is defined by an individual and may not reflect what objective measures indicate about her ability to perform a task. Objective ability is defined by what an individual can actually do. Expectancy (the belief that one's efforts will result in changes in performance) is obviously related to subjective ability in that they both refer to the perceived connection between effort and performance.

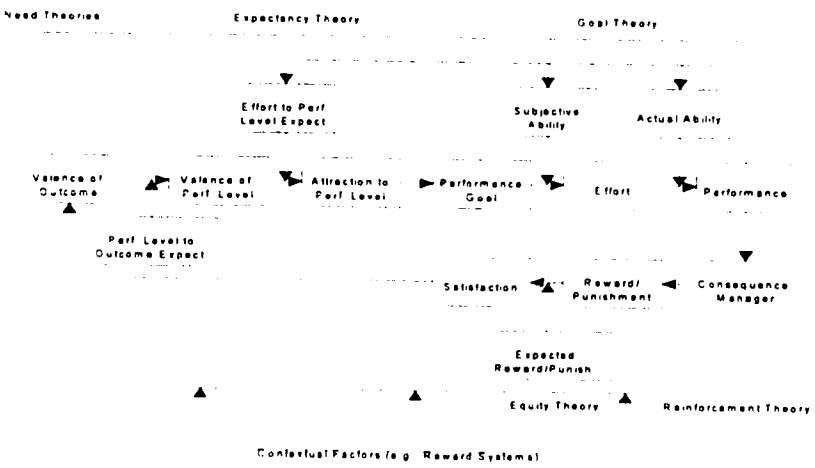
Outcomes of performance are the products which are the results of a worker's performance, for example, pay, recognition, and promotion are all examples of outcomes of performance. These outcomes tend to influence a worker's instrumentality (the perceived connection between performance and its consequences). The satisfaction or dissatisfaction experienced from these outcomes form the basis of valence (the anticipated satisfaction resulting from the performance outcomes). Both valence and instrumentality can change future behavior.

Research to investigate all the variables in the Integrated Model of Motivation to predict the BC-TQM of middle managers would be an ambitious undertaking. Therefore, only those variables which were thought to be of substantial contribution to

this particular study were analyzed. The Integrated Model of Motivation Theories is presented in Figure 1 below.

Figure 1

The Integrated Model of Motivation Theories



Situational Performance Constraints

One of the basic assumptions underlying expectancy theory implies that an individual is influenced by his or her beliefs about the situation the person finds himself in. Therefore, it could be implied that environmental conditions affect behavior. Additionally, it could be said that one's perceptions of environmental conditions affect behavior. Cognitive models of motivation also assume that behavior

is rooted in the belief system of a person and again, these beliefs are based, at least in part, on the actual environment in which one finds himself. Vroom (1964) states that one's work-related beliefs are influenced by the relevant characteristics of his work situation, therefore, they must bare some substantial relationship to reality. These assumptions represent necessary conditions for the expectancy model to predict rational behavior in ongoing situations.

Peters and O'Connor (1980) have argued that the existence of particular environmental conditions will reduce motivation to perform and decrease general job satisfaction. They have also argued that the presence of these constraints limits the influence of other motivational strategies designed to improve motivation and satisfaction. These environmental conditions, called situational performance constraints, are those conditions which act as an obstacle for performing one's duties. Additionally, these constraints frequently are not within the control of the individual. In all, eight constraints have been identified by the researchers which include; job related information, the availability of materials and supplies, budgetary support, service from others, task preparation (training), time availability, physical work environment acceptability, and the availability of necessary tools and equipment. As a logical extension to the Peters and O'Connor (1980) taxonomy, Phillips and Freedman (1984) investigated the potential interrelationships among perceived situational performance constraints and task characteristics. Task characteristics models posit that

intrinsic motivation and satisfaction are positively related to a composite of motivating task characteristics such as variety, autonomy, task identity, task significance, and feedback. This composite score is called the motivating potential score of a job (MPS) and the researchers hypothesized that situational performance constraints will moderate any MPS-outcome relationship.

To test their hypotheses, task characteristics were measured by the Job Diagnostic Survey (JDS) to calculate a MPS for each subject who participated in the study. The perceived existence of situational performance constraints was assessed by means of a series of 7-point Likert-like format items that measured the extent to which each of the constraints included in the Peters and O'Connor (1980) taxonomy was present on the respondents' jobs. Scores on these items were averaged to provide a composite of situational constraints. Satisfaction was measured by the general work satisfaction scale from the JDS. No support was found to indicate that constraints directly moderate the relationship between MPS and either motivation or satisfaction. However, the presence of constraints accounted for significant proportions of variance in affective task reactions that could not be explained by MPS alone. In other words, the perceived existence of high constraints was found to be significantly related to job satisfaction.

According to Lawler (1981) there are large discrepancies between actual environmental conditions and the way people perceive these conditions. In other

words. Lawler states that people redefine task situations. For example, Lawler found large discrepancies between organizational members' perceptions of pay policies and actual pay policies. Therefore, if persons respond to their own redefinition of their task situation, it is important to recognize that persons perceptions do not always match the objective situation.

Job Satisfaction

There have been many studies looking at the relationship between job satisfaction and performance. Porter and Lawler (1968) for example, insist that there is no inherent relationship between satisfaction and performance without contingent-reward conditions. Skinner (1969) believes, however, that job satisfaction is a feeling that accompanies behavior rather than causes behavior and that both are the products of environmental variables. Bandura (1969) suggests that self reports of satisfaction should simply be treated as another class of behavior instead of as indexes of an underlying state endowed with causal powers. This implies that there exists no inherent relationship between performance and self-reports of satisfaction, and the empirical problem becomes that of examining the conditions under which the different reasons systems are correlated or independent. Finally, Schwab and Cummings (1970) suggest that performance and satisfaction are causally related in one direction or another.

In 1971, Cherrington et al. set out to investigate the relationship between job satisfaction and job performance. They hypothesized that the type of reward system under which workers perform, strongly influences the satisfaction-performance relationship. Further, by manipulating the contingencies of a reward system, the researchers believed that they could create conditions under which satisfaction and performance can be related. In order to investigate this, subjects were asked to perform a task and were subsequently grouped in terms of high performers and low performers. Rewards for performance were distributed randomly so that half the subjects in each performance group were rewarded. The results of their research supported the suggestion that the nature and magnitude, or appropriateness, of the relationship between satisfaction and performance depend heavily upon performance-reward contingencies. No significant correlations between performance and subsequent satisfaction were found. However, when distinctions were made between appropriately and inappropriately reinforced subjects, widely disparate performance-satisfaction relationships were observed. For appropriately reinforced subjects, there was a significant positive correlation between performance and eight individual satisfaction indexes which included (a) general affective tone ($r = .55$, $p < .001$), (b) general arousal ($r = .42$, $p < .01$), (c) personal competence ($r = .48$, $p < .01$), (d) general satisfaction with pay, ($r = .67$, $p < .001$), (e) equity of pay ($r = .45$, $p < .01$), (f) adequacy of pay ($r = .59$, $p < .001$), (g) attractiveness of fellow workers ($r = .44$, p

< .01), and (h) attractiveness of task (r = .32, p < .05). For inappropriately reinforced subjects, negative correlations were obtained between performance and seven of the eight satisfaction indexes. The highest of these correlations where the following four: (a) general affective tone (r = -.51, p < .001), (b) general satisfaction with pay (r = -.56, p < .001), (c) equity of pay (r = -.51, p < .001), and (d) adequacy of pay (r = -.57, p < .001).

Cherrington et al. suggest that it is important to take into account the contingencies between performance and rewards for those who seek to affect employee attitudes and/or behavior through various reward systems. If rewards are not positively contingent; then the administration of rewards will not only fail to encourage performance increments, it may also decrease satisfaction.

CHAPTER III

Methods

This study was designed to assess whether an expectancy theory model can account for the variance in the behavioral commitment of middle managers to a Total Quality Management initiative. In addition, the effects of perceived situational performance constraints on motivation to perform were evaluated as well as the relationship between BC-TQM and general job satisfaction. Expectancy Theory constructs were assessed with the scales recommended by Riedel et al., 1988. Predictions of behavior using these scales were made from both the matching law (Herrnstein, 1974) and the maximization rule (Vroom, 1964) to evaluate which is superior. Self-efficacy measures were also compared to expectancy measures to evaluate whether using these measures would yield equivalent predictions.

Subjects

Participants consisted of middle managers from a single biotechnological company located in Southern California. This company had been implementing TQM since 1988 and all subjects where trained to use the same tools and principles. TQM systems can differ. By using subjects from one company the researcher was able to control for different methods of implementing TQM.

A total of 127 middle managers were eligible to participate as subjects in this study. Out of the 127 middle managers, 125 subjects were given BC-TQM scores. These 125 subjects were requested to fill out and return an expectancy theory questionnaire. A total of 104 or 83.2% of the managers requested returned the questionnaire. A power analysis based on this sample size revealed the power to be .20, .93, and .99 for detecting small, medium, and large correlations. Cohen (1988) defines a small effect to be a correlation of .10, a medium correlation to be .30 and a large correlation to be .50. In addition to the middle managers who served as subjects, 12 members of the executive staff served as raters. Using the commitment scale, these raters indicated the average level of BC-TQM each middle manager performs on a regular basis

Protection of human subjects. Past research with TQM and other organizational development interventions have shown little risk to participants. In addition, TQM is part of daily business at this corporation. The Chairman of the Board, The President, and members of the President's staff, including all vice-presidents, and senior directors have jointly authorized this study (Appendix A). In addition, the Chairman of the Board signed an agreement that no one in the organization, except for the researcher, will have access to the raw data. Subjects were told that the use of the data gathered from this study will be twofold. First, that the information learned will be used to improve their own TQM efforts, and second

that part of the data will also be used for a doctoral dissertation with the possibility of aiding the TQM efforts for all companies. To ensure the greatest amount of safety and protection of all subjects in this study, subjects were told that their participation in this study was voluntary and their responses to questions would be confidential.

Instruments

Commitment scale. In order to measure BC-TQM, a commitment scale was developed. The scale was developed from criteria identified by the executive staff as examples of leadership and commitment to TQM (Appendix B). The criteria and supporting behaviors were defined during weekly meetings over a period of six months and refined periodically over the next year. These criteria were used regularly in the company to assess nominees for the company's 'Quality Leadership' Award. The final commitment scale (Appendix C) places the behaviors identified along a continuum to form a behaviorally anchored rating scale (BARS) (Borman, 1991). Seven statements describe the behaviors that identify behavioral anchors for different levels of BC-TQM. In addition, a familiarity scale was added which asked executives to rate on a scale from 1 to 5, how comfortable they felt rating each individual manager. The scale ranged from 1, 'Not Comfortable: I have no contact with this manager, I am unqualified to rate'; to 5, 'Extremely Comfortable: I am in constant contact with this manager'. If a rater did not feel qualified to rate a subject, or if a rater had only a limited amount of contact with a subject then the BC-TQM score

given by that rater was not included in the cumulative score given to that subject. Additionally, subjects who were rated by two or fewer judges were removed from the subject pool. Two middle mangers were removed from the study for these reasons.

The statements were reviewed with four members of the executive staff and four members of middle management before finalizing the commitment scale. After agreement, three executives were asked to rate the same three managers. Although the rated BC-TQM scores differed between managers, each middle manager received the same score from each of the different executives.

Middle manager's TQM questionnaire (expectancy predictions). The survey administered to the middle managers primarily assessed the component parts of the expectancy theory model. Additionally, the survey included questions pertaining to (a) demographic information, (b) perceived situational performance constraints, (c) self-reported BC-TQM, and (d) general job satisfaction. Riedel et al. (1988) empirically evaluated the measures of expectancy theory constructs using test-retest reliability. These measures were used in the current study and are described in Table 1 below. General job satisfaction was assessed using a scale from the Michigan Organizational Assessment Questionnaire and called 'Overall Job Satisfaction'. This instrument was chosen over the Job Diagnostic Survey (JDS) which was used in the Cherrington et al. (1971) study because it is shorter than the JDS and easier to administer in an operating

organization. A copy of the actual questionnaire is provided in Appendix D.

Table 1

Summary of Major Constructs

Construct	Variable Label	Questionnaire Item (Appendix D) or Measure	Computation From Riedel et al. Model
Predictor Measures			
Outcome Valence	OV	Items 1-6; p. 12-18	
Direct Valence	DV	Item 6; p. 20	
Instrumentality	I	Items 1-6; p. 5-11	
Expectancy	PCE	Item 5; p. 19	
Self-Efficacy	PCSE	Item 7; p. 20	
Performance Valence	PCVL (matching law) PCVX (maximization rule)		Sum of products of OV and I [Σ (OV*I)]
Predicted Commitment based on Attractiveness Performance using Expectancy	PCAEL (matching law) PCAEX (maximization rule)		Sum of products of PCE and PCVL [(PCE*PCVL)]
Predicted Commitment on Attractiveness of Performance using Self-Efficacy	PCASL (matching law) PCASX (maximization rule)		Sum of products of PCSE based and PCVL[(PCSE*PCVL])
Predicted Commitment based on Direct Valence	PCDVL (matching law) PCDVX (maximization rule)		Sum of products of PCE and DV [Σ (PCE*DV)]
Perceived Situational Performance Constraints (Total)	SITCONT	Items 7-12; p. 1	
Criterion Measures			
Rated Commitment	AVECOM	Independent measure from the commitment rating scale	
Self-Reported Commitment	SELFCOM	Item 1; p. 2-3	
Self-Reported Goal Level	GOALSET	Items 1-2; p. 19	
General Job Satisfaction (Total)	JOBSATT	Items 1-3; p. 21	

Measures

The expectancy theory model is designed to predict an individual's choice among alternative levels of task-related behavior. When the behavior of interest is a continuum of behavioral degrees like BC-TQM, the continuum must be represented as a range of performance levels which are possible in the organizational context. In the present study, these levels are the different commitment or BC-TQM levels described above. The range is bounded on the low side by behaviors indicating the minimum BC-TQM level which is necessary in the organization and the high side by the behaviors a worker must demonstrate to show the maximum BC-TQM level. In 1988, Riedel et al. refined the measures of the expectancy theory constructs used by Ilgen et al. (1981). The measures found to be the most statistically valid were used for this study and are reviewed below.

Behavioral commitment to TQM (BC-TQM). Behavioral commitment to TQM was measured three ways, as predicted commitment (a computed measure), as rated commitment (a score on a commitment scale), and as self-reported commitment. Predicted commitment was calculated from expectancy theory predictions of commitment and is discussed further in the following sections.

The expectancy theory model provides a vehicle for explaining the choice situation and predicting which alternative behaviors will be selected. Therefore, the commitment scale was created with 7 performance levels. Each level, or statement,

describes concrete, detailed behaviors workers may choose to perform. Seven levels of performance were chosen for two reasons. First, principles of survey design recommend that when creating statements, the number should be limited to 15 since respondents tend to become fatigued or bored (Converse & Presser, 1986). Second, refinement of the statements were completed with the participation of members of the organization in which this study took place. The need to discriminate between BC-TQM further than 7 levels was judged unnecessary by the executives. Rated commitment and self-reported commitment were defined as a numerical score on a commitment scale.

BC-TQM was predicted from two models, one using the expectancy measure and the other using Bandura's self-efficacy measure. In the expectancy method, the attractiveness of each level of BC-TQM was determined by multiplying the performance valence (PCVL) of each level of BC-TQM by the expectancy level (PCE). Using self-efficacy, predicted commitment was assessed by multiplying PCVL by the magnitude of the self-efficacy measure (PCSE). Magnitude involved "yes" or "no" answers to each designated BC-TQM level and each subject's self-efficacy magnitude corresponded to the highest level to which they responded "yes".

The calculated attractiveness for each level of BC-TQM for each model was then used to predict the BC-TQM level based on two choice strategies, the matching law (Herrnstein, 1974) and the maximization rule (Vroom, 1964). The matching law

yields a goal prediction based on the average of the BC-TQM levels weighted by their respective attractiveness-of-performance scores. The maximization rule, however, assumes that people try to maximize gains. The performance level having the highest perceived attractiveness will therefore, be chosen as the performance goal (Riedel et al., 1988).

Valence of job outcomes. In the past, studies of expectancy theory measured valence using interval scales. Schmidt (1973) reviewed eight studies and found that valence was usually assessed with 5 or 7 point Likert-like scales.

Valence of job outcomes refers to an individual's anticipated satisfaction with different levels of certain job outcomes. It was measured by a scale developed and validated by Ilgen et al. (1981). It has since been used in other expectancy theory research including Ilgen, Prichard, Bigby, and Nebeker (1982), and Tatum et al. (1986). In the Ilgen et al. study four outcome classes where used. They were: coworkers' approval, feelings of accomplishment, pay, and supervisory recognition. These outcomes where chosen because they represent outcomes administered by the social and the institutional environments and the individual's personal values. It can be expected that these outcomes will influence individual performance even if their performance instrumentalities are not manipulated directly (Ilgen et al., 1981). The present study used the same four class outcomes with the addition of two more, promotion, and productivity and quality. These outcomes were chosen because the

members of the organization that participated in this study felt that these outcomes are important reasons to adopt TQM. Additionally, they felt that productivity and quality should be linked because the employees were told the two constructs could not be separated.

As in the Ilgen et al. (1981) research, valence was measured by asking subjects to rate the attractiveness of five levels (e.g., different amounts of pay cuts or raises) for each outcome on a 21 point scale ranging from -10 through 0 to +10 and anchored by "very unattractive" to "very attractive" (this attractiveness format focuses upon levels of outcomes). It is a direct measure of outcome valence and has a test-retest reliability of .77 (Ilgen et al., 1981).

Instrumentality. Lawler (1973) defines instrumentality as the extent to which people perceive their behavior as leading to, or being instrumental to a particular outcome. It is the perceived link between performance and outcomes. This study defines instrumentality as the middle managers' perceived relationship between levels of BC-TQM and the attainment of different levels of job outcomes. As in the Ilgen et al. (1981) study, the instrumentality measure asked subjects to indicate which level of each job outcome is most likely to occur if a given level of BC-TQM was performed. Ilgen et al. found the average test re-test reliability of this measure to be .78. The questions used to measure instrumentality presents each level of BC-TQM and asks the manager to indicate which of the five levels of each outcome is most likely if that

level of BC-TQM was performed. For example, the manager was asked, for Level 1 of BC-TQM, which level of the outcome, co-worker approval, is most likely. The choices were (a) resents me and be very unfriendly, (b) dislikes me and be somewhat unfriendly, (c) is neither friendly nor unfriendly, (d) likes me and be somewhat friendly, (e) admires me and be very friendly.

This measure has been found to produce predications of performance with accuracy comparable or superior to conventional instrumentality measures and it has the advantage over other measures because it is shorter and easier for a subject to answer.

Expectancy. Vroom (1964) defined expectancy as the subjective probability that effort will lead to a given outcome level. This is equivalent to measuring the belief about what level of BC-TQM will follow given a level of effort. In the past there has been a variety of methods used to measure expectancy. It is most often considered a subjective probability (Hackman & Porter, 1968) when multiple levels of effort are crossed with multiple performance levels and a full matrix of expectancy probabilities are required to make expectancy theory predictions.

An easier procedure is possible requiring fewer expectancy estimates. This procedure measures expectancy by asking subjects their expected BC-TQM level if they expended their maximum effort. For performance at or below this level, the expectancy probability assigned is 1.0, suggesting that a person extending maximum

effort has a 1.0 probability of attaining any level of BC-TQM equal to or less than his or her maximum performance level. The expectancy for higher BC-TQM levels are assigned zero because these levels are viewed as unattainable for the individual. For example, if a person reported that his or her maximum performance level would be level 5, then a 0.0 probability was assigned as the expectancy at the performance levels 6 and 7 and 1.0 for all levels of 5 and below. This method recognizes that expectancy simply serves to distinguish performance levels seen as attainable from those that are seen as unattainable. Using this method, there is no need to calculate the full matrix of expectancy probabilities that is typically required to make an expectancy theory prediction of effort (Riedel et al., 1988). This procedure has been shown to be as good or better than direct subjective estimates of expectancy and according to Ilgen et al. (1981) has a test re-test reliability of .78.

Expectancy was also measured by self-efficacy methods using Bandura's measures of self-efficacy (see below for measures of self-efficacy). Locke and Henne (1986) claim that expectancy ratings, which are similar to the magnitude aspect of Bandura's self-efficacy, can be made in the same way.

Self-efficacy. Self-efficacy is usually measured in relation to a total range of goals or performance levels. Two aspects of self-efficacy were measured, "magnitude" and "strength". To measure magnitude, subjects simply indicated whether or not they felt that they could perform the behaviors in each of the designated performance

levels. To measure strength, subjects were asked to indicate their confidence in each answer on a 10-point scale, ranging from 'not confident' to 'very confident'. It should be noted that Bandura typically measures strength only for the performance levels with "yes" answers and uses the strength score for the highest performance level that was answered "yes" as the predictor. This was the method employed in this research.

Performance valence. For the purpose of this research performance valence (PCVL) is a hypothetical construct that represents an individual's anticipated satisfaction with exhibiting behavior associated with each level of performance. This valence is derived from each level's association with each job outcome and the valence of that outcome (Riedel et al., 1988). It is calculated by taking the product of valence and instrumentality where:

$$PCVL_i = \Sigma(OV_{jk} * I_{ijk})$$

$PCVL_i$ = the valence for the i^{th} level of BC-TQM.
OV_{jk} = the outcome valence of the j^{th} level of outcome k.
I_{ijk} = the instrumentality of performance level i for attaining the j^{th} level of outcome k.

It was necessary to employ a matrix method to combine valence and instrumentality because multiple levels of performance and outcomes were used in the measurement of these constructs (Hollenback, 1979).

Attractiveness of performance. Attractiveness of performance (PCAEL) is a hypothetical construct which represents the expected value an individual associates

with a particular level of BC-TQM. By multiplying expectancy (PCE) and performance valance (PCVL), the following formula, derived by Riedel et al. (1988), can be used to obtain the attractiveness of performance construct:

$$PCAEL_i = (PCE_i * PCVL_i)$$

$PCAEL_i$ = attractiveness of performance for performance level $_i$.
PCE_i = the expectancy that an individual's best effort can achieve performance level $_i$.
$PCVL_i$ = performance valence performance level $_i$.

Attractiveness of performance equals performance valence for performance levels where the expectancy is 1.0. In other words, the individual believes the levels are attainable. Attractiveness of performance equals zero for performance levels where the expectancy is zero because the individual believes these levels of performance are unattainable.

Predicted performance based on direct valence. Predicted Performance based on Direct Valence (PCDVL) is a hypothetical construct which represents the predicted level of BC-TQM a person is expected to display based on a direct measure of valence. It is determined by substituting in the above equation the direct measure of performance valence and then applying both the matching law or the maximization rule to predict BC-TQM.

Performance goals. Goal-setting studies measure and compare the effects of goals varying in their levels of specificity and difficulty (Riedel et al., 1988).

The performance goal (GOALSET) was measured in this research by asking subjects to select from a list of goal statements which option best reflects their own personal performance goal. The options included a single quantitative goal (e.g. "to always perform at commitment level 6"), a range of performance levels (e.g. "to always perform between commitment level 5 & 7"), or nonquantitative goal statements (e.g. "to do my best"). The subjects were also given the option to write their own goal statement if they found the other options inappropriate. By the subject's choice of options, goal level was determined. If a single quantitative goal was indicated, that level of performance was determined to be the subject's performance goal. If a range of performance levels was indicated, the mid-range was determined to be the subject's performance goal. Nonquantitative goal statements were interpreted as if the subjects did not have a performance goal, therefore no goal level was reported.

Situational performance constraints. This study measured perceived situational performance constraints by using self reports on issues deemed important by upper management. The situational performance constraints identified by Peters and O'Connor (1980) were reviewed by management and the original list of eight was reduced to six TQM specific constraints. These included (a) job related information/task preparation (e.g., training), (b) the availability of materials and supplies, (e.g., personal computers and software which enable them to track performance measures), (c) time availability to complete structured training, (e.g., to

attend classes and to volunteer for team activities), (d) supervisory support, (e) knowledge of concepts and principles of TQM; and finally, (f) the availability of resources, such as literature. The perceived presence of each situational performance constraint was measured using a technique similar to the technique described by Phillips and Freedman (1984). Subjects self reported the perceived existence of constraints and the scores were then combined to create one score. This score represented the score for the situational performance constraint scale. Phillips and Freedman (1984) found the mean for their scale to be 3.92 with a standard deviation of 1.2 (Coefficient alpha = .89).

General job satisfaction. General Job Satisfaction was measured by using part of the Michigan Organizational Assessment Questionnaire called "overall job satisfaction". It is intended to assess organization members' overall affective responses to their jobs. This measure has been used in previous experiments conducted at the Organizational Systems Simulation Laboratory, at the Navy Personnel Research and Development Center, San Diego, CA and had in those studies an internal reliability of .84 to .90. (De Young, 1991). De Young also found Cronbach alpha at both pre and post questionnaire administrations of the questionnaire for his doctoral dissertation to be .88 with a test-retest reliability of .81 (p <.001). The Michigan Organizational Assessment publication reports coefficient alpha to be .77 (Cook, Hepworth, Wall, &

Warr, 1981, p. 31). The present study found the reliability of this scale to be .74 ($p <$ .05).

Procedure

Before beginning this study, the researcher requested permission from the executive staff to conduct research in this organization. Issues discussed included who would participate and how they would be protected, how much employee time would be needed, confidentiality, and what would be done with the results of the study.

After approval, the Chairman of the Board signed a consent form on behalf of the entire organization agreeing to allow members of the organization to participate in scientific research. The researcher worked closely with one member of the executive staff who monitored all activities concerning this study. Additionally, this member specified how much time would be allowed for 'pilot testing' of scales and informal interviews with members of the organization.

After the construction of the commitment scale was complete the researcher trained the executive staff on how to use the scale. According to Borman (1991) rater training provides a promising approach to improving the quality of performance ratings. Two general types of training programs have emerged which help raters generate more error free and accurate rating. The first type of training is called, Rater

Error Training, which simply alerts raters to psychometric and perceptual errors such as leniency/severity, halo effects, restriction-in-range, and similar-to-me effects. Training is often in the form of a brief lecture or a demonstration of the errors and a plea to avoid these errors when making a rating (Bernardin & Buckley, 1981; Smith, 1986). The second kind of training is called, Frame-of-Reference training. It attempts to explain to raters that performance is multidimensional and it familiarizes them with the actual content of each performance dimension (Bernardin & Buckley, 1981).

Researchers have conducted studies comparing the accuracy of ratings made by raters trained on each of the methods just described and untrained raters and compared the psychometric properties of each method. Results suggest that both training methods reduced the target psychometric error and therefore increased rating accuracy (McIntyre, Smith, & Hassett, 1984; Pulakos & Borman, 1988). Borman (1991) reports that it is best to use frame-of-reference training when accuracy is a main goal. The present study used a training technique which integrated both methods. In addition to verbally reviewing the 7 statements, or BC-TQM levels, raters were given a matrix which summarized all the different behaviors corresponding to different BC-TQM levels. During this review, there was a brief discussion of the psychometric and perceptual errors of concern and additionally, the 'comfort scale' was reviewed.

All members of the executive staff who were present during this review received the commitment scale at that time. During this meeting the researcher

answered all questions of concern. A cover letter with instructions was included with the scale and all executives were encouraged to call the researcher if any new questions arose. Two executives were not present during this meeting. The scale was sent to them via interoffice mail and a meeting was arranged with them to discuss rater training issues.

Middle managers received their questionnaires by mail. One week prior to receiving the questionnaire, participants received an introductory letter explaining that it was coming. They were invited to call the researcher if they had questions or concerns. Each survey was mailed with a copy of the introductory letter attached. The only change to this letter was the addition of a return date (Appendix E). The introductory letter explained the purpose of the questionnaire and what the results would be used for. They were further assured confidentiality and were given a consent form to sign stating that they would allow their data to be used in this research (Appendix F).

Participants were asked to complete and return the survey and the consent form within two weeks. Efforts were made in order to maximize response. Fowler (1988) reports that the average response rate of mail surveys is approximately 30 percent. In order to obtain at least a 70 percent response rate with the general population, a three phase follow up method is recommended (Dillman, Carpenter, Christenson, & Brooks, 1974). To increase response rate, a method similar to Fowler (1988) and Dillman et

al. (1974) was used. As suggested, the purpose of the study and the importance of participation was indicated in the introductory letter of the questionnaire. If the survey was not returned after two weeks, a follow-up letter was addressed to and sent to the respondent (Appendix G). This letter was a reminder to return the questionnaire to the researcher as soon as possible or to call the researcher if there were any questions or concerns. A replacement survey was provided in the event that the original had been lost. Since employees were asked to put their name on the questionnaire, tracking response rate was fairly straight forward. After another two weeks, respondents who still did not reply received a follow-up phone call from the researcher asking if there was any confusion about the questionnaire or it's purpose and if the respondent would return it as soon as possible. Questionnaires were accepted over a period of twelve weeks after the initial mailing. The final response rate was 83.2 percent.

Identification of job outcomes. Parker and Dyer (1976) found that by using an expectancy theory approach to predicting behavior, they were able to correctly identify retirement decisions of Navy personnel. They identified 25 outcomes and found they were able to positively predict who would retire in 62% of the cases they studied. Further, they learned that by decreasing the outcome list from 25 to the eight most important, they were able to increase their prediction ability by 6%. They therefore concluded that nonrelevant outcomes reduce the predictive accuracy of the expectancy

theory model so it is not necessary to look at all possible outcomes when conducting predictive expectancy theory research.

Ilgen et al. (1981) empirically evaluated measures of expectancy theory construct. In this study, four outcomes were proposed. They included; coworkers approval, feelings of accomplishment, pay and supervisory recognition. After interviews with six members of the executive staff and middle management, it was agreed that the same outcomes, with the addition of two more, promotion, and pay and productivity, would be appropriate to assess BC-TQM.

CHAPTER IV

Results

Chapter IV is organized into three main sections. The first section presents the demographic data of the sample. The second section discusses the validity and reliability of the measures of the study. The third section presents the results of the analyses of hypotheses.

Demographic Data

Demographic data was collected from 104 individuals who participated in the study. All participants were employees of a biotechnical company located in Southern California (for confidentiality reasons, the name of this company is withheld). Each respondent completed a questionnaire containing demographic questions, questions assessing the perceived existence of situational performance constraints, questions pertaining to the constructs involved in expectancy theory, and questions which assess job satisfaction. The demographic information provided data on age, gender, tenure, and supervisory experience. Ethnic background was not obtained since the majority of participants were caucasian. There were 68 male participants and 36 female participants. The age range of the subjects ranged from 29 to 59 years of age. The average age was 39.5. Length of tenure ranged from one year to 13 years with an

average of 6.17 years. Supervisory experience ranged from less than one year to 20 years with the average being 6.43 years. Table 2 provides a summary of this information.

Table 2

Summary Statistics on Demographic Data

Demographic Variable	Sample Statistics				
	Frequency	Percentage			
Gender:					
Male:	68	65.4%			
Female:	36	34.6%			
Total:	104	100.0%			
	n	Mean	Standard Deviation	Range Min.	Range Max.
Age:	99	39.51	6.13	29	59
Tenure:	103	6.17	3.43	1	13
Supervisory Experience:	101	6.43	4.27	0	20

Validity and Reliability

Validity of commitment rating scale. The commitment scale asked raters to answer one question, to indicate, on average, with what level of BC-TQM each middle manger performed. *Content validity* was used to assess the validity of the scale. Content validity is established through a rational analysis of the content of a test. It's determination is based on individual and subjective judgment. Logical or sampling validity is a type of content validity that involves "the careful definition of the domain of behaviors to be measured by a test and the logical design of items to cover all the important areas of this domain" (Allen & Yen, 1979, p. 96). This technique served as the principle behind the development of the scale which is described in detail in the procedure section of this document. The commitment scale was created around the criteria identified by *Organizational Dynamics, Inc.*, a consulting company whose expertise is in the area of TQM. Executives and middle mangers of the researched organization then operationalized these criterion by discussing what behaviors would be illustrative of these criteria and at what level of performance for each behavior would be illustrative of a particular performance level to TQM. This rational analysis of the 7 statements of the commitment scale satisfied participants in this study that the commitment scale was valid.

Reliability of commitment rating scale. The reliability of the responses on the rating scale required two assumptions (a) the raters were able to discriminate between

different levels of BC-TQM, and (b) the raters were able to accurately determine how qualified, or how comfortable they felt rating each subject. Multiple raters rated each subject and the average or mean scores given to subjects by raters were calculated. This BC-TQM score had an inter-rater reliability of .62. Two issues of concern were present, first, not every rater rated every subject, and second, rater bias needed to be addressed. Winer (1962) suggests calculating an intra-class correlation coefficient to address these concerns. This is accomplished by obtaining beta weights for each rater and adding this number to the BC-TQM score the rater gives to each subject. This method adjusts scores for differences in easy-rater versus hard-rater response styles. By adjusting each rater's scores for this systematic variance, rater bias was not considered part of the error measurement. A regression approach was used to estimate missing ratings from some of the raters. Following these procedures the reliability of the scale increased to .78. Winer interprets this type of reliability by stating that if the experiment were to be repeated with another random sample of raters, but with the same middle managers, the correlation between the mean ratings obtained from the two sets of data on the same middle managers would be approximately .78.

Reliability of perceived situational performance constraints scale. Six perceived situational performance constraints were reported by each subject. Scores on these items were averaged to provide a composite of situational constraints and represented the situational performance constraints scale score. The mean for this

scale was .80 (with dichotomous items the choice of rating was either 0, no presence of the constraints, or 1, complete presence of the constraint) and the standard deviation was .35 (Coefficient alpha = .54). Reliability of this scale was low suggesting that the six constraints did not form a scale. Therefore each constraint was also analyzed independently.

Reliability of job satisfaction scale. General Job Satisfaction was measured by using part of the Michigan Organizational Assessment Questionnaire called "overall job satisfaction". The present study found the reliability of this scale to be .74.

Survey Item Results

Prior to analyses, the experimental variables and the demographic variables were examined for accuracy of data entry and missing cases. Raw data were verified using an interactive data-verification and cleaning facility in STATISTICA/W. The verification procedure checked whether values in variables were "legal" by determining that they fell within allowed ranges. The raw data was later imported into an SPSS-PC file for data analysis.

Hypotheses Results

Fourteen hypotheses were tested in the present study. This section presents the results of the hypotheses testing.

Prediction and criterion measures. Two criterion measures of performance levels were used in this study, the adjusted rated BC-TQM score and the self-reported

BC-TQM score (in the remainder of this document, the adjusted rated BC-TQM score will be referred to as 'rated BC-TQM' and the self-reported score will be referred to as 'self-reported BC-TQM'). This research was unable to demonstrate a correlation between the two measures, r (96) = .08, $p < .44$. Self-reported BC-TQM was more often significantly correlated with the prediction variables. With a few exceptions, these results were not duplicated with rated BC-TQM. Even when there was a significant correlation between rated BC-TQM and a predictor, the correlation was lower than the correlation between self-reported BC-TQM and the predictor. The lack of correlation between rated and self-reported BC-TQM can have several explanations. These include the possibility that the executives may not have communicated what their views of BC-TQM is to the middle managers. This, however, is unlikely since both raters and ratees participated in the construction of the commitment scale. Another possibility is that the raters are not giving feedback to the managers on how they actually are behaving. This possibility is more likely and discussed further in the next chapter.

Both the matching law and the maximization rule were used as prediction rules. Consistently, throughout this research the matching law is a stronger prediction rule than the maximization rule. Unless otherwise indicated, the results reported will reflect results when the matching law is used as the prediction rule.

BC-TQM and expectancy theory. Hypothesis 1 through Hypothesis 3 were analyzed using correlations to determine the relationship between BC-TQM and the predictors, (valence, expectancy and self-efficacy). Hypothesis 1 stated that predicted BC-TQM based on the valence of performance levels will be positively correlated with the actual BC-TQM level. This was tested by examining the correlations between the variables and was supported when BC-TQM was measured by both rated BC-TQM (r (89) = .33, $p < .01$), and self-reported BC-TQM (r (87) = .40, $p < .001$). Hypothesis 2, stated that predicted BC-TQM based on performance expectancy will be positively correlated with the actual BC-TQM level. This was also tested by examining the correlations between the variables and was supported only when BC-TQM was measured using self-reports (r (89) = .60, $p < .001$). Hypothesis 3 stated that predicted BC-TQM based on self-efficacy of performance levels will be positively correlated with the actual BC-TQM level. Again, the correlations were examined and this hypothesis was only supported when BC-TQM was measured using self-reports (r (94) = .58, $p < .001$).

To investigate the relationships between expectancy and performance valence and BC-TQM further, a regression analysis was performed using BC-TQM as the dependent variable. The descriptive statistics from this analysis revealed that the subjects in this study reported on average to behave at a BC-TQM level (Level 5) lower than their self-reported ability (Level 6). The regression analysis itself revealed

that expectancy and performance valence accounted for 37% of the variance of BC-TQM and this was significant, F (2, 76) = 22.47, $p < .001$. The interaction between expectancy and performance valence accounted for an additional 11% of the variance of BC-TQM (R^2 change = .11; F change = 15.14) and this was significant, F (3, 75) = 22.82, $p < .001$. Table 3 summarizes these results.

Table 3

Summary of Hierarchical Multiple Regression Analysis Using Self-Reported BC-TQM as the Dependent Variable and Assessing the Interaction Between Expectancy and Valence.

Final Equation
Multiple R .69
R^2 .49

Variable in Equation	B	Beta	F
PCE	2.69	3.73	19.95***
PCVL	3.21	1.55	18.32***
VALEX (interaction)	-.49	-4.04	15.14***
(Constant)	-11.73		11.30***

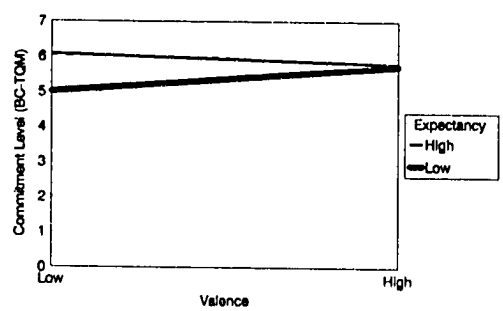
*$p < .05$. **$p < .05$. ***$p < .001$.

In order to show how the relationship between performance valence and BC-TQM changes with expectancy, the regression lines were plotted with valence along the X axis and BC-TQM along the Y axis. Results illustrate that the relationship

between performance valence and BC-TQM depends on expectancy levels for BC-TQM. When expectancy is low and when valence level is low, BC-TQM is at its lowest level. However, when valence is high BC -TQM is approximately the same regardless of expectancy. In other words, as valence (what subjects want to do) increases, the effects of expectancy (what subjects can do) becomes less related to BC-TQM. This is consistent with the results found in the descriptive statistics of the regression analysis since subjects desire to perform at Level 5 and they indicate an ability to perform at Level 6. In sum, the results of these hypotheses indicate that expectancy (or ability) plays a more important role in determining BC-TQM levels for people with low valence, or a low desire to perform, than for people with high valence, or a high desire to perform. Ability plays a less important role in determining BC-TQM levels for people with high valence than for people with low valence. Figure 2 illustrates this relationship.

Figure 2

Relationship Between BC-TQM and Valence as Expectancy Changes



Hypothesis 4 and Hypothesis 5 investigated the relationship between expectancy and self-efficacy. Specifically, Hypothesis 4 stated that the expectancy measure will be positively related to the self-efficacy measure and this Hypothesis was supported (r (92) = .64, $p < .001$). Hypothesis 5 stated that the self-efficacy relationship with BC-TQM will be significantly different than the expectancy relationship with BC-TQM. A t-test showed that there is no significant difference between the correlation self-efficacy has with BC-TQM and the correlation expectancy has with BC-TQM, when BC-TQM is measured using rated scores, t = .332, or self-reported scores, t = -.285.

Expectancy and self-efficacy. Hypothesis 6 through Hypothesis 8 attempted to provide further support that attractiveness of BC-TQM can be obtained using the self-efficacy measure and that this measure produces results that are similar to those when using expectancy measures. Hypothesis 6 stated that predicted BC-TQM based on attractiveness$_E$ (attractiveness of performance using expectancy) will be positively correlated to the actual BC-TQM level. A correlation analysis was used to examine these relationships. When using the matching law as the prediction rule, the Hypothesis was supported with both the rated BC-TQM score (r (81) = .23, $p < .05$), and self-reported BC-TQM score, (r (84) = .56, $p < .001$). When the maximization rule was used as the prediction rule, predicted BC-TQM based on attractiveness$_E$ was

only significantly correlated with the self-reported BC-TQM score (r (84) = .47, p < .001).

Hypothesis 7 stated that the predicted BC-TQM score based on attractiveness$_s$ (attractiveness of performance using self-efficacy) will be positively correlated to the actual BC-TQM level. To test this Hypothesis, a correlation analysis was performed. As with Hypothesis 6, when using the matching law as the prediction rule, significance was found when both rated BC-TQM (r (86) = .28, p < .01), and self-reported BC-TQM (r (84) = .56, p < .001) were used as the criterion measure. When using the maximization rule as the prediction rule significance was found only when using the self-reported BC-TQM score (r (84) = .44, p < .001). These results are summarized in Table 4 below. Table 5 provides an intercorrelation matrix of all variables used in this study, and Table 6 provides a List of the variable names.

Table 4

The Relationships between BC-TQM and Self-Efficacy, and Between BC-TQM and Expectancy

		Rated BC-TQM	Self-Reported BC-TQM
SELF-EFFICACY	Maximization Rule	.13	.44***
	Matching Law	.28**	.56***
EXPECTANCY	Maximization Rule	.15	.47***
	Matching Law	.23*	.56***

* p < .05. ** p < .01. *** p < .001.

Table 5

Intercorrelation Matrix of All Variables

VARIABLES	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. AVECOM	- -	.08	.08	.09	.05	.13	.16	.33**	.06	.28**	.13	.23*	.15	.29**	.17	.27**	.19
2. SELFCOM		- -	.37***	.06	.20*	.60***	.58***	.40***	.28**	.56***	.44***	.56***	.47***	.55***	.39***	.63***	.59***
3. GOALSET			- -	.21*	.16	.48***	.42***	.33**	.09	.48***	.31**	.53***	.44***	.50***	.34**	.54***	.41***
4. SITCONT				- -	.03	.20	.18	-.02	-.01	.04	.07	.04	.08	.12	.12	.18	.14
5. JOBSATT					- -	.06	.08	.23*	.25*	.21*	.26**	.12	.17	.11	.02	.15	.14
6. PCE						- -	.64***	.44***	.27*	.63***	.48***	.94***	.82***	.57***	.48***	.66***	.60***
7. PCSE							- -	.40***	.28**	.84***	.68***	.57***	.60***	.60***	.55***	.84***	.68***
8. PCVL								- -	.52***	.83***	.58***	.70***	.54***	.65***	.54***	.60***	.57***
9. PCVX									- -	.45***	.81***	.35**	.58***	.45***	.39***	.38***	.36**
10. PCASL										- -	.75***	.76***	.68***	.75***	.68***	.86***	.45***
11. PCASX											- -	.54***	.77***	.65***	.68***	.70***	.69***
12. PCAEL												- -	.84***	.69***	.59***	.70***	.66***
13. PCAEX													- -	.62***	.65***	.66***	.68***
14. PCDVL														- -	.72***	.92***	.73***
15. PCDVX															- -	.69***	.90***
16. PCDAEL																- -	.81***
17. PCDAEX																	- -
N	101	92	101	97	103	95	100	91	91	88	88	83	83	100	100	98	98
M	3.14	4.80	3.20	4.80	.097	5.98	6.67	4.95	6.27	4.79	6.06	4.35	5.57	5.21	6.27	4.35	6.12
SD	.76	1.22	1.19	1.22	2.04	1.19	.74	.40	1.04	.66	1.17	.95	1.47	.56	1.25	.95	1.36

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 6

List of Variables for the Intercorrelation Matrix of All Variables

VARIABLE	DESCRIPTION
1. AVECOM	Rated BC-TQM Score
2. SELFCOM	Perceived (self-reported) BC-TQM score
3. JOBSATT	General Job Satisfaction (scale)
4. GOALSET	BC-TQM Goal
5. SITCONT	Perceived Situational Performance Constraints (scale)
6. PCE	Expectancy measure.
7. PCSE	Predicted BC-TQM score based on self-efficacy.
8. PCVL	Predicted BC-TQM based on valence using the matching law as the prediction rule.
9. PCVX	Predicted BC-TQM based on valence using the maximization rule as the prediction rule.
10. PCASL	Predicted BC-TQM score based on attractiveness of BC-TQM using self-efficacy matching law as the prediction rule.
11. PCASX	Predicted BC-TQM score based on attractiveness of BC-TQM using self-efficacy and the maximization rule as the prediction rule.
12. PCAEL	Predicted BC-TQM based on attractiveness of BC-TQM using expectancy and the matching law as the prediction rule.
13. PCAEX	Predicted BC-TQM based on attractiveness of BC-TQM using expectancy and the matching law as the prediction rule.
14. PCDVL	Predicted BC-TQM Score based on a direct measure of valence using the value-matching law as the prediction rule.
15. PCDVX	Predicted BC-TQM Score based on a direct measure of valence using the maximization rule as the prediction rule.
16. PCDAEL	Predicted BC-TQM based on a direct measure of attractiveness of BC-TQM using expectancy and the matching law as the prediction rule.
17. PCDAEX	Predicted BC-TQM based on a direct measure of attractiveness of BC-TQM using expectancy and the maximization rule as the prediction rule.

Using t-tests, Hypothesis 8 was tested which stated that the correlation between attractiveness$_{IE}$ and BC-TQM, will be significantly different than the correlation

between attractiveness$_S$ and BC-TQM. No support was found for this hypothesis indicating there is no difference between the two relationships. This was true when using either the matching law or the maximization rule as the prediction rule and when using either rated BC-TQM or self-reported BC-TQM as the criterion.

The results from these hypotheses reveal several things. First, it seems that the self-efficacy method to predict BC-TQM is equally as effective as the expectancy method when BC-TQM is measured by a self-report. Additionally, the self-efficacy method to predict BC-TQM is equally as weak in predicting BC-TQM when rated scores are used to measure BC-TQM as is the expectancy method. Second, the expectancy theory model predicts BC-TQM better when subjects report on their own BC-TQM level rather than when their BC-TQM level is rated by others. This suggests that individuals rate their committed behaviors toward TQM different from raters. Third, the results of these hypotheses suggest that the matching law is a better prediction rule than the maximization rule when predicted BC-TQM is based on attractiveness using either expectancy or self-efficacy.

Attractiveness of performance and performance goal. Hypothesis 9 through Hypotheses 11 were intended to elaborate on the findings of Riedel et al. (1988) which demonstrated that the construct 'attractiveness to the performance level' predicts an individual's BC-TQM level to a goal.

Hypothesis 9 stated that attractiveness$_E$ will be positively correlated with the performance goal. This hypothesis was tested using a correlation analysis. It was found significant when using both the matching law as the prediction rule (r (82) = .53, $p < .001$), and when using the maximization rule as the prediction rule (r (82) = .44, $p < .001$). Even though both correlations are significant, the matching law showed a stronger correlation than the maximization rule. Hypothesis 10 stated that attractiveness$_S$ will be positively correlated to the performance goal. A correlation analysis revealed that this hypothesis was also significant when using both the matching law as the prediction rule, (r (86) = .48, $p < .001$), and the maximization rule as the prediction rule (r (86) = .31, $p < .01$). Again, the strength of the correlation by the matching law is stronger than the strength of the correlation by the maximization rule.

The results of Hypothesis 11, which predicted that BC-TQM goal would be related to the actual BC-TQM level is consistent with the results of the previous hypotheses in that the relationship between the BC-TQM goal and actual the BC-TQM level is significant only when BC-TQM is measured by a self-report where r (95) = .37, $p < .001$. The results of this hypothesis provides further support for (a) the findings of Riedel et al. (1988) which suggest that the self-efficacy measure can be used in place of the expectancy measure in future expectancy theory research, (b) that the matching law is a stronger prediction rule than the maximization rule, and (c) that

the expectancy theory model is more predictive of BC-TQM when BC-TQM is measured by a self-report rather than by a rated measure.

Situational performance constraints. Hypothesis 12 and Hypothesis 13 were related to Peters and O'Connor's (1980) argument that the presence of situational performance constraints reduces motivation to perform. Hypothesis 12 stated that the relationship between perceived constraints would be negatively correlated with self-efficacy and expectancy. In order to assess this hypothesis, the situational performance constraints were evaluated as one score on a constraints scale. The score was determined by averaging the scores of the individual constraints. To determine the amount of variance in BC-TQM accounted for by the score on the constraints scale, a regression analysis was performed using each predictor (expectancy, self-efficacy, and valence) as the dependent variables. The constraints scale was not able to account for any variance. This suggests that the scale was not influencing subjects' perceptions about displaying committed behaviors toward TQM. Since the reliability of the constraints scale was low (.54), these results where not unexpected. Face validity indicated that there was no reason to expect that the six individual constraints would be related. To investigate this further each individual constraint was correlated with the predictors, expectancy, self-efficacy, and valance. Since the constraints were dichotomous variables a point bi-serial correlation was used in this analysis. Some significance was found between expectancy and availability of materials and supplies,

(r (94) = .21, $p < .05$), expectancy and availability of resources (r (94) = .29, $p < .01$), and self-efficacy and time availability, (r (96) = .25, $p < .01$). Table 7 lists the variables used in the correlation analysis and Table 8 illustrates the results below.

Table 7

List of Variables for the Correlation Matrix of BC-TQM Variables and Situational Performance Constraints

VARIABLE NAME	DESCRIPTION
SITCON1	Situational performance constraint 1: Task Preparation
SITCON2	Situational performance constraint 2: Availability of Materials and Supplies
SITCON3	Situational performance constraint 3: Knowledge of Concepts and Principles
SITCON4	Situational performance constraint 4: Availability of Resources
SITCON5	Situational performance constraint 5: Supervisor Support
SITCON6	Situational performance constraint 6: Time Availability
SITCONT	Situational performance constraint Total: Scale Average
PCE	Expectancy
PCSE	Self-Efficacy
PCVL	Performance Valence

Table 8

Correlation Matrix of BC-TQM Variables and Situational Performance Constraints

VARIABLES	1	2	3	4	5	6	7	8	9	10
1. SITCON1	- -	-.04	.14	.11	.23	.15	.54***	.05	.04	-.00
2. SITCON2		- -	.43	.41	.17	-.01	.47***	.21*	.13	-.05
3. SITCON3			- -	.28	.41	.24	.73***	.08	.08	-.04
4. SITCON4				- -	.29	.23	.69***	.29**	.09	.04
5. SITCON5					- -	.03	.53***	.02	.00	.01
6. SITCON6						- -	.57***	.13	.25**	- .01
7. SITCONT							- -	.20	.18	-.02
8. PCE								- -	.64***	.44***
9. PCSE									- -	.40***
10. PCVL										- -
N	92	94	95	94	94	97	97	95	100	91
M	.68	.85	.95	.92	.91	.51	4.8	5.98	6.67	4.95
SD	.47	.35	.21	.27	.28	.50	1.2	1.19	.74	.40

* $p < .05$. ** $p < .01$. *** $p < .001$.

These results suggest that subjects perceive a relationship between their ability to perform behaviors which demonstrate committed behaviors toward TQM, and external influences such as the availability of personal computers and software which

enable them to track performance measures, and the availability of appropriate resources which help fit TQM into daily work. Performance valence was not significantly correlated with any of the constraints which may indicate that subjects do not see external factors influencing their own valence to BC-TQM.

The results of these correlations are interpreted with caution. Since the magnitude of the correlations were small, for instance, for availability of tools and equipment and expectancy, the correlation is .21; for task preparation and expectancy, the correlation is .29; and for time availability and self-efficacy, the correlation is .25, and 18 correlations were performed, the likelihood of a type one error increased. In other words, by performing more tests, it was more likely that significance will be found due to chance alone, for some of the relationships. In order to investigate this relationship further, the researcher took a more conservative approach to interpreting the data. Using the a modified Bonferroni test (Keppel, 1982), the alpha level changed from .05 to .003. Significance was no longer found among any of the constraints and variables.

Hypothesis 13 stated that the perceived situational performance constraints would be negatively correlated with the BC-TQM level. Regression analyses were performed using both rated BC-TQM and self-reported BC-TQM as the dependent variables and expectancy, self-efficacy and valence as the independent variables. Results of this analysis are consistent with the results above and reveal that the

perceived situational performance constraints are not adding any significant portion of variance to predicting either rated BC-TQM levels of participants or the self-reported BC-TQM levels of participants. This indicates that the individual constraints are not influencing subjects' perceptions about performing behaviors which indicate commitment to TQM above what is already being accounted for by the model. This suggests that the items on the commitment scale are not germane to BC-TQM. Although out of the scope of this research, it would be worth additional investigation to see if the scale identified the wrong constraints or if there are other constraints that were not identified. Also, it would be interesting to note that constraints can be internal. This was not looked at in this study. The question remains to see if perceived situational performance constraints influence BC-TQM. Is it influencing the middle managers' perceptions as to whether they display committed behaviors or if their level of expectancy or self-efficacy is influenced by non-situational things such as ability or desire?

Job satisfaction. Hypotheses 14 merely looked to see if there is a positive correlation between BC-TQM and job satisfaction especially since work motivation literature only confirms that performance (BC-TQM) is positively related to job satisfaction when tied to rewards or outcomes (Cherrington et al., 1971). Specifically, Hypothesis 14 stated that BC-TQM will be related to job satisfaction. This hypothesis was examined using a correlation analysis and was confirmed when BC-TQM was

measured by the self-reported BC-TQM score (r (97) = .20, p < .05) but no correlation was revealed when BC-TQM was measured by the rated BC-TQM score. Again, this hypothesis provides further evidence that there is a difference in interpretation of BC-TQM provided by the self-reported measures of BC-TQM and rated measures of BC-TQM. As noted earlier, self-reported BC-TQM is correlated with expectancy (r (89) = .60, p < .001) and valence (r (87) = .40, p < .001), but rated BC-TQM is only related to valence, (r (89) = .33, p < .01). This suggests that the self-reported BC-TQM is a reflection of subjects' belief in their own ability (expectancy) and desire to perform (valence), where rated BC-TQM reflects only desire to perform. Because of the connection between performance and rewards, these results suggest that within the organization in which this study took place, subjects do not perceive the attainment of rewards from the company to be the result of displaying committed attitudes or behaviors. Instead, they may, as Cherrington et al. (1971) suggest, realize that rewards may be contingent upon factors independent to performance, for instance, seniority. In such an organization, it can be expected that satisfaction and performance are unrelated. Because self-reported BC-TQM scores are correlated with job satisfaction, one can presume that subjects are obtaining some type of intrinsic satisfaction, or internal rewards for performing in a manner which illustrates commitment to TQM. This is worth further investigation.

Supplemental Analysis

Missing data. Before computing the predictor variables of this study, the impact of missing data was assessed. Although 125 managers were actually given BC-TQM scores by the raters, only 104 of those same managers returned the survey. Of those 104, 23 individuals did not complete the questionnaire in it's entirety. Eleven of those subjects were females and 12 were males. To test whether those not completing the entire questionnaire were significantly different from those who did, the means of the predictors and criterion were compared. The only difference which was significant was between the means for predicted commitment score based on attractiveness using expectancy ($M_1 = 3.21$, $M_2 = 2.91$; $t = 2.18$; $df = 123$; $p < .05$). This indicates that subjects who completed the entire questionnaire have higher rated commitment scores than those who did not complete the questionnaire. Even though there was a mean difference in rated commitment it did not effect the variance of rated commitment used in the correlations. Therefore, there is no way to be sure if the correlations between the predictors and rated commitment would have been different if all subjects had completed the entire questionnaire.

Correlations that were 'marginally' significant were assessed to determine whether those correlations would change if missing cases were added. Depending on the construct that was missing, several procedures were used to estimate the missing data. Since expectancy was a direct measure, there was no way to recover that

variable if it was omitted and therefore, no further analysis was performed. If one or two levels of instrumentality or valence was missing, the researcher assigned a value for the missing value that best fit the prediction line based on the subject's answers to other levels of that same question. If more than two levels of either instrumentality or valence were missing, and the correlation between the predictor and criterion variables were close to significance, the researcher assessed whether or not the addition of cases could have affected the significance of any of the correlations. A test of the r^2, a method recommended by Pedhazur (1982) was used to determine *f* ratios for these correlations. F tests indicated that the significance level of these correlations would not improve. As a result, no further attempts were made to estimate the values of missing data.

Gender. The differences between gender, BC-TQM and the predictor variables were reviewed. Mean scores indicate that females tend to rate themselves at a higher BC-TQM level than males rate themselves (M_m= 5.45; M_f= 5.71). In addition, when judged by raters, the females again have a higher mean score (M_m = 2.97; M_f = 3.44). A correlation analysis reveals that for males, the expectancy model predicts BC-TQM when measured by a self-report. This is demonstrated by the significant correlations found between expectancy and self-reported BC-TQM (r (56) = .65 , p < .001), self-efficacy and self-reported BC-TQM (r (61) = .65, p < .001), and valence and self-reported BC-TQM (r (53) = .51 , p < .001). However, when rated BC-TQM is used

as the criterion measure, a significant correlation is only found between valence and BC-TQM (r (54) = .36, $p < .01$).

The expectancy model was not able to duplicate these results with the female subjects. When BC-TQM and the predictor variables were correlated, the only significance found was between expectancy and self-reported BC-TQM (r = .39 (33), $p < .05$). Table 9, Table 10, and Table 11 illustrate these relationships below.

Table 9

The Relationship Among BC-TQM Variables for the Total Sample

VARIABLES	1	2	3	4	5	6
1. Gender	- -	.14	.30**	.22*	.24*	.17
2. Self-reported BC-TQM		- -	.08	.60***	.58**	.40***
3. Rated BC-TQM			- -	.13	.16	.33**
4. Expectancy				- -	.64***	.44***
5. Self-Efficacy					- -	.40***
6. Valence						- -
N	104	97	125	95	100	91
M	1.35	5.55	3.11	5.98	6.67	4.95
SD	.48	.88	.72	1.19	.74	.40

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 10

The Relationship Among BC-TQM Variables for Males

VARIABLES	1	2	3	4	5
1. Self-reported BC-TQM	- -	.02	.65***	.65***	.51***
2. Rated BC-TQM		- -	.00	.12	.36**
3. Expectancy			- -	.65***	.52***
4. Self-Efficacy				- -	.48*
5. Valence					- -
N	62	66	61	66	56
M	5.45	2.97	5.79	6.55	4.90
SD	.97	.73	1.24	.86	.42

*$p < .05$; **$p < .01$; ***$p < .001$.

Table 11

The Relationship Among BC-TQM Variables for Females

VARIABLES	1	2	3	4	5
1. Self-reported BC-TQM	- -	.13	.39*	.03	.07
2. Rated BC-TQM		- -	.23	-.03	.18
3. Expectancy			- -	.35*	.20
4. Self-Efficacy				- -	-.03
5. Valence					- -
N	35	36	34	34	35
M	5.71	3.44	6.32	6.91	5.04
SD	.67	.73	1.04	.29	.37

*$p < .05$; **$p < .01$; ***$p < .001$.

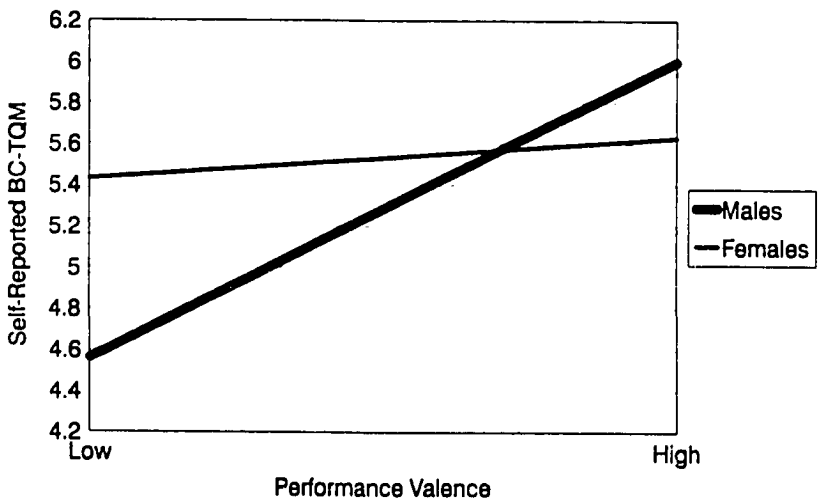
The results of the data suggest that there was a restricted range of female participants in this study. In order for the expectancy model to be predictive of performance, there must be a range of performance levels between subjects. The model, however, was not able to predict performance for this sample of subjects. It is possible that there was a ceiling effect for the female subjects. The female subjects had consistently higher mean scores than the male subjects did for all the BC-TQM variables and it appears that all the female subjects performed at a high level of BC-TQM.

To investigate the relationships between gender and BC-TQM further, moderated multiple regression analyses were performed to test if gender acts as a moderator for the relationship between predictor variables and BC-TQM. Results reveal that there is a significant interaction between gender and performance valence and that gender acts as a moderating variable for the performance valence and self-reported BC-TQM correlation (β = -3.09, F = 5.26, $p < .02$). In other words, gender is not related to self-reported BC-TQM. However, gender alters the relationship between performance valence and self-reported BC-TQM. The relationship between performance valence and BC-TQM is different for males and females. In order to demonstrate this interaction, a median split was performed on the data and scores for high and low valence levels were plotted against the different levels of BC-TQM. Results reveal an interaction. For both males and females, as performance valence (or

desire) increases, so does the BC-TQM score. This correlation is much stronger for men than for women. Figure 3 illustrates the moderating effects of gender on performance valence and BC-TQM below. Gender did not, however, prove to be a moderator variable for the correlation between expectancy and BC-TQM ($F = 3.69$, $p < .06$), or for self-efficacy and BC-TQM ($F = 2.05$, $p < .16$).

Figure 3

Moderator Effects of Gender on BC-TQM and Performance Valence



CHAPTER V

Discussion

The Integrated Model of Motivation (Nebeker, 1992) was used to predict behaviors which illustrate commitment to TQM (BC-TQM). This model proposes various theoretical and empirical relationships between expectancy theory constructs, goal-setting and self-efficacy which operate within the work environment. This research was intended to stimulate discussion and was designed to test some aspects of the model. There was hope to add to our knowledge and understanding of expectancy theory and to test its ability to predict BC-TQM.

Methodologically, this study compared traditional methods of measuring the expectancy construct of expectancy theory as recommended by Ilgen et al. (1981) with a method based on self-efficacy theory. Locke et al. (1986) suggested this method and concluded that by demonstrating a high correlation between the two methods, one can determine that (a) expectancy theory predictions are indeed valid, and (b) self-efficacy can be substituted for expectancy in future research. Additionally, several other areas that contribute to expectancy theory research were assessed including, the effects of perceived situational performance constraints on motivation to perform, the appropriateness of using the matching law versus the maximization rule as the

prediction rule for expectancy theory predictions, as well as the relationship between BC-TQM and general job satisfaction.

There were five major conclusions that resulted from this research. First, it was determined that the self-efficacy construct is equally predictive of behavioral commitment to TQM as is the expectancy construct in expectancy theory predictions. Second, it was concluded that the matching law is equally predictive as is the maximization rule as the prediction rule for expectancy theory predictions. The third major conclusion from this research indicated that self-reports of BC-TQM are more predictable from the expectancy model variables than the rated score of BC-TQM. The fourth major conclusion was that there is a positive correlation between job satisfaction and self-reported BC-TQM, and the fifth major conclusion was that gender acts as a moderator variable for expectancy and valence. All five of these conclusions provide implications for future research and are discussed below.

Measures and Implications

Hypothesis 1 and Hypothesis 2 addressed whether predicted BC-TQM can be obtained using one of two methods. In the expectancy theory model, using either valence of performance level or expectancy of performance level will lead to positive correlations with actual performance. According to Hackman and Porter (1968) expectancy theory states that the strength of the tendency for an individual to perform a particular act is a function of (a) the strength with which the individual expects

certain outcomes to be obtained from the act, times (b) the attractiveness to the individual of the expected outcomes. Thus, the theory frequently is summarized by stating that the force to perform an act equals expectancy times performance valence (F = PCE x PCVL). In other words, either low expectancy or low valence leads to low levels of performance, and only high expectancy and high valence lead to high levels of performance.

Results of the current research do not support this prediction. Although there is a positive correlation between both expectancy and BC-TQM and performance valence and BC-TQM, this study demonstrates that as performance valence increases, the effects of expectancy become less related to BC-TQM. This suggests that people display BC-TQM almost entirely depending on whether they want to perform, not whether they have the ability to perform. Therefore, after a basic competency level, BC-TQM is based on the valence of the outcome. It is also possible that every subject in this study had the ability to perform at a similar level of BC-TQM indicating a restricted range of subjects. Restricted ranges have small variances and expectancy theory predictions become weakened without the ability to discriminate among different performance levels. This finding deserves further attention and should be considered in future research.

Expectancy and self-efficacy. Hypothesis 3 through Hypothesis 12 addressed whether using Bandura's method to obtain self-efficacy is equally as effective in

predicting a BC-TQM score as is the expectancy measure. Self-efficacy is a key concept in Bandura's social learning theory. It is defined as "the conviction that one can successfully execute the behavior required to produce [certain] outcomes" (Bandura, 1977, p. 122). The concepts in Bandura's self-efficacy are similar to those in expectancy theory. Effort-performance expectancy and self-efficacy expectancy both represent beliefs about the ability to perform a behavior.

Self-efficacy ratings are made by measuring across a full performance range. Ilgen et al. (1981) found that effort-performance expectancy, when measured across the full performance range yields better predictions of performance than expectancies measured in traditional ways. It holds then that self-efficacy can be substituted for expectancy when predicting BC-TQM goal in expectancy research. The current research found support for this argument and it is therefore recommended that self-efficacy measurements be used instead of traditional expectancy measurements in future expectancy theory research.

Rated BC-TQM and self-reported BC-TQM. Throughout this research, the self-reported BC-TQM score is more accurately predicted than is the rated score of BC-TQM. Interestingly, self-reported BC-TQM has a mean score of 1.66 levels higher than the rated BC-TQM score. The intercorrelation matrix of all variables demonstrates that although valence is correlated with both rated BC-TQM and self-reported BC-TQM, expectancy is correlated only with self-reported BC-TQM.

Therefore, it can be concluded that self-reported BC-TQM is a function of actual ability and a desire to perform. Rated BC-TQM, on the other hand, is strictly a function of desire. Results suggest that the participants in this study are given BC-TQM scores by others strictly on the participants' desire or outward attitude toward TQM.

These results suggest two things, first, raters are not rating actual behavior but instead their perception of how they think subjects are behaving based on the subjects' attitudes. It would be interesting to see if a construct could be developed and labelled 'political suaveness' and determine whether those individuals who are represented by this construct receive a higher BC-TQM score by raters than subjects who actually have a higher BC-TQM score as determined by the interaction between expectancy and performance valence. Another reason the expectancy theory model may be more predictive of performance when self-reported BC-TQM is used instead of rated BC-TQM is the lack of communication and feedback supplied to the subjects from the raters. In other words, subjects rate themselves as having a higher BC-TQM score than the raters rate them. This indicates that participants think that they are demonstrating BC-TQM when in fact, the raters disagree.

Research in the areas of job design, goal-setting, and behavior psychology recognize that performance feedback is an important factor in both employee motivation and performance (Pavett, 1983). In research that examines the relationship

among perceptions of feedback, motivation, and rated performance, evidence is provided that demonstrates that communications from others in the form of feedback impact the formulation of performance-reward linkages (Ilgen, Fisher, & Taylor, 1979). Frequent positive feedback from supervisors, co-workers, and peers, along with the lack of negative feedback, all impact on performance and motivation. Pavett (1983) demonstrated that perceptions of the quantity and frequency of verbal feedback are related to how well subjects perform and to their level of motivation. In addition, feedback helps to sustain planned behavioral change (Conlon, 1980), and feedback influences internal motivation (Deci, 1972). It would be interesting in future research to measure the quantity and quality of feedback given to subjects by the raters to determine if this was the cause for rated BC-TQM to be different than self-reported BC-TQM in this study.

Prediction rules. The fourth major finding in this research was that the matching law is as equally effective in predicting BC-TQM as is the maximization rule. In the Integrated Model of Motivation Theories (Nebeker, 1992), goal choice is determined by an individual's evaluation of the attractiveness of different performance levels. The matching law states that the frequency of a response at a particular performance level is proportional to the value of the reinforcement at that given level (Herrnstein, 1974). It makes sense that when using the matching law as the prediction

rule, goal choice is determined by the weighted average of the attractiveness to perform across all levels of performance.

The matching law is a prediction rule which presumes that the construct 'attractiveness of the performance level' predicts an individual's attractiveness to a goal. It suggests that people who can distinguish between different levels of performance in terms of expected value will have higher levels of performance to their goals than people who cannot make the same distinctions (Riedel et al., 1988).

This research found the matching law to be equally as predictive of BC-TQM as the maximization rule. This is important because the matching law is easier to use than the maximization rule. It is recommended that the matching law be used as the prediction rule in future expectancy theory research.

BC-TQM variables and gender. The final major conclusion drawn from this study resulted from a supplementary analysis which looked at the relationships between BC-TQM variables and gender. Male subjects have significant positive correlations between self-reported BC-TQM and expectancy theory constructs. Female subjects, on the other hand, only have a significant correlation between self-reported BC-TQM and expectancy. Further, descriptive statistics reveal that female subjects have higher mean scores than males on BC-TQM variables, including rated BC-TQM and self-reported BC-TQM.

These results suggest that there was a ceiling effect for female subjects. In general, they all performed at a high level of BC-TQM and the commitment scale was unable to discriminate between their levels of performance. This situation allows for only a small amount of variance available for female subjects. Variance is necessary for the expectancy model to be predictive of performance. Using a method recommended by Ghiselli et al. (1981) to correct for range restriction did not change these results.

There is no reason to believe that the expectancy theory model is predictive of performance for males and not for females. It would therefore be interesting to investigate whether female subjects tend to perform in a Total Quality Management environment better than males do. Traditionally, females migrate toward jobs which require nurturing and coaching behaviors, for example, nursing and teaching, while males migrate toward jobs which reflect the traditional management style of command and control. The traditional management style is common in male dominated jobs, for example, policeman and architect (Greaves, 1991). TQM, however, requires a fundamental change in the way managers perform. The TQM management style is more characteristic of a participative and mentoring approach rather than an authoritative approach. The characteristics of the TQM manager are the same characteristics which are typically used to describe a women's approach to

management. This finding deserves further attention and should be considered in future TQM and future expectancy theory research.

Situational performance constraints. The current study attempted to find support for Peters and O'Connor's (1980) argument that the presence of situational performance constraints reduces motivation to perform. The question was raised to assess whether constraints influence subjects' BC-TQM scores in terms of influencing their expectancy or ability. In order to assess this, the amount of variance in BC-TQM accounted for by the situational performance constraints scale was examined. The scale was unable to account for any variance. Additionally, the reliability for this scale was low and it appears that the six individual constraints examined completely different aspects of BC-TQM. A supplementary analysis was performed to look at the correlation between the six individual constraints and valence, expectancy and self-efficacy. Results suggested that subjects may perceive that the existence of constraints affect expectancy, or their ability to perform BC-TQM. Because no correlations were found between valence and the individual constraints, it could be suggested that situational performance constraints which are external to the subject's locus of control are not related to a subject's desire to perform.

These results should be interpreted with caution. Because the magnitude of the correlations were small, and the number of correlations performed were large, the likelihood of making a Type 1 error was high. By taking a more conservative

approach to interpreting the data and making the alpha level more stringent, significance was not found among any of the constraints and variables.

Although this research did not support the major findings cited in current literature, it is recommended that future research examine this further. Phillips and Freedman (1984) indicate that the effects of constraints appear to be more a function of whether individuals feel personally in control of relevant outcomes rather than merely a function of the perceived existence of constraints. Previous research has found that extrinsic constraints (e.g., contingent pay, deadlines, etc.) detrimentally influence motivation only to the extent that they lead to reduced perceptions of personal control (Fisher, 1978; Phillips & Lord, 1980). Therefore, in this study constraints may not have affected the BC-TQM level of subjects if the subjects felt that they were still personally in control of the situation.

The presence of situational constraints may not necessarily cause low motivation to perform or low job satisfaction if employees believe that the constraints have not reduced their ability to obtain desired outcomes. Likewise, the constraints may also provide poor performers with convenient excuses for their failures. Thus, further research should explore possible organizational, task, or individual characteristics which may be related to perceptions of control in the presence of situational performance constraints.

Job satisfaction. Results of the current research indicate that subjects who believe they have the actual ability to perform and the desire to perform (as reflected in self-reported BC-TQM scores) are generally more satisfied than those who believe they only have the desire to perform (as reflected in rated BC-TQM scores). Because self-reported BC-TQM scores are correlated with job satisfaction, it can be concluded that subjects reward themselves intrinsically. Cherrington et al. (1971) stress that the relationship between satisfaction and performance depend heavily upon performance-reward contingencies, so subjects with high self-reported BC-TQM scores are perceiving a connection between performance and job satisfaction, probably through internal rewards. Because rated BC-TQM scores are not correlated with job satisfaction an indication is made that subjects are not perceiving the connection between performance and rewards given by the organization. For many organizations, pay increases and promotions are alleged to be performance contingent, and this was found to be true in the current research by the identification of outcome measures. It is suggested however, that employees may not see the connection between desired behaviors and these same rewards. Cherrington et al. suggest that these rewards are instead contingent upon factors independent to performance, such as age, seniority, upward influence of one's supervisor or even 'political suaveness'. In such an organization we would expect satisfaction and performance to be unrelated. The

current research supports this proposal but additional research is recommended to investigate the relationship of these variables further.

Limitations

The first two limitations of this study address the BC-TQM scale used to produce the rated BC-TQM scores and the self-reported BC-TQM scores. First, as previously mentioned, there seemed to be a lack of communication between raters and participants. If feedback on performance is not consistent and accurate, an individual may perceive her own performance as very different than the behaviors actually exhibited. There was no test in this study to examine whether these perception gaps were indeed problematic. In addition, there are five main problems that can undermine any type of graphic rating scale (such as the commitment scale): unclear standards, halo effect, central tendency, leniency or strictness, and bias (Dessler, 1988). Although every effort was made to eliminate these potential problems by training the raters, rater training is no panacea for the errors or improving the accuracy of the scores. From a practical point of view, several factors, including the extent to which time constraints, turnover, and the need to justify ratings, may be more important than training in influencing the ratings actually given. This means that improving a rating scale for accuracy involves not only training but also controlling outside factors such as budget pressures. It also means that rater training, to be

effective, should address real-life problems such as the fact that some individuals may feel some outside pressure to rate everyone high (Dessler, 1988).

The second limitation of the BC-TQM scale addresses the judgement rating methodology used in the study. Though the measurement and the methodology are both found to be reliable and valid, they are time-consuming and labor-intensive. The reality of incorporating multiple appropriate judges, choosing appropriate behaviors, and conducting fairly complex statistical analyses may not be practical in future field research.

A third limitation of the study addresses the construction of the situational performance constraints scale. Phillips and Freedman (1984) recommend assessing the perceived existence of situational performance constraints by means of a series of 7-point Likert-like format items that measure the extent to which each of the constraints is present on a respondent's job. Scores can then be averaged to provide a composite of situational performance constraints. In the current study, subjects were asked to rate the perceived presence or absence of different constraints. This modification was made after a request by senior management to shorten the length of the survey. Future research should follow the Phillips and Freedman procedure.

A fourth limitation is that the generalizability is restricted. A conscious choice was made by the researcher to involve only one organization in this study. Additionally, the sample was homogeneous in that the majority of participants were

caucasian. The rationale for choosing only one organization was that TQM philosophies, degrees of organizational-wide deployment, training and instructional techniques available to organizations, differ. All these variables can add to uncontrollable variation in the subject pool. Additionally, the BC-TQM scale was specifically created around the behavioral norms identified by the members of this organization. Future research should look at the predictability of the expectancy model in determining commitment to TQM among different ethnic populations.

The fifth limitation was conducting this study in an operating organization. There were time constraints imposed by leaders of the organization, and there were limitations placed on the type of evaluations possible. In addition, there were budgetary issues and pending layoffs affecting the entire organization during the time of data collection. Readers should be aware that financial restrictions and hardships were prevalent for many organizations nationally during the time of the formal study and the existence of these issues affect generalizability.

Future Research

Several areas for future research have been identified from the results of this research study and discussed earlier. Additionally, there appear to be some methodological aspects of this study that can be improved upon.

Future research should continue to use different subject populations in a variety of applied organizational settings. This study looked at the middle managers

of one organization. The results of this study and of past research are intriguing with regards to the potential predictive power of expectancy theory constructs. The results of this study, however, are constrained by the limitations imposed by this organization. Therefore, generalization to other organizations is limited. Studies of expectancy theory constructs should assess the predictive ability of expectancy theory on BC-TQM for different types of employees, including differences in gender, and in a variety of organizations.

Statements from potential subjects who chose not to participate in this study revealed a lack of trust among middle managers and the leaders of the organization. Several even indicated that if they where 'honest' with their responses to the questionnaire, they may potentially lose their jobs. There were many comments regarding the politics of the organization and a fear that the promise of anonymity would be broken. Some were even afraid that eventually, the researcher would lose control of the study and the leaders would see all information. One wrote, "even though your (the researcher's) intentions are good, and I trust you, I've seen this happen before. I can't afford to lose this job". It would have been interesting to compare this group of employees to the group who participated in the study. In the future, researchers should further evaluate the culture of the organization and the trust level among members before doing field research.

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Appendix A

Consent Form-A
(Company Name) Incorporated

Consent of Participation in Scientific Research

We, at *(Company Name)* Incorporated have voluntarily agreed to participate in a study sponsored by *(Company Name)* Incorporated. We understand that we may withdraw participation at any time. We also understand that we will not have access to raw data pertaining to any one individual, however, we will receive an oral and a written summary of the combined results of the study. The combined results will be used for a doctoral dissertation by Susan B. Stern, M. A. at the California School of Professional Psychology, San Diego.

_____ _____

Name and Title (Please Print) Date

_____

Signature

Appendix B

Commitment Scale Criteria

Quality Award Nomination Criteria

Use the following criteria as guidelines to determine whether a team or an individual is eligible for nomination of a Harmony Award. Below is a list of activities that a Harmony Award recipient might be expected to participate in.

A team or individual does not have to meet all of the criteria listed to qualify for the Award, however, final recipients of the Award will be judged against these criteria and the top three (3) individuals, and the top (1) team will win the Award per quarter.

CUSTOMER FOCUS

- Prepares and updates a list of customers and suppliers.
- Documents alignment agreements.
- Shows awareness of and concern for impact of daily actions on customers.
- Gives customer satisfaction top priority.
- Quality of work meets customer expectations.

TOTAL INVOLVEMENT

- Coordinates with other departments to ensure side-to-side integration.
- Participates in team activates (QAT's, QPM's, Steering Committees, etc.).
- Sets an example in using *(Company Name)* tools and concepts.
- Prevents things from "falling through the cracks".
- Makes helpful suggestions about how to improve Quality.

MEASUREMENT

- Develops and tracks appropriate measures of performance.
- Keeps track of personal work performance.
- Solicits user feedback on outputs.
- Provides feedback to suppliers.
- Makes decisions based on data when possible.

SYSTEMATIC SUPPORT

- Follows standard operating procedures.
- Recognizes the achievement of others.
- Removes barriers to performance when possible (i.e., recommends appropriate training, provides resources and/or time).
- Communicates that Quality is as important as all other daily work activities and encourages its integration in all aspects of work life (i.e., performance ratings).
- Actively supports Quality efforts by displaying measurements, participating in activities/classes, etc.

CONTINUOUS IMPROVEMENT

- Recommends improvement strategies when appropriate.
- Emphasizes planning, prevention and improvement of existing system.
- Demonstrates initiative and takes reasonable risks.
- Uses mistakes as an indicator of how to improve a process.
- Uses FADE principles to solve problems (defines problem, collects and analyzes data, uses participation to develop and execute action plans).

SBS Revision 6/24/91

Appendix C

Commitment Scale

COMFORT RATING SCALE

Please use the scale below to indicate how comfortable you are with rating each individual manager. Use the following score sheet to mark your rating.

Not Comfortable	Slightly Comfortable	Comfortable	Very Comfortable	Extremely Comfortable
I have no contact with this manager, I am unqualified to rate.	*I have only a limited amount of contact with this manager*	*I do not work with this manager regularly but I am familiar with his/her commitment level.*	*I have frequent with this manager*	*I am in constant contact with this manager.*
1	2	3	4	5

(COMPANY NAME) COMMITMENT RATING SCALE

Everyone demonstrates commitment to (Company Name) Team Excellence differently. The following statements illustrate different behaviors people may show. Please indicate on the following score sheet, which statement best illustrates each managers level of commitment.

___ LEVEL 1: This manger feels that customer complaints interfere with getting the job done correctly an believes that his/her daily activities have little or no impact on others. This manger probably has not complete his/her customer-supplier card. This manger participates in all required *(Company Name)* Team Excellence classes but frequently reschedules at the last minute because of time constraints. In addition, this manager avoids participating on teams. This manger may have some measures displayed in his/her department by other members of the work group. This manger rarely gives feedback other than during annual performance reviews. This manger probably forgets what the F, A, D and E represent in FADE. **In sum, this manager communicates that "Quality" is extra work and will only interfere with getting the job done correctly.**

___ LEVEL 2: This manager is not concerned with customer satisfaction and is unaware of how his/her daily activities can impact others. This manager may update his/her customer-supplier list when asked by a supervisor. This manager shows BC-TQM to Quality by participating in all required *(Company Name)* Team Excellence classes, however, frequently needs to make up classes because his/her schedule is too busy to attend regularly scheduled classes. This manger may participate on a team if necessary. This manager delegates the responsibility of tracking most measures of performance to other members of the work group and does little to follow up. This manger can be expect to give limited feedback to suppliers and, at times, recognizes someone on a job well done. This manger is aware of the FADE principles and my suggest others use them when solving a problem. **In sum, this manager communicates that "Quality" is extra work**

___ LEVEL 3: This manager talks about customer satisfaction and realizes that the actions of others can impact customer satisfaction. This manger prepares his/her customer-supplier list annually but rarely refers to it thereafter. This manger shows BC-TQM to Quality by participating in all required *(Company Name)* Team Excellence classes and may rearrange schedule if necessary to attend class. This manager also participates on teams when necessary. This manager makes some effort to track performance measures in his/her work group. This manger can be expected to give some feedback to suppliers and at times, congratulate someone on a job well done. This manger may suggest ways to remove barriers to performance and may recommend using FADE principles while participating as a member of a Quality Action Team. This manager may be expected to make suggestions to the suggestion system quarterly. **In sum, this manager communicates that "Quality" is a performance tool used at *(Company Name).***

___ LEVEL 4: This manager talks about customer satisfaction and understands how his/her activities can, at times, impact others. This manager prepares a customer-supplier list annually and makes alignment agreements if necessary. This manager shows BC-TQM to Quality by participating in required *(Company Name)* Team Excellence classes and will attempt to rearrange appointments if there is a scheduling conflict. This manger may also participate in team activities. He/she will track measures of performance developed by the work group. He/she can be expected to listen to feedback and to provide feedback to suppliers. This manager usually recognizes the achievements of others but sometimes overlooks accomplishments. This manager may suggest ways to remove barriers to performance by recommending the use of FADE principles. This manger demonstrates initiative by making suggestions via the suggestion system. **In sum, this manager communicates that "Quality" can probably improve daily work.**

___ LEVEL 5: This manger is aware of the importance of customer satisfaction and understands how his/her daily actions can impact others. This manager prepares his/her customer-supplier list annually and makes alignment agreements with others when necessary. This manager shows BC-TQM to Quality by participating in *(Company Name)* Team Excellence classes and avoids scheduling activities that may come in conflict with class schedules. This manager also participates on teams and develops and tracks appropriate measures of personal work performance and department work performance. He/she can be expected to listen to feedback and respond accordingly, and to provide constructive feedback to suppliers. This manager also recognized the achievements of others. This manager may suggest ways to remove barriers to performance and may use FADE principles to solve problems. This manger demonstrates initiative by making suggestions to improve processes. **In sum, this manager communicates that "Quality" is important and should be considered when performing your daily work.**

___ LEVEL 6: Except in certain situations (such as time availability or lack of staff), this manager gives customer satisfaction top priority and is usually aware of how his/her daily actions impact others. this is evident by the interest show by preparing and updating lists of customers and suppliers, by making alignment agreements and when consulting with others to learn about their goals and expectations. This manager shows BC-TQM to Quality by participating in *(Company Name)* Team Excellence classes whenever possible. This manager also participates in team activities, and develops and tracks appropriate measures of personal work performance and department work performance. He/she can be expected to solicit feedback from customers and provide constructive feedback to suppliers, in addition to recognizing the achievements of others. This manager suggests ways to remove barriers to performance and uses FADE principles to solve most of the problems that arise in his/her area. This manager demonstrates initiative by suggesting ways to improve processes and developing implementation plans. **In sum, this manager communicates that Quality is as important as all other daily work activities and encourages its integration in all aspects of work life.**

___ LEVEL 7: This manager always gives customer satisfaction top priority and is constantly aware of how his/her daily actions impact others. This is evident by the interest and concern toward customers that this manger shows. This manager regularly prepares and updates lists of customers and suppliers and coordinates with them to make sure that their goals and expectations are met. This individual also documents alignment agreements. This manager regularly shows his/her BC-TQM to Quality by participating in *(Company Name)* Team Excellence classes whenever possible. This manager makes sure that there are no conflicts in his/her schedule when signing up for classes to avoid missing them. This manager participates in team activities, and regularly assumes team leader or team facilitator roles whenever possible. This manager develops & tracks appropriate measures of personal work performance and department work performance. He/she actively solicits feedback on outputs and constructively provides feedback to suppliers, in addition to recognizing the achievements of others. This manager removes barriers to performance (i.e.: recommends training, provides resources &/or time), uses FADE principles to solve problems, and demonstrates initiative by taking reasonable risks. **In sum, this manager communicates that Quality is part of daily work activities. This manager has successfully integrated Quality into all aspects of work life.**

Appendix D

Middle Manager's TQM Questionnaire
(Expectancy Measures)

(Company Name) Total Quality Management Questionnaire

Please answer the following questions to the best of your ability. Do not skip any questions. Do not share your answers with others.

1. Your Name:_____.
2. Your Age (fill in):_____.
3. Yrs. at *(Company Name)*:_____.
4. Yrs. of supervisory responsibility:_____.
5. By placing a check (✓) in the appropriate box(es) please indicate which *(company name)* classes you have attended:

- ☐ The Quality Advantage (TQA)
- ☐ Quality Action Teams (QAT)
- ☐ Quality Management Skills (QMS)
- ☐ Quality Process Management (QPM)
- ☐ Experiment Design (ED)
- ☐ Response Surface Models/Mixtures (RSM)
- ☐ Statistical Process Control (SPC)
- ☐ Team Facilitator Training
- ☐ Results Through People
- ☐ Interaction Management
- ☐ Interaction Management/ Management Support
- ☐ Targeted Selection
- ☐ Presentation Skills
- ☐ Writing Skills
- ☐ Increasing Personal Productivity

6.	How long ago was your last training class?	_____mos.	_____yrs.
7.	In the past, have you found it easy or difficult to sign up to attend a training class? (If difficult, please explain).	☐ easy	☐ difficult
8.	Do you, or members of your work group have access to a personal computer and software which enables you to track performance measures?	☐ yes	☐ no
9.	Do you feel that you have been well trained in TQM concepts and principles?	☐ yes	☐ no
10.	Do you feel you have the appropriate resources available to you to help you understand how TQM fits with daily work?	☐ yes	☐ no
11.	Do you feel you have support from your immediate supervisor in regards to your own commitment to TQM?	☐ yes	☐ no
12.	Do you feel that you have time to follow TQM requirements (ie, fill out SOST, attend classes, volunteer for team activities)?	☐ yes	☐ no

Each of us demonstrates our commitment to TQM in different ways. The following statements illustrate different behaviors people ***may*** *show. Please place a (✓) next to the statement which you perceive represents your own behavior most of the time. Please check only one statement.*

_____Level 1: I feel that customer input interferes with getting the job done correctly and I believe that my daily activities have little or no impact on others. I probably have not complete my customer -suppler card. I participate in TQM classes because I am required to, however, I frequently reschedule at the last minute. I avoid participating on team. I may have some measures displayed in my department but the initiative came from other members of my work group. I rarely give feedback other than during annual performance reviews. I do not use or support the FADE problem solving process. **In sum, I communicate that "Quality" is extra work and will only interfere with getting the job done correctly.**

_____Level 2: I am not concerned with customer satisfaction and I am unaware of how my daily activities can impact others. I update my customer-supplier card when asked by my supervisor. I show Commitment to Quality by participating in all required TQM classes, however, I frequently need to make up classes because of lack of priority given to attending regularly scheduled classes. I may participate on a team if necessary. I delegate the responsibility of tracking most measures of performance to other members of my work group and I do little to follow up. I can be expected to give limited feedback to suppliers and, at times, recognizes someone on a job well done. I am aware of the FADE principles and my suggest others use them when solving a problem. **In sum, I communicate that "Quality" is extra work.**

_____Level 3: I talk about customer satisfaction and I realize that the actions of others can impact customer satisfaction. I prepare my customer-supplier list annually but rarely refer to it thereafter. I show Commitment to Quality by participating in all required TQM classes and I may rearrange my schedule if necessary to attend class. I also participate on teams when necessary. I make some effort to track performance measures in my work group. I can be expected to give some feedback to suppliers and at times, congratulate someone on a job well done. I may suggest ways to remove barriers to performance and I may recommend using FADE principles while participating as a member of a team. I may be expected to make suggestions to the suggestion system quarterly. **In sum, I communicate that "Quality" is a performance tool used at (company name).**

_____Level 4: I talk about customer satisfaction and I understand how my activities can, at times, impact others. I prepare my own customer-supplier card annually and I make alignment agreements if necessary. I show Commitment to Quality by participating in all required TQM classes and I will attempt to rearrange appointments if there is a schedule conflict. I may also participate in team activities. I will track measures of performance developed by the work group. I can be expected to listen to feedback and to provide feedback to suppliers. I usually recognize the achievements of others but I sometimes overlook their accomplishments. I may suggest ways to remove barriers to performance by recommending the use of FADE principles. I demonstrate initiative by making suggestions via the suggestion system. **In sum, I communicate that "Quality" can probably improve daily work.**

_____Level 5: I am aware of the importance of customer satisfaction and I understand how my daily actions can impact others. I prepare my customer-supplier card annually and I make alignment agreements with others when necessary. I show Commitment to Quality by participating in TQM classes and I avoid scheduling activities that may come in conflict with class schedules. I also participate on teams and I develop and track appropriate measures of personal work performance and department work performance. I can be expected to listen to feedback and respond accordingly, and to provide constructive feedback to suppliers. I also recognize the achievements of others. I may suggest ways to remove barriers to performance and I may use FADE principles to solve problems. I demonstrate initiative by making suggestions to improve processes. **In sum, I communicate that "Quality" is important and should be considered when performing your daily work.**

_____Level 6: Except in certain situations (such as time availability, or short staffed) I give customer satisfaction top priority and am usually aware of how my daily actions impact others. This is evident by the interest I show by preparing and updating lists of customers and suppliers, by making alignment agreements and by consulting with others to learn about their goals and expectations. I show Commitment to Quality by participating in TQM classes whenever possible. I also participate in team activities, and develop and track appropriate measures of personal work performance and department work performance. I can be expected to solicit feedback from customers and to provide constructive feedback to suppliers, in addition, I recognizer the achievements of others. I suggest ways to remove barriers to performance and I use FADE principles to solve most of the problems that arise in my area. I demonstrate initiative by suggesting ways to improve processes and by developing implementation plans. **In sum, I communicate that Quality is as important as all other daily work activities and I encourage its integration in all aspects of work life.**

_____Level 7: I always give customer satisfaction top priority and I am constantly aware of how my daily actions impact others. I regularly prepare and update lists of customers and suppliers and I regularly coordinate with them to make sure that their goals and expectations are met. I also document alignment agreements. I show my Commitment to Quality by participating in TQM classes whenever possible and I make sure that there are no conflicts in my schedule when I sigh up for classes to avoid missing them I participate in team activities, and readily assume team leader or team facilitator roles whenever possible. I develop & track appropriate measures of personal work performance and department work performance. I actively solicit feedback on outputs and constructively provide feedback to suppliers, in addition to recognizing the achievements of others. I remove barriers to performance (i.e.: recommend training, provide resource &/or time), use FADE principles to solve problems, and demonstrate initiative by taking reasonable risks. **In sum, I communicate that Quality is part of daily work activities and have successfully integrated Quality into all aspects of work life.**

The following scale is to be used to help guide you through the rest of the survey. You will need to remember the previous statements in order to answer some of the questions. Feel free to pull this page out of your survey package to use as a reference. You may also, at any time, return to the original summaries of the Levels if needed.

Level 1	I communicate that "Quality" is extra work and will only interfere with getting the job done correctly.
Level 2	I communicate that "Quality" is extra work.
Level 3	I communicate that Quality is a performance tool used at (company name).
Level 4	I communicate that Quality can probably improve daily work.
Level 5	I communicate that "Quality" is important and should be considered when performing your daily work.
Level 6	I communicate that Quality is as important as all other daily work activities and I encourage its integration in all aspects of work life.
Level 7	I communicate that Quality is part of daily work activities and has successfully integrated Quality into all aspects of work life.

Consequences of Commitment

Different things can happen as a result of the way we do our jobs. In the next set of questions, please indicate what you feel are the consequences of performing at different levels of Commitment to TQM (for the purpose of this questionnaire, levels of Commitment are defined by the statements you just read).

For each of the Commitment levels listed, indicate which one of the outcomes (horizontal axis) you believe is most likely to happen to you. That is, in a given set of boxes you would make one check in each row, checking the outcome you think is most likely to happen.

EXAMPLE:

Satisfaction
The satisfaction or unsatisfaction one feels from using TQM tools and principles in your daily work.

If on average, I perform at...	at the end of the year I would feel...				
	Very Satisfied	Somewhat Satisfied	Neither Satisfied or Unsatisfied	Somewhat Unsatisfied	Very Unsatisfied
Level 1					✓
Level 2				✓	
Level 3			✓		
Level 4			✓		
Level 5		✓			
Level 6		✓			
Level 7	✓				

In this example, the first row says: "If, on average, I perform at level 1, at the end of the year I would feel very unsatisfied". That is, if this person was performing at level 1 as defined by the previous Commitment scale, this person would feel very unsatisfied with his or her performance at the end of the year. Performing on average at level 2 would leave the person feeling somewhat unsatisfied. Performing on average at levels 3 & 4 would leave the individual feeling neither satisfied or unsatisfied. Performing on average at levels 5 & 6 would leave the person somewhat satisfied. Finally, performing on average at level 7 would leaver the person feeling very satisfied.

Note: Every row is to be checked. 5

Please make one check in each row of the following tables.

1. Supervisory Recognition

The amount of criticism or praise received from supervisor for performing on average at the level indicated.

If I perform, on average at...	at the end of the year, I would receive...				
	Quite a Bit of Criticism	Some Criticism	Neither Praise or Criticism	Some Praise	A Very High Amount of Praise
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					

Note: Every row is to be checked.

Please make one check in each row of the following table.

2. Feelings of Accomplishment

Feelings of accomplishment you get from performing on average at the level indicated.

If on average, I perform at...	I would feel...				
	Quite a Bit of Disappointment	Some Disappointment	Neither Disappointment or a Sense of Accomplishment	Some Sense of Accomplishment	A Strong Sense of Accomplishment
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					

Note: Every row is to be checked.

Please make one check in each row of the following table.

3. Co-worker Approval

The degree to which your co-workers are friendly and admire you if you performed on average at the levels indicated.

If on average, I perform at...	my coworkers would...				
	Resent me and be Very Unfriendly	Dislike me and be Somewhat Unfriendly	Be Neither Friendly or Unfriendly	Like me and be Somewhat Friendly	Admire me and be Very Friendly
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					

Note: Every row is to be checked.

Please make one check in each row of the following table.

4. Pay

The likelihood of earning a pay raise if you performed on average at the level indicated.

If on average, I perform at...	earning a pay raise would be..				
	Very Unlikely	Somewhat Unlikely	Neither Unlikely or Likely	Somewhat Likely	Very Likely
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					

Note: Every row is to be checked.

Please make one check in each row of the following table.

5. Promotion

The likelihood of earning a promotion if you performed on average at the level indicated.

If on average, I perform at...	earning a promotion would be..				
	Very Unlikely	Somewhat Unlikely	Neither Unlikely or Likely	Somewhat Likely	Very Likely
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					

Note: Every row is to be checked.

Please make one check in each row of the following table.

6. Productivity and Quality

The quantity and quality of work completed when performing on average at the level indicated.

If on average, I perform at...	the quantity and quality of my work would be...				
	Much Higher in Productivity and Quality	Somewhat Higher in Productivity and Quality	No Different in Productivity and Quality	Somewhat Lower in Productivity and Quality	Much Lower in Productivity and Quality
Level 1					
Level 2					
Level 3					
Level 4					
Level 5					
Level 6					
Level 7					

Note: Every row is to be checked.

Attractiveness of Job Factor

People differ in how attracted they are to different things about their jobs. For example, some people feel pleasant working conditions are very important and therefore working at a pleasant place is very attractive to them. For others working in a pleasant place means little or nothing, so good working conditions are neither attractive nor unattractive.

This part of the questionnaire attempts to find how attractive you would find different things about your job. On the next few pages a few of these things are described. After every description, please describe how attractive you feel the item described is to you. See the example below.

EXAMPLE: Attractiveness Rating

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it for you...

to get a small pay raise...

-10 -9 -ŏ -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

to get a large pay raise...

-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

The person in this example feels a "small pay raise" is attractive to a small degree but not as attractive as what he or shoe would call "somewhat attractive." On the other hand, the person feels "a large pay raise" is very attractive.

Please turn the page and complete all ratings by circling what you feel best describes your feelings.

Note: Every item has only one response. Do not circle between numbers.

Please circle the appropriate number for each item listed below.

1. Informal Supervisor Recognition: Having your supervisor tell you how he/she feels about your work. This can be praise for a good job such as a simple "pat on the back" or simply saying "good job." It also might be criticism for a bad job.

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it for you to get...

quite a bit of criticism from your supervisor...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

some criticism from your supervisor...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

neither criticism nor praise from your supervisor...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

some praise from your supervisor...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

a very high amount of praise from your supervisor...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Note: Every item has one response.

Please circle the appropriate number for each item listed below.

2. Sense of Accomplishment: The feeling of self satisfaction you get from having done a good job. This can be a positive feeling when you have done well or a negative feeling of disappointment if you know you've done a poor job.

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it for you to feel...

quite a bit of disappointment with your performance...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

some disappointment with your performance...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

neither disappointment nor a sense of accomplishment for your performance...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

some sense of accomplishment for your performance...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

a strong sense of accomplishment for your performance...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Note: Every item has one response.

Please circle the appropriate number for each item listed below.

3. Pay: Getting a pay raise for a job well done.

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it for you to...

receive a large pay cut...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

receive a small pay cut...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

neither a pay cut or a pay raise...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

receive a small pay raise...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

receive a large pay raise...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Note: Every item has one response.

Please circle the appropriate number for each item listed below.

4. Promotion: Getting a promotion for a job well done.

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it for you to...

receive a large demotion...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

receive a small demotion...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

neither a demotion or promotion...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

receive a small promotion...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

receive a large promotion...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Note: Every item has one response.

Please circle the appropriate number for each item listed below.

5. Friendship and admiration from co-workers: The extent to which your co-workers are friendly and admire you.

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it to you to have...

co-workers who resent you are very unfriendly...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

co-workers who dislike you and are somewhat unfriendly...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

co-workers who are neither friendly nor unfriendly...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

co-workers who like you and are somewhat friendly...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

co-workers who admire you greatly and are very friendly...

Note: Every item has one response.

Please circle the appropriate number for each item listed below.

6. Productivity and Quality: The quantity and quality of work performed.

Very Unattractive	Somewhat Unattractive	Neither Attractive Nor Unattractive	Somewhat Attractive	Very Attractive
-10	-5	0	5	10

How attractive is it to you if your work was...

very low in productivity and quality...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

somewhat low in productivity and quality...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

neither low nor high in productivity and quality...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

somewhat high in productivity and quality...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

much higher in productivity and quality...
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Note: Every item has one response.

Sometimes people set goals for themselves when they work on a job. For example, some people try for a certain production rate, others try to maintain a certain level of quality, and others try to put in a certain amount of effort. The following questions ask about the goals or objectives you may set. Circle the appropriate answer.

Sometimes people at work set goals or objectives regarding their Commitment to an organizational business strategy (i.e.: TQM).

1. To what extent have you given thought to setting a goal for your own Commitment with TQM?
   a. To a very great extent
   b. To a great extent
   c. To some extent
   d. To a small extent
   e. Not at all

2. At what level of Commitment to TQM would you like to be able to perform? (Pick one of the following options as your answer. Be sure to fill in the appropriate number if you pick (a) or (b).
   a. My goal is to always perform at a Commitment level of _____.
      (fill in level number 1 - 7.)
   b. My goal is to always perform at a Commitment level between _____ & _____.
      (fill in level numbers 1 - 7).
   c. My goal is to perform at the highest level of Commitment.
   d. Other: My goal is to _____

No one can perform at their best rate all the time, nor do we perform at the same pace continuously. We work harder or lesser because of things like energy and fatigue, interest and boredom, problems or delays, etc. During a regular work day we may work our hardest at times and we may slow down once in awhile.

The next set of questions concerns your estimate of what your Commitment level would be if you worked at different paces continually.

3. At what level of Commitment would you rate yourself if you worked at your slowest pace? _____.
4. At what level of Commitment would you rate yourself if you worked at your average rate continuously? _____.
5. At what level of Commitment would you be if you always worked your hardest? _____.

6. How attractive would it be for you to perform at: (Please circle the appropriate number)

Level 1?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Level 2?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Level 3?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Level 4?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Level 5?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Level 6?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

Level 7?
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +10

7. Can you perform at: On a scale from 0 to 10 (where 0 = no confidence, and 10 = a lot of confidence), please indicate how confident you are with your answer by circling the appropriate number:

Level 1?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10
Level 2?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10
Level 3?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10
Level 4?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10
Level 5?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10
Level 6?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10
Level 7?	☐ yes	☐ no	0	1	2	3	4	5	6	7	8	9	10

General Job Satisfaction Scale

The following questions ask how you feel about your job. Using the scale provided, circle the number which best represents how you feel.

1. All in all, I am satisfied with this job.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

2. In general, I don't like this job.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

3. In general, I like working here.

Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1	2	3	4	5

Please return this survey, along with the attached consent form to Susan Stern, PN-01, by July 19, 1992.

I'd like to thank you for all of your time and effort. Again, if you have any questions or concerns regarding this questionnaire, please feel free to call me.

Appendix E

Introductory Letter

To: (Employee's name) Date: June 23, 1992
From: Susan B. Stern, M. A.

As you may be aware, I am conducting research to complete the requirements for my Ph.D in Industrial/Organizational Psychology. I/O Psychology largely deals with changes that occur in organizations and how people respond to them. (Company Name) Team Excellence is an excellent example of organizational change and I am specifically interested in your personal opinions of the system. I have discussed my dissertation with the Quality Council and was given permission to ask you to participate in this study. In exchange, I will evaluate issues surrounding (Company Name) Team Excellence and make recommendations for improvements.

Attached is a questionnaire asking you how you feel about (Company Name) Team Excellence and what your perceptions are of its benefits to yourself and to the company.

Privacy Act Statement

The information obtained in this study will help us to understand how to improve jobs. Your individual comments will be kept in strict confidence by myself under the ethical guidelines of the American Psychological Association and will not be reported to anyone except in the form of grouped statistical summaries which maintain your individual anonymity. I will be requesting your identity so I can track respondents and call you for clarification to answers if necessary. Once data is collected all identities will be destroyed so no one person can be linked to information. Your participation in this study is voluntary and if you decide not to participate it will not be held against you. You are encouraged to participate. The study will be more accurate and have greater impact upon improving work if more people are involve.

For your review, I've attached a copy of a consent for signed by (Name), Chairman of the Board, representing top management. This states that the executive staff is aware that they will not have access to individual data collect by this study. If you have any questions or concerns please feel free to ask. My extension at (Company Name) is xXXXX or you could reach me at home at XXX-XXXX. Please return this questionnaire no later than **July 7, 1992.**

Thank you for your help.

Susan

Appendix F

Consent Form-B
(Company Name)

Consent of Participation in Scientific Research

I _____, have voluntarily agreed to participate in a study sponsored by (Company Name) Incorporated. I understand that I may withdraw participation at any time. I understand that all information collected will be held in strict confidence and the combined results will be used for a doctoral dissertation by Susan B. Stern, M. A. at the California School of Professional Psychology-San Diego.

_____ _____

Name (Please Print) Date

_____

Signed

Appendix G

Follow-up letter

To: (Employee's name) Date: July 21, 1992

From: Susan Stern, M. A Re: TQM Questionnaire

Dear Name,

A few weeks ago I sent you a questionnaire asking you how you feel about TQM and what your perceptions are of its benefits to yourself and to the company. This notice is just a friendly reminder to return the questionnaire to me as soon as possible. I am excited about the information obtained so far and I think (Company Name) will greatly benefit from the results. If you have any concerns or questions about filling out the survey, please feel free to call me (xXXXX) and I'd be happy to explain to you how the formate of this study works. I'd like to have all the questionnaires collected by Monday, July 27.

Thank you for your support and for your time.

Susan

EXPECTANCY THEORY PREDICTIONS OF MIDDLE MANAGEMENT'S COMMITMENT TO TOTAL QUALITY MANAGEMENT

An abstract of a dissertation
presented to the faculty of the
California School of Professional Psychology
San Diego

In partial fulfillment
of the requirements for the degree

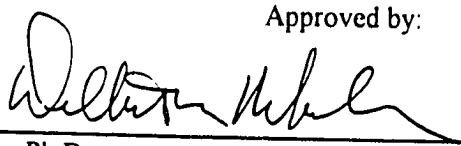
DOCTOR OF PHILOSOPHY

By

Susan Beth Stern

1995

Approved by:



Delbert Nebeker, Ph.D.

6/5/95

Abstract

TQM requires major operational changes, major culture changes, and even value changes in an organization. The process is time consuming and very costly. This study was designed to investigate why middle managers are willing to or not willing to perform behaviors which illustrate commitment to a TQM intervention. With this information, organizations can better invest time, money and energy to increase commitment.

The present study contributes both theoretically and methodologically to TQM and Work Motivation literature. Theoretically, this study assessed whether expectancy theory can account for the behavioral outcomes, which suggest commitment of middle managers to Total Quality Management, in a real organizational setting. In addition, the effects of situational performance constraints on motivation to perform was assessed, as well as the relationship between displaying commitment behaviors and general job satisfaction. Methodologically, this study compared traditional methods of measuring the expectancy construct of expectancy theory to a method based on self-efficacy theory. Further, the effects of using both the maximization rule and the matching law as predictions rules were assessed.

There were five major conclusions that resulted from this research. First, it was determined that the self-efficacy construct was equally affective in predicting commitment to TQM as the expectancy construct. Second, it was concluded that the matching law was equally affective as the maximization rule as the prediction rule for expectancy theory predictions. The third major conclusion from this research indicates that self-reports of BC-TQM are more predictable from the expectancy model predictions than the rated score of BC-TQM. The fourth major conclusion is that there is a positive correlation between job satisfaction and self-reported BC-TQM, and the fifth major conclusion is that gender seems to act as a moderator variable for expectancy and valence. There were no significant findings related to the perceived situational performance constraints and BC-TQM, however, this could have been due to methodological issues in the study.