

CONTINUOUS QUALITY IMPROVEMENT, TOTAL QUALITY MANAGEMENT,
AND LEADERSHIP

by

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Abstract

This dissertation seeks to understand why the failure of total quality management and continuous quality improvement initiatives persist. It investigates why some companies are able to succeed with total quality management and continuous quality improvement implementation and countless others are not. Many components contribute to the successful implementation of total quality management, examples are culture, top management commitment, systems knowledge, long term versus short term thinking, strategic planning processes, training, human resource management, and organizational structure. All of these components are within the sphere of influence surrounding organizational leadership. Therefore, it is put forward that the answers sought by this study can all be found within the discipline of leadership, its methods, and its association with effective change management strategies and approaches.

Dedication

To Suzanne, whose love, support, and understanding made this work possible.

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Thank you to my dissertation committee whose guidance, support, and contributions helped ensure the successful development and completion of this work. I give a special thanks to Dr. Ronald Benson, without your guidance, I surely would have erred along the path of learning and exploration.

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CHAPTER 1. INTRODUCTION

Total quality management and continuous improvement programs continue to result in failed implementations across many organizations seeking change (Deming, 1994; Lu & Sohal, 1993; Gurnani, 1999; Ishikawa, 1985; Juran, 1989; Kassicieh & Yourstone, 1998; Lakshman, 2006; Lawler, 1994; Mellahi & Eyuboglu, 2001; Santiago & Perles, 2002; Shea & Howell, 1998; Shin, Kalinowski & El-Enein, 1998; Soltani, Lai, & Gharneh, 2005; Terziovski, Sohal & Samson, 1996; Warwood & Roberts, 2004; Yusof & Aspinwall, 2000). This failure is attributable to the inability of leadership to properly embrace both total quality management and continuous improvement methods (Deming, 1994; Ishikawa, 1985; Juran, 1989). Although leadership seeks change and desires the success of quality programs in order to enhance the organization's ability to compete, they limit the quality initiative by failing to wholly embrace what it means to engage such an initiative. Many leaders delegate the responsibility for quality and thus fail to take executive ownership. Others do not approach change management in a manner conducive to success. Therefore, a vision is never effectively communicated, a guiding coalition is never built to drive forward the aim of the vision, short term wins are never realized, and the organizations culture and daily business processes remain constant and unaltered.

In addition, other leaders lack the leadership competencies and styles found within the servant, situational, transformational, and emotionally intelligent approaches. This basic leadership deficiency eradicates the possibility of successful total quality implementation and long term program sustainability. Even when organizations have leaders that obtain quality knowledge, the appropriate change management skills, and the leadership competencies necessary for success, many leaders still lack the knowledge of systems required for a triumphant outcome.

This study will investigate the belief that organizational leaders demonstrating strong aptitudes for quality management, change management, leadership styles and their associated competencies, along with systems knowledge will be equipped with the training, knowledge, and expertise required for success.

Background of the Study

Quality management has evolved over many centuries and many different societies such as China's ancient handicraft production and inspection organizations, ancient Greece's architect and design societies, Europe's labor guilds, Taylor's (1911) labor specialization, Shewart's (1931) quality control and the utilization of upper and lower control limits, or the evolution of systemic processes ushered in by the quality approaches of Deming (1994), Juran (1989), Taguchi (1995), Ishikawa (1985), and Ohno (2007).

Quality has continually evolved and been constantly redefined. While at one time quality was merely concerned with the excellence and superiority of craftsmanship, it is today focused beyond labor and is concerned with all organizational activities that influence customer satisfaction and long term customer loyalty. This shift in thinking was achieved with the contributions of many. Ishikawa (1985) focused organizations on customer requirements, Juran (1989) offered his trilogy, Deming (1994) provided his system of profound knowledge, and Ohno (2007) fathered in the era of lean thinking. Each of these gurus' approaches views quality in the larger context, which is a context that is systemic in nature. These views redefined quality and aided its evolution from a focus on labor and product superiority to that of organizational superiority. Collectively these views ushered in a new era of quality known as total quality management.

Many components contribute to the successful implementation of total quality management: (a) culture, (b) top management commitment, (c) systems knowledge, (d) long term versus short term thinking, (e) strategic planning processes, (f) training, (g) human resource management, and (h) organizational structure for example (Bennett & Kerr, 1996; Cole, 2002; Dedhia, 1997; Deming, 2000; Feldman, 1986; Juran, 1989; Taiwo, 2001; Te-Wei Wang, 2004; Womack & Jones, 2003). It is theorized that these components are within the sphere of influence surrounding organizational leadership. Therefore, it is put forward that the problems inherent in quality program implementation can be found within the discipline of leadership and its methods.

Additionally, the researcher believes that a relationship exists between a leader's ability to successfully implement and sustain a continuous improvement and total quality management program and his or her understanding of systems and continuous improvement strategies.

Total quality management and continuous improvement programs are systems for change. The change realized from these systemic programs requires leadership and other change implementers to analyze, evaluate, and comprehend how improvement actions influence the organizational system in which they reside. Therefore, leaders embracing total quality management and continuous improvement programs should have an understanding of systems and knowledge of their inner workings in an effort to improve quality implementation and program success.

Statement of the Problem

It is hypothesized by the researcher that a lack of knowledge exists concerning the role of executive leadership skill, capability, style, and knowledge as it relates to the success of continuous quality improvement and total quality management programs. Needed is an understanding of why organizations continue to have failed total quality management and

continuous quality improvement program implementations given the knowledge provided by quality gurus and other quality management academics.

Purpose of the Study

This dissertation seeks to understand why the failure of total quality management and continuous quality improvement initiatives persist. It investigates why some companies are able to succeed with total quality management and continuous quality improvement implementation and countless others are not. Many of the causes associated with total quality failures can be found within the scope of organizational leadership. To that end, a key purpose of this research is to determine the requisite leadership skills and capabilities required for the success of total quality management and continuous improvement programs. To understand what leadership skills and capabilities must be studied, a comprehensive evaluation of total quality management and continuous improvement efforts will first be conducted. As noted, continuous improvement programs and total quality management initiatives require specific components to ensure success. These components will be isolated and reviewed for their contributions and ability to ensure successful implementation as well as long term program sustainability.

To accomplish this goal, three hierarchical research questions and six hypotheses will be addressed using a quantitative research design. The target participants for this study consist of general managers, quality managers, and other senior executives working within the U.S. economy to implement or sustain total quality management and continuous quality improvement initiatives. Given their experience and knowledge within the fields of quality management and leadership, these individual groups were chosen for the sample frame.

Rationale

The literature acknowledges that senior leadership is a critical factor to the success or failure of total quality management and continuous improvement initiatives. Most of the discussion has surrounded the involvement of senior leadership to ensure that the proper resources, focus, and support are awarded the effort to create the environment required for success. However, although leadership involvement increases, failure persists (Gurnani, 1999; Lakshman, 2006; Mellahi & Eyuboglu, 2001; Santiago & Perles, 2002; Soltani et al., 2005; Warwood & Roberts, 2004; Yusof & Aspinwall, 2000). This development creates a quandary: if continuous quality initiatives require senior leadership involvement what leadership skills, abilities, and knowledge are required to deliver successful total quality outcomes?

This research will aid the business community with the knowledge required for the proper implementation of continuous quality programs. It will provide leadership with the necessary understanding and comprehension of the competencies required for the successful implementation of total quality management efforts. Additionally, it will offer leadership an understanding of what they must do to develop the skills, abilities, and knowledge required in order to ensure the success of their quality initiatives.

Research Questions/Hypotheses

This study is a quantitative research approach. Chapter 3 of the dissertation provides a complete presentation of the research paradigm, methodology, and its operationalization. However, for clarity the following hierarchical research questions and associated hypotheses are presented below. These questions and hypotheses organize the research process and achieve the goal of the research problem.

Q1: Are executive leadership knowledge and priorities a factor in, or independent of, the success of total quality programs?

H1_A: TQM success of quality program implementation and sustainment is dependent upon executive leadership knowledge and prioritization.

H1₀: TQM success of quality program implementation and sustainment is not dependent upon executive leadership knowledge and prioritization.

Q2: Are executive leadership style and abilities a factor in, or independent of, the success of total quality programs?

H2_A: TQM success is dependent upon leadership style.

H2₀: TQM success is not dependent upon leadership style.

H3_A: TQM success is dependent upon leadership abilities.

H3₀: TQM success is not dependent upon leadership abilities.

Q3: Is executive leadership knowledge of quality programs a factor in, or independent of, the success of total quality programs?

H4_A: TQM success is dependent upon executive leadership's comprehension and understanding of systems.

H4₀: TQM success is not dependent upon executive leadership's comprehension and understanding of systems.

H5_A: TQM success is dependent upon executive leadership's comprehension and understanding of the field of quality.

H5₀: TQM success is not dependent upon executive leadership's comprehension and understanding of the field of quality.

H6_A: TQM success is dependent upon executive leadership's comprehension and understanding of change management.

H6₀: TQM success is not dependent upon executive leadership's comprehension and understanding of change management.

Nature of the Study: A Conceptual Model

It is conceptualized by the researcher that a relationship exists between a leader's knowledge of leadership style/approaches, of quality and systems, of change management, of executive knowledge and prioritization, and the success of total quality management and continuous quality improvement programs. The relationship surmised is the foundation of this effort. This conceptualization is illustrated in Figure 1.

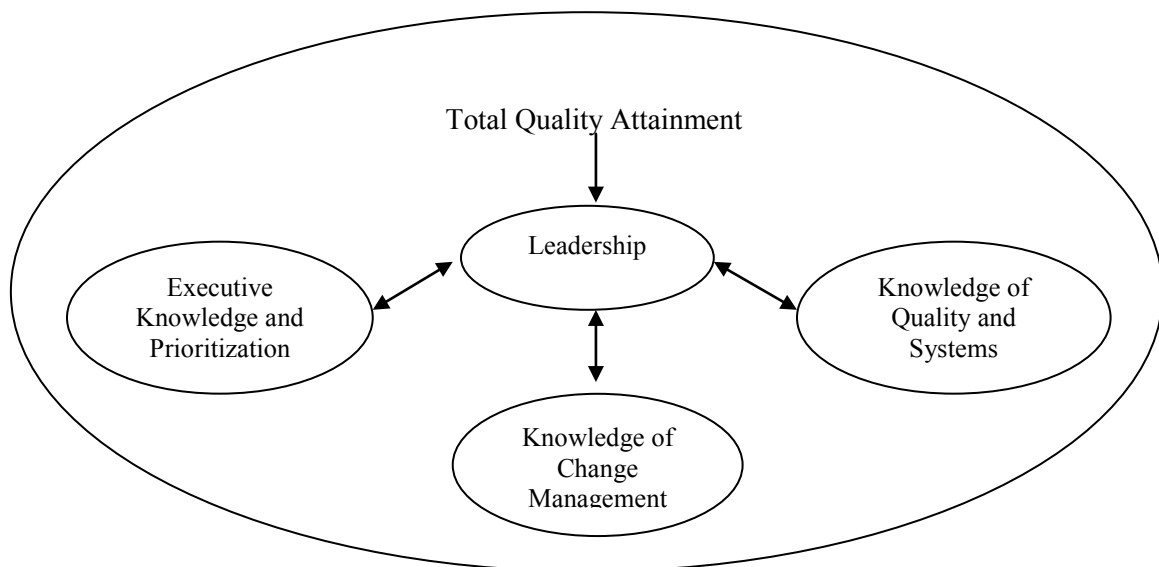


Figure 1. Antonaros Quality Attainment Conceptualization Model

The attainment of total quality management is realized only when proper leadership is employed, which means that the most appropriate leadership style and approach must be used during implementation and long term program execution. This study will work to prove that the

leadership competencies and styles found within the transformational (servant, situational, and emotionally intelligent approaches) approach are the most appropriate. In addition, a complete and comprehensive understanding of change management and systems thinking is required.

Leadership must understand that continuous improvement programs such as total quality management are incessant change operatives. Failing to fully understand change, what it is, and how to effectively manage and implement it, could be lethal to the execution of the initiative. Much research and work has been completed surrounding the concept of change. Kotter, in his 1996 book titled *Leading Change*, popularized the concept while prescribing a framework to assist in the successful execution of change. It is important for proper implementation that leadership fully comprehend change theories and change management frameworks. This knowledge will aid in the growth of the leader and his/her understanding of how to execute continuous improvement programs.

In addition to change, leadership must embrace systemic thinking patterns (Deming, 1994; Senge, 2006). Organizations are systems operating inside of a larger system (e.g., a company division, a vertical industry, a supply chain, the national economy, the global economy). Total quality management, being an operative of change and improvement, makes changes to parts of the system. Failing to understand how those changes influence the system wholly could be fatal to the organization; changes made in an effort to improve could yield unforeseen problems elsewhere. Conversely, when using systemic thinking, positive changes can be made that yield positive actions and improvements elsewhere.

Significance of the Study

As stated, this research will aid the business community with the understanding and knowledge required for proper implementation of continuous quality programs. It will offer

leadership an understanding of the skills, abilities, and knowledge necessary for the success of quality initiatives, which is significant given the number of organizations striving to weave quality programs into their overall strategic orientation. Lawler, Mohrman, and Ledford (1992) reported that 77% of American companies were engaging in some form of total quality management program as a means to achieve efficiencies and/or competitive advantage. Additionally, while referring to an American Quality Foundation study whose sample population consisted of companies headquartered in Canada, Germany, Japan, and the United States, Terziovski et al. (1996) pointed out that “virtually every organization in the sample indicated that quality was a crucial factor in its strategic performance” (p. 459). Mellahi and Eyuboglu, in a 2001 empirical study, pointed out that the need to understand total quality management extends beyond the walls of the west and into the Middle East as well. These researchers point out that those organizations embracing total quality and continuous improvement initiatives are realizing brand preference and competitive advantage. This new reality has organizations from both the west and the third world looking to engage total quality management and continuous improvement programs in an effort to achieve performance expectations and total customer satisfaction (Mellahi & Eyuboglu, 2001).

Definition of Terms

ASQ: The American Society for Quality

Change: To cause a transformation; to become something different.

Change Management: The processes, framework, and steps required of a leader to transform the organization.

Deming Prize: The Japanese quality award given to organizations demonstrating the ability to successfully implement and sustain total quality control across the organization.

Effective: Producing a desired result. For the purpose of this study effective refers to producing a desired quality result.

Efficient: Achieving a desired quality result without wasting time, effort, or resources.

Leadership: An individual that inspires others to action through the sharing of a common vision in order to create and realize a new reality.

Leadership Style: How a leader interacts with and relates to followers.

Leadership Abilities: A leader's emotional capacity, emotional influence, emotional awareness, and overall emotional intelligence.

Lean: A total quality management approach born out of the production strategies of Taiichi Ohno; a quality approach that achieves customer satisfaction and retention by focusing all organizational energies upon activities generating customer value.

MBNQA: The Malcolm Baldrige National Quality Award was established in 1987 by the United States Congress to raise quality awareness in America. It annually recognizes organizations that demonstrate mastery in the field of quality and achieve total quality management.

Quality: The degree of excellence required to achieve distinguishable attributes that provide product and service superiority.

Quantitative Study: A systemic scientific investigation carried out for the purpose of understanding relationships existing among variables. A process used to answer scientific questions.

Satisfaction: A sense of fulfillment; contentment.

Success: Achieving a desired outcome. For the purpose of this study success refers to achieving the degree of excellence required to realize distinguishable attributes that provide product and service superiority.

System: A group of independent but interrelated elements comprising a unified whole.

Systems Thinking: The recognizing of systems, subsystems, components of systems, and system interrelationships.

Total Quality Management: A management approach for an organization engaging all employees for the purpose of achieving constant improvement that yields total customer satisfaction.

Assumptions and Limitations

This research takes the position that total quality management cannot be achieved and successfully sustained by any organization without the presence of proper leadership and knowledge of change models and systems thinking. It assumes that leadership based on Burns's (1978) transformational approach (an approach encompassing Greenleaf's (1998) servant, Hersey and Blanchard's (1974) situational, and Goleman's (1998) emotionally intelligent leadership) will be equipped with the leadership tools, skills, and knowledge necessary for success. Additionally, without the knowledge of systems and change management strategies, proper leadership alone is insufficient. Proper leadership must be coupled with the knowledge of change management and systems thinking, and it should be integrated with the teachings of seminal thinkers such as Kotter's 1996 change strategies and von Bertalanffy's 1968 general systems theory.

This study uses a quantitative approach to research. For data collection purposes, surveys will be administered to research participants. The research outcomes will be influenced by the

number of respondents choosing to engage the study. Thus, findings will be limited to those sample frame members that choose to participate and engage the study.

Organization of the Research

The next chapter presents the reader with a review of the continuous quality improvement, total quality management, change management, leadership, and systems literature. Academic books, journals, and periodicals are presented. As a result, the reader will have a better understanding of the topic along with the history surrounding this study and its problem. Chapter 3 will present the research design to collect the data necessary to address this research problem. Chapter 4 will present the collected data and Chapter 5 will offer conclusions.

CHAPTER 2. LITERATURE REVIEW

To ensure proper understanding of the problem surrounding leadership and the successful implementation of total quality management, the literature review and background for the study is composed of two sections. The first section consists of three parts. The first part will offer a brief historical overview of total quality and present various approaches to total quality management and continuous improvement philosophies. The second part will review leadership styles and competencies required for change management and the continuous improvement strategies associated with total quality management. The third part will introduce systems thinking and its association with total quality management and leadership success. The first section will conclude with a summary that reviews the problem and the relationship between the three parts offering an enhanced understanding of the problems facing leadership's abilities to successfully launch and sustain a total quality management initiative. The second section will offer an expansive review of the literature and present various academic works: both books and empirical studies.

Section I, Part I: Quality

The field of quality dates back thousands of years. From the first rock knife, to the skilled labor of the blacksmith, to the labor guilds, to Taylorism, to control charts, and to contemporary quality efforts, man has continuously labored to improve product, service, and performance. Quality concerns have been present for centuries. However, it was not until the late 19th century and early part of the 20th century that one man's efforts began rapidly altering the field: Frederick Taylor (1911). The brief historical overview provided will begin with his contributions.

Scientific Management

Taylor (1911), a pioneer in the pursuit of scientific management, was an industrial engineer who enhanced productivity through process improvements. His goal was to take a specific process that was integrated into a larger process and work to improve its overall effectiveness. Taylor's efforts could be said to be bottom/up driven. For example, he might have learned that assembling part X in a specific manner reduced the assembly time of that component by four minutes. If similar time savings could be found across the 10 components used to make the whole manufactured good he could improve production by 40 minutes per unit. He found ways to eliminate waste and improve production and process effectiveness. Taylor believed that labor and management equally shared the responsibility of performance and productivity. He argued that it was management's responsibility to ensure best practices were uncovered and recorded while labor's duty was to execute the best practices that management builds into task process and procedure.

Fayol (1919) was a management theorist focused on administrative arrangements; he worked from the top/down. It was his belief that to be successful the organization must labor to improve its administration. This directed him to primarily work at enhancing the coordination and specialization of the business. Fayol used coordination to create vertical reporting structures that clearly defined roles, authority, and employee supervision. Regarding specialization, he effectively developed departments that focused on specific duties such as finance departments versus procurement and operations departments.

Mayo (1933) was an industrial psychologist whose research investigated the psychological impact of environment and workload on laborers. He created knowledge surrounding worker productivity while conducting his famous Hawthorne Studies. These studies

taught us that worker motivation is high when team members feel acknowledged, and a part of something important.

As a practitioner, Barnard's (1938) perspectives are useful. He believed that organizations, although working towards goals and means, were dependent upon the collaboration of all team members in order to achieve success. He also had the insight to understand that positional authority was not always effective. Rather, workers provide the authority based upon their willingness to execute directives (thus encompassing the spirit of true team collaboration). His was an interesting perspective for the time considering the hard line management tactics that was associated with his era.

Selznick (1948), a structural theorist whose contributions focused around the concept of the bureaucracy, believed in the institutionalization of the organization. He argued that organizations are evolving. He suggested that their main purpose, like that of an organism, was self maintenance, sustainability, and long term viability. His work strongly supports the perspective of evolving organizations (or the idea of self-prolongment).

Parsons (1947) was a researcher whose work focused on the needs required for the survival of an organizations social system (which is required for organizational success). His work created the following model as shown in Scott and Davis (2007):

1. Adaptation: the problem of acquiring sufficient resources
2. Goal Attainment: the problem of setting and implementing goals
3. Integration: the problem of maintaining solidarity or coordination among the subunits of the system
4. Latency: the problem of creating, preserving, and transmitting the systems distinctive culture and values. (p. 77)

These scientists contributed to the field of quality. Taylor drove process improvement, Fayol delivered increased output through functional competencies, Mayo taught us about worker motivation and its association with productivity, Barnard demonstrated the effectiveness of collaboration and teamwork, while Selznick and Parson demonstrated how the organization can sustain itself and grow. Each contributed to the quality movement and changed the way practitioners engage quality in their organizations. Additionally, their work is still relevant and can be found in the building blocks of continuous improvement methodologies.

Continuous Quality Improvement

Continuous quality improvement can be thought of as an organizational attitude. It is a company's approach and philosophy to doing business. In addition, it can be the key thrust to achieving and sustaining a competitive advantage. Continuous quality improvement methods can be found in the teachings of Deming (1994) and Juran (1989). Deming's work is anchored by his 14 points which teach us to create constancy toward improvement. He argues that organizations should strive to improve in all facets of their business such as: (a) employee management, (b) organizational direction and focus, (c) communications, (d) leadership, (e) production, (f) service delivery. Moreover, Deming argues that devoid of leadership, constancy toward improvement will cease to be present. Top management and senior level leadership must embrace continuous improvement and strive to engrain the philosophy into everyday business processes and practices. Deming (2000) states, "the aim of leadership should be to improve the performance of man and machine, to improve quality, to increase output, and simultaneously to bring pride of workmanship to people" (p. 248). Juran also supports this philosophy in his work. He feverishly argues that it is CEO and top management involvement that make quality work.

He believes that without constant CEO and top management focus, quality is nothing more than a fad (Juran, 1989).

Juran and Deming share many of the same philosophies. Their works stress that quality is a top management and organizational initiative. As such, to be successful it must become a daily norm for the organization, effectively turning into a part of the daily culture.

Organizations pursuing continuous quality improvement initiatives must address their culture in a way that shifts it from its current state to the one desired. Claver, Gasco, Llopis, and Gonzalez (2001) support this change. While referring to company culture and the successful implementation of Total Quality Management, a continuous quality improvement methodology, they state that all organizational members must be “committed to customer satisfaction through continuous improvement” (p. 470). To achieve this commitment, an organizational change must take place that alters the course of the business through cultural integration. After all, it is the force of culture that holds organizations in a given form over time (Feldman, 1986). Regardless of the method chosen, all organizations searching for long term viability should employ some form of continuous quality improvement.

Total quality management

Total quality management is a philosophy of continuous quality improvement that yields total customer satisfaction, and therefore long term organizational viability. Total quality management practitioners historically utilize total quality management principles in an effort to find solutions that prevent procedural or process specific error.

Customers are the key to answering what capability organizations should employ and what offerings they should provide. They are the single most important element in defining what quality is for the organization. Customers know what they want, when they want it, and where

they want it. According to Harari (1992), customers define quality “in terms of their total experience with your products, your services and your company as a whole” (p. 8), which implies that it is the organization’s duty to understand, and cater to, the complete needs of the customer to make certain quality interactions are realized. Ensuring these needs are met will enhance the customer experience making certain customer satisfaction is achieved. Attaining this satisfaction is the aim of total quality management. Using continuous improvement methods, total quality management enhances products and services through process and procedural developments. Therefore, total quality management is a continuous improvement program designed to enhance the total customer experience, resulting in total customer satisfaction.

Total quality management delivers total customer satisfaction through enhanced quality. When something is perceived to be of good quality, it has realized definable and distinguishable characteristics that are preferred or desired. These characteristics can be either physical or behavioral in nature. Ensuring that these characteristics are present requires (a) control mechanisms, (b) assurance of control, (c) learning mechanisms, and (d) ultimately some sort of third party (customer) satisfaction. Control mechanisms, along with control assurance, emphasize process management, means of action, and the guarantee of their proper implementation. Learning mechanisms develop knowledge that yields process, product, or service offering improvements. Third party satisfaction is realized when a given entity perceives that their needs are being met through the aforementioned behavioral or physical characteristics (Rungtusanatham, Ogden, & Bin Wu, 2003).

All of these elements are components of quality management. Each contributes in its own way to ensure that definable and distinguishable characteristics exist. If control mechanisms are not present, characteristics will be mottled. Without assurance of control,

control mechanisms are not constant, and therefore yield variability. Moreover, learning mechanisms ensure improvements resulting in future characteristics that are definable and distinguishable (devoid of this mechanism will make certain quality is short lived). Finally, if satisfaction is not realized, quality is not present.

Lean thinking

Lean thinking is a total quality management approach. It was born out of the production strategies of Taiichi Ohno (2007), who for much of the 20th century was a key Toyota senior manager. Ohno recognized early in his career that to achieve customer satisfaction and retention organizations must focus all of their energies upon activities generating customer value. To this end, Ohno developed the principles of lean thinking in an effort to eliminate waste and enhance the total customer experience. In their book, *Lean Thinking*, Womack and Jones (2003) define waste as “any human activity which absorbs resources but creates no value” (p. 15). Lean thinking principles work to ensure value is created by making certain that all organizational resources are constantly utilized, focused, and aimed at satisfying the customer. There are five principles of lean thinking: (a) value, (b) value stream, (c) flow, (d) pull, and (e) perfection (Womack & Jones, 2003).

Value is determined by the customer as it relates to a provider’s good or service (Womack & Jones, 2003). Organizations looking to create value must start with redefining their traditional methods of value creation. Many companies look to sell their capability, even if this capability is not required of the customer. To follow this logic is wasteful. Resources are deployed and utilized but never result in true customer satisfaction and value creation. To break away from the traditional mind sets, organizations must understand value as it relates to the

customer. Once value is characterized, companies can redeploy resources to execute value and achieve customer satisfaction.

Value streams are defined by the effectiveness of supply chains. Organizations both up and downstream are connected across the chain. All activities associated with the development of a product or service at any part of the chain can influence the outcome. As a result, value for a producer/provider can be impacted positively or negatively by its up and downstream business partners. Organizations must work to eliminate waste across the supply chain by developing value streams with their supply chain partners. In support Womack and Jones (2003) state that “lean thinking must go beyond the firm, the standard unit of scorekeeping in business across the world, to look at the whole: the entire set of activities entailed in creating and producing a specific product” (p. 20).

Once waste has been removed from the value creating process, the next step in lean implementation--the flow--can be executed. Flow refers to the continuous movement of resources through the production process in a congruent manner. As a result of continuous flow organizations can migrate from a push mentality of production to a pull method (regardless of whether they produce products or services). In a pull environment organizations respond to the immediate needs of the market by producing to the demand of the market. Inventory is not built and then hopefully sold; rather, production and action are based upon real customer demand. The Dell computer company is an excellent example of this method of production. Customers can use Dell’s flow methods to build a machine to their specifications. Dell, using the customer’s requirements, builds to demand needs ensuring value creation in a non-wasteful production process.

Organizations that identify true value as it is defined by the customer by eliminating waste from their value streams, creating a flow mentality towards production, and implementing a pull method of demand management are prepared to pursue the final step of lean thinking-- perfection--which is nothing more than the continual pursuance of improvement and waste elimination from a system process that ensures companies focus energies and resources upon the goal of value creation and total customer satisfaction.

Lean thinking approaches the process of customer satisfaction from a system perspective. The system is evaluated beyond the organizational whole to include all up and downstream business partners influencing the final output created for the customer. Supply chain dynamics become a large part of the system and must be effectively managed to ensure that lean models are achieved.

Six Sigma

Six Sigma is a statistical process control methodology that was developed by Bill Smith at the Motorola Company. Its foundations can be found in the control charts and methods developed by Shewart in the 1920s. The goal of Six Sigma is to identify and eliminate errors from either a production or business related process. The identification and elimination of these errors ensures defects are neutralized ultimately ensuring quality output. As such, the elimination of variation is a key characteristic of this continuous improvement philosophy. The identification of error occurs through the incorporation of statistical process control methods. Upper and lower control limits are set to constantly measure tolerance levels associated with specific processes and their outputs. To achieve the goal of Six Sigma, processes cannot have more than 3.4 variations or defects per 1,000,000 process outcomes (Pande & Holpp, 2002).

Building upon Deming's Plan-Do-Check-Act (PDCA) cycle, Six Sigma incorporates a similar improvement process known as Define-Measure-Analyze-Improve-Control (DMAIC) which is explained below.

- Define the problem. What process improvement goals are consistent with customer demands?
- Measure. Gather data to validate and quantify the problem.
- Analyze. Verify cause-and-effect relationships and establish the root cause of the problem.
- Improve. Optimize the process based upon data analysis using beta experiments and pilot tests. Once complete, move onto production and final implementation.
- Control. Establish control mechanisms that ensure constancy of improvement while continuously monitoring the new process. (Pande & Holpp, 2002).

Six Sigma is an excellent tool for improving quality within the goods and services production system. It permits for the identification of defects, the elimination of defects, and the assurance that variation will be managed within established upper and lower control limits. As a statistical process control methodology, its applicability to total quality management and continuous improvement techniques are undeniable. However, Six Sigma minimizes consideration of the system by subordinating it to the variation found in defective processes. The impacts upon the organizational system realized from the elimination of defects are of little consideration to the Six Sigma enthusiast and supporter. Moreover, the methodology fails to work beyond the organizational system which is in direct conflict with total quality management principles. Furthermore, it does not incorporate a holistic view of the service development or

product development process, and therefore, does not take into consideration supply chain partners and supply chain dynamics.

Quality: A Conclusion

Taylor (1911) subdivided jobs into duties and processes which improved production as a result of positional expertise. This was aided through the ability to hire job skills that matched job characteristics. Shewart (1931) introduced the control chart allowing for the measurement of processes and performance ushering in the age of statistical process control. Deming (1994) and Juran (1989) built upon Shewart's efforts and created a doctrine of quality that yielded the philosophies surrounding total quality management and continuous improvement methodologies. Ohno (2007), building on the work of Deming, Juran, and the Japanese Union of Scientists and Engineers, expanded the concept of continuous improvement from that of a closed organizational system to an open systems solution. His lean methods expanded quality outside the confines of the organizational system and ushered in the age of supply chain competition. All of these individuals and their efforts expanded the concept of quality and created new approaches furthering the discipline. Although differences in philosophical perspectives do exist between them, the similarities that connect their works within the field of quality are of interest. All argue that leadership must be involved in quality and that the change required for quality implementation can not occur without long term commitment. While presenting his findings and argument for scientific management, Taylor himself warns that implementers "must go exceedingly slowly, and that the work of making the change...could not be done in less than from three to five years" (p. 75).

Section I, Part II: Quality and Leadership

The success of an individual organization is dependent upon multiple facets. To be successful the organization must have a sound value proposition, be able to demonstrate an ability to adequately deliver its proposition, be recognized as providing appropriate value in the market, be adept at coping with market forces, and capable of both minor change and frame breaking change. To accomplish this, an organization requires a strong management team and firm leadership. Indeed, leadership is a key ingredient for organizational change, continuous improvement, and long term success. Therefore, leaders will effect and determine the productivity and efficiency of the organizations they oversee.

Continuous improvement efforts are nothing more than the ability to successfully execute positive change. Change is the act of altering the status quo. It is becoming something different (Robbins & Judge, 2007). When change occurs, organizations unfreeze, move, and refreeze into their new reality (Lewin, 1951). Moreover, to be successful when executing change, leaders should establish a sense of urgency, create a guiding coalition, develop a vision and strategy, communicate the change vision, empower broad based action, generate short term wins, consolidate gains, produce more change, and anchor new approaches in the culture (Kotter, 1996).

Today's leaders are constantly working in the face of change. In the challenges associated with cultural diversity, technology, social trends, market forces, or the continuous improvement efforts associated with total quality management, change is always present. Leaders must be tactful change managers and demonstrate a savvy approach to leadership; in this vein, leadership is thus the ability to cope with and manage change. It is the coercion and influence of one will upon another to achieve change via the execution of a vision and goal

(Robbins & Judge, 2007). Leadership then, is the driving force behind an organization's ability to effectively implement, execute, and manage change.

Leadership is the key to organizational change, continuous improvement, achievement, sustainment, and long term success. A leader can be an asset to the company by helping it change, grow, and mature, or a leader can be a liability to the company draining its resources and straining its ability to progress. The next section will discuss the characteristics of leadership required for success, specifically those associated with successful change and continuous improvement strategies.

Theories of Leadership Required for Successful Quality Management

To effectively execute change and continuous improvement strategies, the needs of all employees must be met, which ensures their ability to both accomplish their work and contribute to the vision. Leaders should make certain that all subordinates have the tools, structure, and support required for success (Greenleaf, 2002). Also, it is imperative that team members feel a sense of empowerment, are collaborated with, and know that support is always available from management (Hersey & Blanchard, 1988). To accomplish this, managers should be self-aware, socially aware, and be able to regulate their own emotions while successfully managing external and interpersonal relationships (Goleman, Boyatzis, McKee, 2002), thus making certain that a healthy work environment exists for productivity and the cultivation of job satisfaction.

The following sections and their paragraphs discuss the theories supporting these comments. For clarity and completeness, a thorough overview of leadership is offered in Figure 2. This diagram presents leadership along a continuum. Along that continuum are characteristics and theories of leadership that are either transactional or transformational in nature.

Transactional leadership is commonly used; leaders reward followers for providing specific outcomes. Burns (1978) states that “leaders approach followers with an eye to exchanging one thing for another: jobs for votes, or subsidies for campaign contributions” (p. 4). Transformational leadership, in contrast to transactional methods, works to grow and develop the follower resulting in heightened levels of inspiration and motivation. This increased enthusiasm yields improved performance and desirable outcomes. In support, Bass and Riggio (2006) assert that “transformational leaders...are those who stimulate and inspire followers to both achieve extraordinary outcomes and, in the process, develop their own leadership capacity. Transformational leaders help follower’s grow and develop...by empowering them” (p. 3).

Transactional and transformational modes of leadership can be found in many of the paradigmatic views extrapolated to develop leadership theory. As such, the basic elements of these leadership modes can be found in the characteristics and basic theories of leadership offered across the continuum found in Figure 2. Displayed in the diagram are traits theory, behavioral theory, and contingency-based theories of leadership. Each theory, depending upon its sub theory, can be either transformational or transactional ensuring its place within the continuum. Examples are situational leadership (Hersey & Blanchard, 1988) and the Fiedler model (Fiedler, 1967). Both are contingency theories and both have transactional and transformational elements or characteristics.

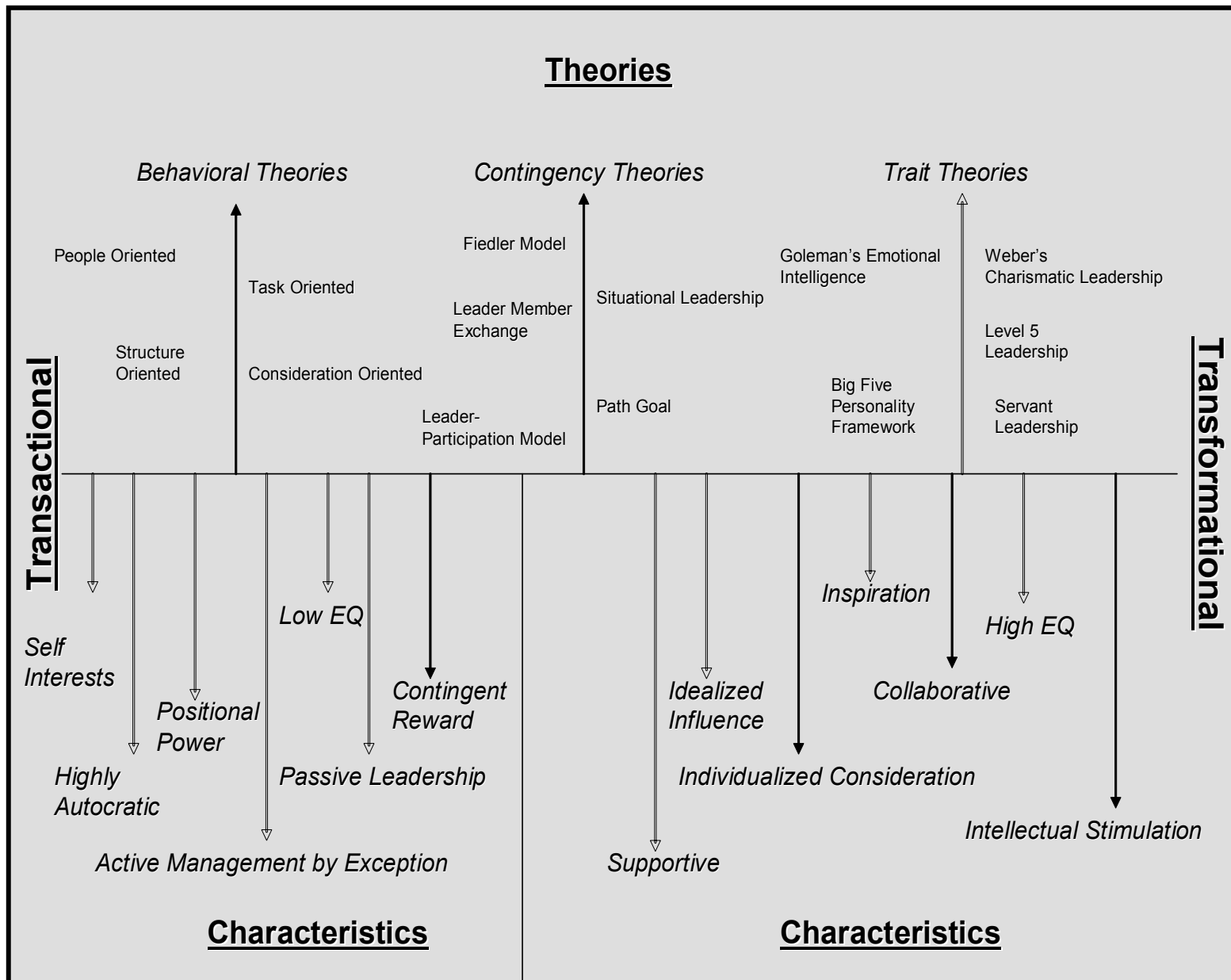


Figure 2. Continuum of Leadership

Servant Leadership

Servant leadership was introduced by Greenleaf in his 1970 essay, “The Servant as Leader.” It is a style of leadership that focuses on the assurance that all followers are provided the resources and support required for their success. Spears (1995) provides a clear definition of servant leadership when stating that it is a model of leadership “that puts serving others-including employees, customers, and community-as the number one priority” (p. 3). Leaders labor to ensure that the physical, mental, and general needs of their followers are adequately met. To accomplish this, individuals prescribing to this mode of leadership consistently and routinely demonstrate ten key characteristics that can be used to describe servant leaders. These characteristics are (a) listening, (b) empathy, (c) healing, (d) awareness, (e) persuasion, (f) conceptualization, (g) foresight, (h) stewardship, (i) a commitment to the growth of people, and (j) a desire to build community (Spears, 1995). An example of servant leadership commonly used is that of Jesus Christ. Christ led his apostles while simultaneously supporting their physical, mental, and emotional needs. Christ demonstrated that as a leader he would be servant first. Greenleaf (2002) argues that servitude is the hallmark of the servant leader when he so simply states “the servant leader is servant first” (p. 27).

Servant leaders aspire to execute a vision of individual and organizational growth through service. The investment of time in others is the goal. As a result of the servant leader’s ability to support the needs of followers and develop their abilities, followers are inspired to action by always working to further the cause of the organization and its vision of service. Many organizations not employing servant models lack the inspiration to move others. Greenleaf (1998), when referring to a leader’s ability to execute a vision, states that “one who is

inspired by a vision must know the difference between an action that points toward a benign result, or simply aimless activity” (p. 26). While making this statement, Greenleaf is presenting one of the fundamental differences between leadership and servant leadership. The servant leader’s vision always inspires others to action. The follower simply becomes a part of the cause for action. Again, referring to Jesus Christ, the apostles were all inspired to execute Christ’s vision as a result of the vision’s ability to inspire. Each apostle embraced the vision and was driven to become a catalyst for action themselves. The vision was executed during the life of Christ and continued on well after his death. This is another characteristic of the servant leader, whose visions are realized over years, decades, and generations. In the case of Christ, the vision has endured over two millennia.

The vision of serving others can inspire many to action. Additionally, it can organize action that is sustainable and everlasting. This ongoing momentum can propel organizations in a forward direction, ensuring long-lasting growth and prosperity. While explaining why a servant driven company was able to sustain itself better than that of a non-servant business, Greenleaf (1998) demonstrated the real life influence a servant model can yield. He stated “company X is not too different from its competitors in dimension... What separates company X from the rest is unconventional thinking about its “dream”--what this business wants to be, how its priorities are set, and how it organizes to serve” (p. 28). A key point to take from this quotation is simply that servant leaders build organizations that serve. The organizing of the company in a direction of service yields long-term growth and sustainable outcomes. A non-servant based company, depending upon its vision, may yield aimless activity resulting in nothing more than the activity itself.

The servant leader is characterized by sound ethics and moral integrity. The concept of moral integrity refers to the moral soundness of organizational leadership. Integrity itself is the totality and wholeness of the individual leader. In this sense, it is the ethical fiber required for the foundation of sound management. To this end, servant leaders employ a different ethical approach than that of the non-servant leader. Leaders are required to inspire others to action. This action is designed to achieve the results desired of the leader. Many leaders employ tactics that drive the activity needed. These tactics are often coercive or manipulative. However, a servant leader will never approach inspiration and a call to action in this manner. Rather, the servant leader employs the tactic of persuasion (Greenleaf, 1998). Persuasion is communication designed to provoke a belief or stimulate action. Conversely, manipulation and coercion make individuals behave or act involuntarily; followers act because they must, not because they desire to do so. This is a fundamental difference between the servant leader and the non servant leader. The ethical code of the servant leader is a driving force behind this style's success. Ultimately, the ethics employed allow leaders the ability to establish and maintain the trust of followers.

Another key characteristic of the servant leader is his/her desire to integrate a culture of service and not competition. Competition breeds action, but it may breed aimless action. Additionally, competition can yield political activity, which is never useful to the long term health of the organization. Individuals become focused on their own achievement and well being. This focus can take away from the focus required to execute the vision and propel the organization forward. The servant leader, instilling a culture of service via the vision of an organization of servers, diminishes competitive spirit. Followers look for ways to serve and are rewarded by the outcomes of their actions. They see the results of their service and are

motivated to continue in the same vein. While referring to this contrast, Greenleaf (1998) writes that “serving and competing are antithetical; the stronger the urge to serve, the less the interest in competing” (p. 51).

Servant leaders labor to develop others and foster their abilities to lead. The goal is to build an organization of servant leaders capable of expanding the ability of the whole to achieve its vision. As leaders and followers are developed, they are empowered to action. As a result of this empowerment, organizations employing the servant model are typically self organizing in nature (Greenleaf, 1998). People are empowered, and therefore action is voluntary.

Today’s business environment is fast paced and results oriented. Shareholders are looking for growth and executives are the means to deliver. Without a proper total quality management program, leadership will struggle to realize the growth and results required of them. As such, long term decision making at times can be compromised for short term results. The servant leader understands that short term decision making is inimical to total quality management efforts. To be successful in the long term, servant leaders must ensure that short term thinking is never employed and always abandoned for long term plans and continuous improvement efforts.

Situational Leadership

Situational leadership is a leadership approach that is based upon a leader’s diagnostic abilities, be it the ability to diagnose employees, their skill sets, their behavioral psychology, or their preparation for optimal performance. Leaders diagnose followers and their abilities. They then select the appropriate leadership style required to match the situation.

Situational leadership accentuates the behaviors and actions that leaders show towards their followers (Hersey, Blanchard, & Johnson, 2008). Regarding the situational leader, behaviors can be classified as either task oriented or relationship oriented. Task behaviors are specific and thoroughly explain duties and direct the actions of followers. Conversely, relationship behavior is a two-way plane of communication. Leaders do less explaining and directing and more listening and supporting of employee efforts (Hersey et al. 2008). According to Hersey et al., to be a situational leader one must “behave in a flexible manner...be able to diagnose the leadership style appropriate to the situation, and...be able to apply the appropriate style” (p. 95). As such, every situation requires a different response, whether directive, collaborative, supportive, or delegated (Hersey et al.).

In the realm of situational leadership, being flexible, diagnosing the situation, and applying the appropriate style means simply responding properly to the level of expertise and capability an individual subordinate demonstrates. Employees, depending upon the situation and their development level, require different responses and stimuli from management. Hersey and Blanchard refer to this development level as the performance readiness level of the employee. Those employees demonstrating a high level of performance readiness will demonstrate both job specific and organizational expertise. These individuals will also exude a high level of motivation and drive. As a result, those employees with a high level of performance readiness will require less directive and supportive management. Rather, they will necessitate a more collaborative and delegated approach to leadership. The opposite can be said for those employees demonstrating a low level of performance readiness. They realize little job specific and organizational expertise and will require more direction and support from leadership to ensure their success.

Hersey and Blanchard (1974) offer four styles of leadership behavior designed to effectively lead all followers. They are Style 1, Style 2, Style 3, and Style 4, or S1, S2, S3, and S4. S1 requires leaders to demonstrate high task behavior and low relationship behavior. Leaders employing this style will be directing, instructing, and guiding the activities of followers. S2 requires high task behavior and high relationship behavior. In this style, leadership migrates to an approach of teaching, coaching, and explanation. Using an S3 style, the leader will illustrate high relationship behavior and low task behavior, becoming more supportive and encouraging of followers. Additionally, they begin to empower followers to action. Finally, S4 requires the leader to demonstrate low relationship behavior and low task behavior. Followers are delegated to and fully empowered to action. Leaders simply monitor, observe, and track performance. The situational model presented simply allows each leadership approach to match with each employee situation.

Providing the appropriate support level for subordinates requires an understanding of one's own leadership actions and style. Hersey and Blanchard (1974) state that "the closer and closer to reality a leader's perception is to the perception of others...the higher the probability that the leader will be able to cope effectively" (p. 22). People react positively to leadership that is situational in nature. Fostering the situational leadership competencies will allow leadership to become more collaborative, supportive, and empowering in delegation. These components will improve leadership effectiveness. Becoming more collaborative will help leadership link individual employee goals and objectives with the organizations vision. Using supportive elements leadership will know when and how to reward employee contributions. Finally, ensuring that employees are delegated to, challenged, tested, and empowered to do their work will improve leadership-subordinate relations (Hersey & Blanchard, 1988).

Emotionally Intelligent Leadership

Empirical evidence finds that organizational leaders all realize greater levels of productivity and job satisfaction when they individually or collectively obtain a high level of emotional intelligence. This finding has its roots in early twentieth century psychological testing.

Thorndike (1936), an early twentieth century psychologist, provided the foundation for emotional intelligence when he discovered three types of intelligence: (a) abstract intelligence, (b) concrete intelligence, and (c) social intelligence. Abstract intelligence is simply verbal and mathematical reasoning; concrete intelligence is a more geometric and shape-based intelligence, while social intelligence is the early foundation of emotional intelligence. Thorndike, according to Bagshaw (2000), defined this type of intelligence “as the ability to understand and relate to people” (pp. 61-65). In addition, Goleman et al. (2002), in their book *Primal Leadership*, define emotional intelligence as “how leaders handle themselves and their relationships” (p. 6). Based on this earlier work emotional intelligence may be defined as the ability to manage one’s emotions and influence another’s, the ability to identify and evaluate one’s own emotional state as well as that of an individual or group, and the ability to resonate with people.

Sound leadership realizes this intelligence base and uses it to ensure sensible action. Using emotions in addition to cognition permits leaders to utilize and access a larger portion of the brain. A heightened level of brain capacity yields enhanced problem solving and improved reasoning. Caruso and Salovey (2004), building upon the work of Mayer and Salovey, help support the argument for the importance of emotional intelligence when they state “that emotion is not just important but absolutely necessary for us to make good decisions, take optimal action to solve problems, cope with change, and succeed” (p. ix).

To gain emotional intelligence, leaders must first master and demonstrate key abilities and competencies. Caruso and Salovey (2004) offer four key skills or abilities associated with the emotionally intelligent manager. They assert that to be emotionally intelligent, leaders must be able to (a) read people (identifying emotions), (b) get in the mood (use emotions to influence thinking), (c) predict the emotional future (understand emotions and know what they mean), and (d) do it with feeling (manage emotions and integrate them into the thinking process). It is argued that these four skills afford leaders the opportunity to analyze a situation and apply the most effective approach to ensure positive outcomes.

In addition to the four key skills presented by Caruso and Salovey, Goleman (1998) puts forward his five competencies of emotional intelligence. They are (a) self awareness, (b) self regulation, (c) motivation, (d) empathy and (e) social skill. Self awareness is the ability to recognize one's own emotional state and how it impacts others. Self regulation is the ability to control one's emotions and eliminating sudden flare-ups. Motivation refers to one's desire to achieve, or realize objectives. Empathy is recognizing the emotional state of another and reacting accordingly to that state, while social skill refers to one's ability to resonate with others. All of these competencies make up one's emotional intelligence level. Some leaders have strong self awareness but poor self regulation. Others may have empathy skills but limited motivation. Ultimately, those with the highest emotional quotients will score high in all five competencies.

All of these competencies are integral to the effectiveness of the emotionally intelligent leader. However, although they are indeed all key competencies, one competency is the cornerstone to each individual's ability to effectively execute an emotionally intelligent approach to leadership: self awareness. The competency of self awareness is the initial building

block required for a strong emotional quotient. Individuals must be able to appropriately assess their emotional state and understand how their existing state can positively or negatively influence the outcomes of interpersonal communications. Referring to this phenomenon Weisinger (1998) states that:

Self awareness is the core of each of these skills...High self awareness enables you to monitor yourself, to observe yourself in action... You must first understand what it is that makes you do what you do before you can begin to alter your actions for better results. You must understand what is important to you, how you experience things, what you want, how you feel, and how you come across to others. This subjective knowledge about the nature of your personality not only guides your behavior from situation to situation...it also provides you with a solid framework for making better choices. (p. 4)

Emotional intelligence research has discerned that executives with strong aptitudes for emotional intelligence will make effective leaders. Effective leaders then, are those that can harness the ability to effectively establish a positive emotional state with their followers. To accomplish this, leaders must first become self aware and understand how their own emotional state influences those of their followers and colleagues. Leaders learning to become socially aware will be capable of executing the abilities presented by Caruso and Salovey as well as moving forward with the development of the additional four competencies offered by Goleman.

Quality and Leadership: A Conclusion

As noted, research has demonstrated the impact of emotional intelligence. Its key abilities of emotion identification, emotional influence, emotional understanding, and emotional management accompanied by its competencies of self awareness, self regulation, empathy,

motivation, and social skill serve to assist in driving performance and effectiveness for the leader. Additionally, servant leadership teaches us that it is the responsibility of leaders to ensure the development, growth, and support of their followers. In turn, followers should learn from leaders and become inspired by them to embrace their visions and execute plans designed to achieve a new reality. To this end, a leader should aspire to foster the growth of others and ensure their success. Moreover, situational leadership illustrates that leaders must alter their leadership approach and style. This alteration is designed to fit the maturity level and performance readiness of the employee.

These leadership modes are required to effectively influence and positively impact change while engaging continuous improvement philosophies and programs. Additionally, continuous improvement and change management initiatives can be effectively executed when one works to establish a sense of urgency, create a guiding coalition, develop a vision and strategy, communicate the change vision, empower broad based action, generate short term wins, consolidate gains and produce more change, and anchor new approaches in the culture (Kotter, 1996).

The servant leader is able to inspire and motivate others to action through serving the needs of his/her followers. Using the servant leadership characteristics of listening, empathy, healing, awareness, persuasion, conceptualization, foresight, stewardship, a commitment to the growth of people, and a desire to build community, the servant leader is able to establish a strong rapport with followers while successfully building a high level of trust with them. This rapport and trust is essential for leaders of quality management to create the guiding coalition required to support and effectively communicate a vision for change and continuous improvement. In addition, it is necessary to develop these relationship characteristics in order

to adequately train, support, and motivate employees to carry forward the quality management initiative.

The situational leader can assist continuous improvement and change management efforts by helping to empower broad-based action and generating short term wins. Working with employees, the situational leader will help drive quality through properly motivating those individuals demonstrating a high degree of performance readiness. These team members will demonstrate the knowledge and expertise required for proper execution and success and will be empowered to execute the vision. They will remain motivated to action through the support and collaboration offered by leadership. Those demonstrating a low level of performance readiness will also be prepared to aid in the continuous quality improvement initiative. They will remain motivated by their leadership as a result of the guidance and direction offered. These individuals are looking to contribute and learn more and the situational mode of leadership offers them the opportunity to do just that. Additionally, their efforts will assist in the development of short term wins necessary for the progression of quality improvement initiatives.

Emotional intelligence abilities and competencies lend themselves well to the support of continuous quality improvement and its change initiatives. Demonstrating a thorough understanding of emotions while utilizing them to effectively execute strategy will aid in the progression of change required for quality improvement. Emotionally intelligent leaders will be capable of the proper establishment of the sense of urgency required for change. Moreover, their ability to use self awareness and empathy will serve to help engrain the continuous quality improvement initiative into the culture of the company. Using emotional intelligence, quality and continuous improvement can be approached in a way that is presented in the manner

required to effectively obtain the support and following necessary for long term sustainment and evolution.

Good leadership requires many things, but most important is service to others. To lead is to serve. In order to accomplish this, effective leadership should be situational, emotionally intelligent, and rooted in the servant approach. Combining the competencies, characteristics, and methods of each style will yield an effective leadership mode capable of driving continuous improvement and sustaining long term evolution in the organization. A synthesized integration of these leadership methods will drive forward the leader's ability to effectively influence the organization and therefore impact change.

Section I, Part III: Quality and Systems

Systems Theory

Continuous quality improvement programs and total quality management initiatives are designed to improve performance so as to yield enhanced levels of customer satisfaction. To realize improvement, organizations must make changes. These changes alter the status quo and usher in a new reality. The new reality, as a result of the change employed, can and will influence other areas of the business. To this end, continuous quality improvement programs and those implementing them must think in terms of systems and not merely static processes.

Systems thinking has existed for many years; however, it did not gain the attention of the academic and business communities until biologist von Bertalanffy (1968) introduced his concept of General System Theory (GST), which is a basic systems thinking framework that includes both closed and open systems perspectives (Wang, 2004). It is an alternative to traditional management methods. Unlike traditional management thinking, systems thinking

acknowledges the fact that unknowns exist. For example, organizations implementing continuous improvement programs and change initiatives will no doubt create other outcomes in addition to the ones intended. Therefore, systems thinking recognizes that the whole is greater than the sum of its parts (Taiwo, 2002). Those prescribing to this form of thinking embrace a holistic viewpoint.

The following section explores systems thinking and presents many of the paradigmatic views found inside of the GST school of thought. Cybernetics, rational systems, natural systems, and open systems are presented and reviewed.

Cybernetics

Communication, control, and feedback are the primary characteristics of a cybernetic system. (Wang, 2004). In their definition of a cybernetic system, Scott and Davis (2007) state that it is “a system capable of self regulation in terms of some externally prescribed target or criterion” (p. 89). Moreover, the system is closed and is therefore a nonliving element. An example of a cybernetic system can be found in the business logistics processes of an industrial wholesaling organization. These processes begin with forecasting and procurement and end with customer order fulfillment and delivery. Between these steps lie numerous activities and business processes that require policy, control, implementation, and feedback. Furthermore, given that order fulfillment creates the forecasting data required for replenishment, the system is closed and constantly repeating.

Rational systems

The rational systems paradigm of business was born out of the necessity to bring order and discipline to the organization. To accomplish this, perspective holders place an emphasis

upon goals and organizational structure. Scott and Davis (2007) define rational systems as “collectivities oriented to the pursuit of relatively specific goals and exhibiting relatively highly formalized social structures” (p. 29). Thus, the key characteristics associated with this paradigmatic view are goal specificity and formalization.

Goal specificity ensures that organizational actors work towards the desired end. The cognitive thought process required to make actionable decisions is minimized. Employees know the goals at hand and know those activities required to achieve goal completion. For example, a firm’s credit department may have the goal of achieving a day’s sales outstanding (DSO) of 30 days. Credit analysts and collection clerks will begin the collection effort process on the day of the sale while ensuring all accounts past due are contacted for payment, put on hold, or turned over to the appropriate collections agency (precise goals driving specific movement). Their specific goal of 30 days generates specific activities required to achieve goal completion.

Goal specificity drives activities while formalization drives behavior. Scott and Davis (2007) point out that “formalization may be viewed as an attempt to make behavior more predictable by standardizing and regulating it” (p. 37). Using the DSO example from above, activities are driven by the specific goal of achieving a DSO of 30. To accomplish these activities, formalization is incorporated to ensure employees utilize the correct process and procedural design. Credit agents will follow a standard operating procedure that specifies how to make the collection phone call, how and when to put a customer on hold, and how and when to turnover delinquent accounts to collections agencies. This formalization ensures consistent and appropriate behavior; cognitive stimulation is minimized while behaviors are consistent and productive, thus maximizing time investment.

Natural systems

The natural systems paradigm can be described as an extension of the rational system. In addition to the rational system's elements of goal specificity and formalization, the natural system favors collectivity and evolution of the cooperative. Unlike rational systems that are driven to achieve specific objectives only, the natural system changes and evolves to ensure organization sustainability and health. The survival of the group takes precedent. Scott and Davis (2007) describe natural systems as organizations of "collectivities whose participants are pursuing multiple interests, both disparate and common, but who recognize the value of perpetuating the organization as an important resource" (p. 30).

Organizations as natural systems are ever changing. Indeed, the inclusion of change to ensure sustainability is one of its key defining characteristics. Organizations will alter their goals and formal structures in order to propel their own existence forward. For example, organizations in the decline phase of their industry begin to see a commoditization and saturation of offerings and services inside of the market. To differentiate itself and ensure brand awareness and value creation in the marketplace, an organization should incorporate specific value added services and capabilities into its value proposition. Implementing system-wide changes across the organizations value creation model will aid with the evolution of the business ensuring long term sustainability.

Open systems

An open system is one that is self maintaining as a result of energy and matter exchange. It is a system of change and evolution. Moreover, the open system is constantly in a state of exchange with the environment from which it exists. A likely example of an open system is that

of the human body. Matter is consumed and transformed into useable nutrients that provide for self maintenance and energy propulsion. This newfound energy is then released back into the environment through activity and motion. The body changes continuously based upon the amount and type of matter it consumes.

Open systems, because they are in constant interaction with their environment, can realize both good and bad exchanges. In addition, the open system is limited in exchange capabilities depending upon the environment in which it exists. Emphasizing this restriction of the open system are Scott and Davis (2007) who present the law of limited variety. While referring to this law they state that “a system will exhibit no more variety than the variety to which it has been exposed in its environment” (p. 97). In the open system, the organization is a part of something larger and is connected to the internal and external environments. This theory creates a higher level of complexity. If the organization is an open system influenced by endless stimuli, it is adaptive and ever changing. Therefore, the organization is diverse and made up of numerous interconnected components that can and will adapt, effectively changing and learning from experience.

A Systems Approach to Continuous Quality Improvement

As noted, open systems and the GST model assume that the whole is greater than the sum of its parts; thus the system is total. In comparison, many continuous quality improvement methodologies share a similar point of view. Total quality management believes in the concept of totality. Information and stimuli from the environment are used for improvement and positive change of the organizational system. One can see this totality when evaluating the 14 points prescribed by Deming (2000). To effectively implement Deming’s points, an organization must have complete cooperation with internal and external actors-influencers furthering the systems

connection (Wang, 2004). Taiichi Ohno's (2007) Lean Thinking system is founded in the view of the holistic system. This perspective teaches us that the final output is dependent upon the ability of the entire system to properly function.

All systems found in the GST model have one common thread--the need for control. While there is no doubt that control mechanisms are far more prevalent in one system than in others, it is also a fact that control mechanisms exist in each (Thompson, 2003). Total quality management and continuous improvement programs share this characteristic of control. Although the aim of total quality management is continuous improvement, this aim is accomplished through a process that requires control for validation. For instance, Deming incorporated Shewart's (1931) model of plan, do, check, act (PDCA) into his approach to continuous improvement. Using this process, a quality professional will evaluate the problem, implement a solution, check for its effectiveness, and act upon the findings. The PDCA cycle permits for control in the total quality management and continuous improvement process.

Another characteristic of an open system is that it is constantly evolving. This is directly connected with the fact that open systems are in a steady exchange with their environment. In addition, the open system is limited in exchange capabilities depending upon the environment in which it exists. As noted earlier, this is supported by the law of limited variety. This open system exchange is present in total quality management and lean thinking methods. Total quality management and lean thinking strive for continuous improvement across the organization. As such, total quality management and lean initiatives require communications and process/procedural changes that introduce new elements into the existing system. This introduction creates an exchange with either an internal or external entity, effectively altering the system. As a result of this constant exchange and alteration, total quality management and

lean are in a state of continual evolution. Moreover, total quality management and lean methods constantly exchange with the environment from which they are implemented. As such, they are also impacted by the law of limited variety.

Six Sigma and other statistical process control-based quality programs are not open systems perspectives, but rather natural system perspectives. They do not share the self-maintaining characteristics of open systems but require the formal structure and goal specificity of natural systems to ensure change is achieved. These quality improvement programs work to enhance the internal workings of specific organizational processes, and are not concerned with the holistic view of the organizational system, nor are they concerned with its external influences. Enhancing internal system processes, maximizing quality, and optimizing internal process productivity are the primary objectives of these improvement programs.

Quality and Systems: A Conclusion

The vocation of quality management has undergone substantial changes over the past century. With its beginnings in scientific management, the profession has evolved to include quality assurance, quality control, and quality improvement through constancy of change. As we come to the close of the current century's first decade, we can see this evolution furthering itself. Quality management will continue to be significantly influenced by systems thinking in the coming years. Total quality management and lean principles already presuppose the whole is greater than the sum of its parts, making them open system perspectives. Many organizations have toiled to implement and execute upon the promise of total quality management or lean and failed. As Wang (2004) notes, the reason for this is that implementers "do not understand systems...most managers only have vague ideas about systems" (p. 400). Bennett and Kerr (1996) argue that "without applying systems thinking to such an implementation, it will be very

difficult if not impossible for TQM to develop into a practical generator of evolutionary... change within an organization” (p. 648). Therefore, organizations and leadership must embrace systems thinking and incorporate it into the company’s total quality management and lean strategy. This will ensure positive change and continual learning. In addition to the open system perspectives of total quality management and lean strategy, many other continuous improvement programs engage natural system views of the organization and its change processes. As systems influence grows, systems comprehension and global thinking will expand the knowledge band of the quality executive, helping to ensure the evolution of the organization through continuous improvement methodologies (Dedhia, 1997).

Organizations and their executive leaders looking to embrace continuous improvement methods must embrace systems thinking. By obtaining an understanding of how systems work and how constancy of change impacts the whole system, leadership will become more prepared to address quality improvement problems. Additionally, by obtaining an understanding of systems, leadership will be prepared to make decisions about what continuous improvement program to employ. A strong knowledge of systems is required for leadership to implement total quality management or lean strategies. Those leaders with a very minute understanding of systems should avoid implementation of these holistic strategies. Rather, they should focus their efforts upon natural system models such as Six Sigma. These process-focused programs deal with a more finite system perspective. Conversely, those leaders with a complete understanding of systems should embrace the principles of either total quality management or lean strategies, and subordinate a program like Six Sigma to ensure proper processes are within control limits, effectively minimizing variation and ensuring quality. The bottom line is that organizational leaders must strive to obtain systems knowledge to effectively engage open

system improvement models. Without this knowledge, there is no reason to expend effort that will only result in failure.

Section II: Academic Books

Frederick Taylor (1911) altered the landscape of business and ushered in a new age of quality management when he introduced his concept of scientific management. In his book, *The Principles of Scientific Management*, Taylor takes on the issues surrounding productivity and efficiency. He calls for a stop to the old guild style of labor that he terms initiative and incentive. In this system, Taylor (1911) explains, planning and problem solving are “up to the workman” (p. 25). Conversely, within the philosophy of scientific management, planning and problem solving are “up to the management” (p. 25). Taylor believed that his principles and methods would improve each component of a laborer’s work, effectively making the work systematic and predictive. This approach allows management to hire workers that are suited to the work--an action ensuring job fit matches. Management would hire, train, and systematically develop workers to enhance productivity and drive forward quality. Using empirical evidence from his own research, Taylor demonstrated the effectiveness of his methods. He presented his famous pig iron study, in which unprecedented gains in productivity were realized after the successful implementation of scientific management. Additionally, it is worth noting, that Taylor (1911) explained that proper implementation “must go exceedingly slow, and that the work of making the change...could not be done in less than...three to five years” (p. 75). Those not listening to this advice, and who chose accelerated forms of implementation, realized extreme failure. Similar to this quality implementation failure is total quality management

failure. Perhaps the lesson learned is that any quality initiative requiring system wide change is accomplished only when approached in the long term.

Scientific management proved to be a very useful science for business in the early part of the 1900s. Its concepts drove specialization and ensured job characteristics were appropriately paired with an individual's skills, which yielded job fit matches. The eventual success of scientific management changed the way western society managed for quality.

Over time, the phenomenon of scientific management became known as Taylorism. Although extremely effective and valid for the time, scientific management, or Taylorism, minimizes labor and weakens management/labor relations. Its principles, although proven effective, weaken the implementation of total quality management, which calls for the empowerment and inclusion of labor in the quality management process.

In his 1931 book, *Economic Control of Quality of Manufactured Product*, Shewart provides for the characteristics of quality control, a scientific basis for quality control, and the advantages of achieving quality control. He presents numerous statistical methods appropriate to the control of quality and discusses their application. His efforts created statistical process control and ushered in an age of numerical representation for quality and its characteristics. Moreover, they led the way for today's statistical process control methods and their programs such as Motorola's Six Sigma.

Deming's contributions are many. Utilizing Shewart's control methods, Deming helped introduce to the world quality control, quality management, and the principles of continuous improvement. Perhaps his greatest contribution came with his infamous 14 points and 7 deadly diseases. In his 1982 (republished in 2000) book, *Out of the Crisis*, Deming reviewed these

points and diseases and offered an explanation of how management can transform itself to ensure future performance and long term viability. These are summarized below.

Deming's 14 Points

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

The 7 Deadly Diseases

1. Lack of constancy of purpose.
2. Emphasis on short term profits.
3. Evaluation of performance, merit rating, or annual review.
4. Mobility of top management.
5. Running a company on visible figures alone.

6. Excessive medical costs.
7. Excessive costs of liability, fueled by lawyers that work on contingency fees.

In addition to the 14 points and 7 deadly diseases, Deming (1994) presents his system of profound knowledge, which he defines as “a theory for transformation” (p. 49). The system is made up of four parts; (a) an appreciation of a system, (b) knowledge of variation, (c) theory of knowledge, and (d) knowledge of psychology. An appreciation of a system refers to the understanding of the overall supply chain, its business processes, and the order cycle. All aspects involving raw material suppliers, manufacturers, intermediaries, and customers using finished goods or services are to be comprehended in order to be fully aware of the systems components. Moreover, Deming’s system aids in the understanding of how elements of the system force system wide behavior and drive forward activities influencing the whole. Knowledge of variation, the second part, submits that one have a thorough view of the range and causes of variation in quality. In other words, one must know that variations are considered normal versus special.

In Deming’s system, normal causes of variation should be managed and controlled. Deming cautions removing normal causes of variation; he argues that doing so could disrupt the system yielding lower levels of performance. The fact is simply that when plotted over time normal causes of variation fall within standard upper and lower control limit levels. Therefore, although normal causes of variation exist, they exist within acceptable levels that are ordinary to the process. Removing them can disrupt the process required for quality outcomes, effectively causing variations that negatively affect the production of a product or service. Conversely, special causes of variation should be isolated and removed from the system in order to enhance performance. These causes of variation are not normal, and therefore are not a part of the

quality process. Additionally, when plotted over time, they will not fall within specified control limits. To remove special causes of variation, an individual will require an understanding of statistical techniques permitting for the use of statistical measurements. Statistical measurement will identify the variation in question and allow for its isolation and ultimate removal.

The third part, a theory of knowledge, refers to knowledge bases and beliefs. Organizations and their team members must be cognizant of what forms their beliefs and basis for knowledge, which will help them to understand, question, and explain knowledge as it is known. Additionally, those embracing the theory of knowledge will be capable of comprehending and articulating the limitations surrounding the knowledge perceived to be reality.

The fourth and final part, knowledge of psychology, ensures the understanding of human behavior. No two people are alike. Deming (1994) states that “people are different from one another. A manager of people must be aware of these differences, and use them for optimization of everybody’s abilities and inclinations” (p. 108).

The system of profound knowledge helps organizations and their members to engage continuous improvement programs and ensure constancy of purpose. It ensures comprehensive understanding and an unparalleled depth of insight surrounding the organizational system. Deming’s contribution here helps drive forward his life long struggle to inject industry with quality management practices.

In the early 1980’s Mary Walton was a reporter and journalist for the *The Philadelphia Inquirer*. In 1984, the newspaper published an article on Deming and his contributions in Japan that drew a significant amount of local, as well as national, attention. To follow up this article, she worked closely with Deming to introduce his philosophy and life work in *The Deming*

Management Method, which was published in 1986. The book explores Deming's history, his work with Shewart, his support and education of Japanese business leaders and scientists, and his contributions to the field of quality management. Walton's contributions in writing this book are twofold, 1) she presents Deming's 14 points and his 7 deadly diseases in a manner that is easily understandable by the masses, and 2) she helps offer real life experiences of organizations implementing Deming's approach. The book as a whole is unique and offers the reader a sensible approach to understanding and applying the guru's management methods.

In his 1989 book, *Juran on Leadership for Quality: An Executive Handbook*, Juran offers the reader an understanding of quality management and provides leadership with a practical map for executing total quality control programs inside their respective organizations. As does Deming, Juran argues that quality management should be a top executive initiative. Juran (1989) points out that senior management are involved in such things as financial management or new product development. However, when it comes to quality he points out that "quality improvement takes place at the initiative of the lower levels of organization. To a large degree this results in quality improvement being on a voluntary basis. Any such voluntary activity has difficulty competing against the mandated responsibilities of the operating managers-to meet their schedules, budgets, specifications, and other mandated standards" (p. 33).

To ensure quality management is a top executive initiative, Juran puts forward a framework that permits organizations to treat quality the same as they would other strategic initiatives such as financial management. His trilogy calls for (a) quality planning, (b) quality control, and (c) quality improvement. He explains this is no different than the financial management process of (a) financial planning, (b) financial control, and (c) financial

improvement. By using an already familiar process, and simply applying it towards quality, Juran believes top executives can ensure that quality is built into their organizations and that continuous improvement will be realized.

Feigenbaum (1991) understood that quality is nothing more than the result of human action. His approach to quality was to realize total quality through the assurance of quality in all processes and procedures that are directly tied to the daily human actions necessary for production. Feigenbaum's (1991) aim was to eradicate what he termed the "hidden plant", which he described as the "proportion of plant capacity that exists to rework unsatisfactory parts, to replace products recalled from the field, or to retest and re-inspect rejected units" (p. 47). To accomplish his aim he believed total quality management programs should be preventive as opposed to corrective. This approach would allow workers to do it right the first time, thus minimizing the need for the hidden plant.

Feigenbaum argued that there were nine factors affecting quality; he termed them the "nine m's". These are markets, money, management, men, motivation, materials, machines and mechanization, modern information methods, and mounting product requirements. The nine m's, before total quality implementation, should be thoroughly considered, explored, analyzed, and evaluated to allow for the proper synthesizing of each in order to yield a sound path forward. Once the nine m's are completed, Feigenbaum called on quality managers to engage his four steps of quality control. Total quality implementers should set standards, appraise conformance, take corrective action, and plan for improvement. These steps should be completed and allow quality managers to conduct his four jobs of quality control; (a) new design control, (b) incoming material control, (c) product control, and (d) special process studies.

Ensuring the proper measurement of his four jobs of quality control are statistical tools. Feigenbaum explains that quality must be measured and cannot be achieved by simply conducting the work. In order to make certain quality programs are effective and working, jobs and tasks must be measured using one of four tools, (a) frequency distributions, (b) control charts, (c) sampling tables, and (d) special methods such as bi-variate correlation or analysis of variance techniques. These actions will directly impact scrap, rework, customer complaints, and inspection and test costs; the four key performance indicators that Feigenbaum explains are the inhibitors of quality. Analyzing the nine m's, engaging the four steps, conducting the four jobs, and incorporating the four statistical tools will effectively lower the percentage of incidence associated with the four key performance indicators driving forward quality and minimizing the hidden plant.

Ishikawa (1985), a guru of Japanese quality and a disciple of Deming, provides a detailed analysis of what it means to implement quality control and total quality programs in his book *What is Total Quality Control?: The Japanese Way*. He offers an understanding into what quality control is, how to ensure its ongoing implementation, and explains the benefits and advantages of doing so. Ishikawa (1985), while referring to quality control implementation, argues that three critical steps must be taken for success. Organizations, before taking on implementation, should “understand true quality characteristics...determine methods of measuring and testing true quality characteristics...discover substitute quality characteristics...and have a correct understanding of the relationship between true quality characteristics and substitute quality characteristics” (pp. 48-49).

True quality characteristics are those characteristics that satisfy customer requirements. Ishikawa (1985) states that “the functions or capabilities of a product are part of its true quality”

(p. 48). Substitute quality characteristics are those that help ensure the achievement of true quality characteristics. For example, in a service industry such as industrial wholesaling, a true quality characteristic is accurate on-time delivery to the customer's point of use. Customer satisfaction is impacted by this true quality characteristic; customers want what they order, when they order it, successfully delivered to the required point of use with no errors or variations from their purchase order. Additionally, substitute quality characteristics affecting true quality characteristics are the accuracy and completeness of order entry, the ability to execute order acknowledgment and confirmation, inventory levels and fulfillment capabilities that influence fill rate, picking accuracy, order staging, and proper delivery.

Ishikawa's understanding of quality drives the organization to ensure that customer requirements are met. The focus on customer satisfaction through attaining customer requirements creates a constancy of purpose for the business and its members.

Crosby's (1984) perspectives are close to those of the other quality gurus. He believes in top management involvement and commitment. He argues that corrective action processes and quality assurance programs should be in place, and that statistical methods should be employed for true success. In his book, *Quality without Tears: the Art of Hassle Free Management*, Crosby (1984) defines quality as "conformance to requirements" (p. 60). Moreover, while referring to quality, he states that to administer quality "to the corporate body requires a strategy that contains three distinct management actions...determination, education" and "implementation" (p. 7).

Determination is simply management's commitment to quality. To succeed, leadership must understand what quality is, how it affects top and bottom line revenues, and be prepared to execute quality as a primary organizational strategy. Management must ensure the education of

all employees. Training programs and quality education systems not only need to be implemented and executed, but also must become a part of the organizational system and its ongoing processes. Finally, proper implementation is necessary for success. Crosby states that “implementation is guiding the flow of improvement along the yellow brick road” (p. 10).

Crosby, although sharing many of the perspectives of the other quality gurus, does differ in critical areas. The differences can be found in Crosby’s fourteen steps to quality improvement. He calls for (a) management commitment, (b) quality improvement teams, (c) statistical measurement, (d) cost of quality, (e) quality awareness, (f) corrective action, (g) zero defect planning, (h) employee education, (i) zero defect day, (j) goal setting, (k) error-cause removal, (l) recognition, (m) quality councils, and (n) the circular perspective of do it again. Most of these steps sound familiar and can be found in the works of the other quality gurus. However, the influence of Fiegenbaum is present in Crosby’s work. Crosby calls for the creation of a quality team and an organization-wide commitment to zero defects. Crosby’s quality team is a separate entity. It is made up of individual employees, department heads, and is chaired by executives other than top management. Additionally, zero defects day and the quality goal of zero defects make Crosby’s approach and perspective very different from that of Ishikawa, Deming, and Juran. He calls for no variation in process, procedure, or product. Conversely, his contemporaries call for the embracing of variation, arguing that it is variation itself that allows for the understanding and knowledge development necessary for ongoing improvement and growth.

Senge expanded upon the works of the quality gurus and his predecessors when he published *The Fifth Discipline: The Art and Practice of the Learning Organization* (2006). The concept of Senge’s work is based in systems thinking. He argues that many problems plaguing

organizations today are attributable to a lack of systems knowledge on the part of leadership. It is surmised that by incorporating the lessons associated with his learning approach, organizations can unlock untapped potential and thus elevate the business to new heights of performance. Five elements exist in Senge's learning model; (a) personal mastery, (b) shared vision, (c) mental models, (d) team learning, and (e) systems thinking (or the fifth discipline). Senge (1990), when referring to systems thinking, states that it "is a discipline for seeing wholes. It is a framework for seeing interrelationships rather than things, for seeing patterns of change rather than static 'snapshots'". (p. 68).

Senge's contribution to the field of quality is often underemphasized. This might be attributable to the fact that his approach is broader than most quality programs. However, in the context of total quality management, the fifth discipline is indeed applicable. You can not have total quality without systems theory, systems knowledge, and systems application. Senge helps quality managers to think in terms of systems; this shift in thinking has aided total quality initiatives by ensuring that organizations understand how their actions towards improvement influence the system as a whole.

It is worth noting that Senge's work inspired Deming in his later years to put on paper his thoughts surrounding systems thinking. This inspiration led to Deming's System of Profound Knowledge, which may be seen to resemble Senge's model for organizational learning. Senge's personal mastery can be found in Deming's knowledge of variation; Senge's mental model is another way of approaching the theory of knowledge, while his shared vision and team learning elements could not be achieved without knowledge of psychology. Moreover, both frameworks are founded in the concepts surrounding systems theory and systems thinking--Senge's fifth discipline and Deming's appreciation of a system.

Oakland (1993) contributed to the quality field when he authored *Total Quality Management*. In the book, he explains that quality is nothing more than meeting customer requirements. To make quality a reality, organizations must employ what Oakland terms the Quality Chain. This chain makes all employees accountable to one another. More specifically, it ensures that each member of the organization identifies who their internal customer is and delivers the level of service required to ensure their needs and requirements are met. To ensure quality, Oakland (1993) presents 12 questions that all employees must answer if they are to achieve quality for their internal customers. They are:

1. Who are my immediate customers?
2. What are their true requirements?
3. How do or can I find out what the requirements are?
4. How can I measure my ability to meet the requirements?
5. Do I have the necessary capability to meet the requirements?
6. Do I continually meet the requirements?
7. How do I monitor changes in the requirements? (p. 10)

Oakland's approach is to make certain that quality is realized in every activity and process across the entire organization. Having employees identify the service needs and requirements of internal customers helps drive quality forward by making it an organization-wide initiative effectively making total quality management a reality. To achieve this reality and make total quality management a success, Oakland argues that the empowerment of employees is a requirement. In addition, he calls for total quality management to be a strategically planned program, integrating it with executive management strategy. As a management strategy, organizational leadership will become engaged. However, according to

Oakland (1993), to make total quality management a reality leadership must work at “developing and publishing clear documented corporate beliefs and objectives...developing clear and effective strategies and supporting plans for achieving...identifying the critical success factors and critical processes...reviewing the management structure” and “empowerment...encouraging effective employee participation” (pp. 32-33).

Goetsch and Davis in 2001 introduced their *Total Quality Handbook*. They break down total quality management and offer the reader a comprehensive understanding of the topic along with the level of comprehension required to successfully implement a total quality solution. Their handbook discusses (a) what total quality management is, (b) how to strategically plan for it, (c) what cultural shift must occur, (d) how to achieve customer satisfaction, (e) what type of leadership is required, (f) what level of employee empowerment is necessary, (g) how to train for quality, (h) how to measure, benchmark, and control quality, along with (i) how organizational members should analyze, evaluate, and address business and process related problems that must be resolved in order to continually improve.

Omachonu and Ross (2004) define total quality management as “the integration of all functions and processes within an organization in order to achieve continuous improvement of the quality of goods and services” (p. 3). They go on to explain that the aim of total quality management is to realize customer satisfaction. However, they assert that this realization is hampered by traditional thinking. They argue that total quality management programs rarely succeed as a result of leadership not fully grasping the cost of quality, or more simply stated the cost of not meeting customer requirements. Leadership looks at quality from an accounting perspective which teaches that poor quality is justified as long as it does not exceed the cost of a

total quality program. The problem with this logic is that it fails to consider how negative customer experiences influences long term financial performance.

To make total quality a reality, Omachonu and Ross believe leadership must be the driving force behind the success or failure of total quality management. The pair assert that leadership should be (a) involved and committed to total quality, (b) that they should effectively communicate the company's direction and expectations for quality, (c) that they should establish a culture for quality, (d) implement a management systems required to support the total quality initiative, and (e) aid in the implementation of control mechanisms needed for proper measurement and analysis.

As noted, Omachonu and Ross believe that total quality is a top management concern. Senior executives should treat quality just as they do other critical performance areas of the business. This philosophy is similar to that of the other quality experts. They assert that a strategic management plan should be incorporated and must include (a) a vision for quality, (b) a mission for attaining it, (c) a product and market scope, (d) a differentiation strategy, (e) supporting policies, (f) key quality performance objectives, and (h) a path to realign the organizational culture around the total quality management initiative. Regarding their approach, Omachonu and Ross (2004) state that:

When an organization chooses to make quality a major competitive edge, it becomes the central issue in strategic planning—from mission to supporting policies. An essential idea is that the produce is customer value rather than a physical product or service.

Another concept that is basic to the process is the need to develop an organizational culture based on quality. Finally, no strategy or plan can be effective unless carefully implemented. (p. 75)

Section II: Papers, Articles, and Empirical Research

During a 1998 study titled *Training, Performance Evaluation, Rewards, and TQM Implementation Success*, Kassicieh and Yourstone conducted empirical research in an effort to confirm key elements required for successful total quality management implementation. They investigated nine hypotheses that evaluate and analyze the relationship present between total quality management training, total quality management performance evolution systems, and total quality management rewards systems. The results of their research confirmed that to ensure a successful implementation of total quality management, an organization must ensure that all of the necessary participants receive total quality management training, total quality management performance evaluations surrounding quality outcomes, and total quality management rewards for quality ideas supporting successful implementation.

Soltani, Lai, and Gharneh (2005) conducted an investigation by way of literature review in their article, *Breaking Through Barriers to TQM Effectiveness: Lack of Commitment of Upper-Level Management*. Building on the previous work of the gurus, they examine the roadblocks to effectively implement and execute total quality management. Additionally, they engage more recent research and conceptualization to offer current perspectives. They contribute to the literature by offering twelve roadblocks that are collectively drawn from the literature. These roadblocks, or barriers, can be effectively dealt with to ensure their neutralization before and during the total quality management implementation process. These barriers are as follows:

1. Lack of senior management commitment and their visible participation.

2. Overlapping of responsibilities of leadership and as a consequent lack of vision and planning.
3. Limited resources and, as a consequence, satisfaction with the quick fix.
4. Fear of change.
5. Work overloads.
6. Lack of comprehensive quality improvement education.
7. Lack of customer orientation.
8. Lack of clarity in measurement systems.
9. Lack of generally accepted and precise definition of TQM components.
10. Satisfaction with customer satisfaction, which could impede exceeding customer satisfaction.
11. Institutionalized quality management.
12. Lack of real people involvement.

While investigating small and medium size enterprises, Yusof and Aspinwall (2000) add to the literature by confirming that the commitment of leadership, quality supply chain management, proper human resource management, and employee training and education are all critical success factors when implementing and executing total quality management programs.

Gunasekaran evaluates the enablers of total quality management implementation in a 1999 case study. After conducting a brief literature review he offers a conceptual model for implementing total quality management that is founded upon seven enablers. The enablers are (a) overall job satisfaction, (b) communication, (c) teamwork, (d) cross functional teams, (e) empowerment, (f) training and education, and (g) technological support. He then reviews this

model against a company based in the United Kingdom. The study confirms his model and concludes with eight lessons learned from the research.

In an article published in the *Journal of Business Ethics* Santiago and Perles (2002) examined the dimensions of leadership required for the successful implementation of total quality management. The pair prescribed that three dimensions exist that allow employees to embrace the quality initiative and follow the leader as required; (a) technical, (b) psycho-affective, and (c) ethical. Using the technical dimension, employees are attracted to the leader's knowledge, know how, and ability to get things done. The psycho-affective dimension stems from the leader's ability to resonate with followers. Resonance occurs as a result of social skill and general self-awareness. Finally, in the ethical dimension, followers are attracted to the leader's virtues and ability to be morally sound. Together, the three dimensions drive the leader's vision forward and allow the team to follow. They help employees trust the leader, buy into his/her vision, and embrace working to achieve its aim.

Gurnani (1999) conducted a case study to evaluate the reasons organizations fail to correctly implement total quality management initiatives. He studied the unsuccessful implementation of a local Hong Kong company and discovered five glaring causes for failure. The organization in question was not using quality standards that were specific, measurable, and attainable. They were not incorporating a sound reward and recognition system that reinforced proper quality outcomes, nor was the company engaging in a total quality management training program necessary to support execution. It was determined that human resources was not integrated into the quality strategy, and this caused a breakdown between organizational strategy and the direction of the human resource department. The result of these findings led to the

conclusion that the leadership simply was not completely engaged in the total quality management initiative.

Lakshman, in a 2006 paper published in *Total Quality Management*, offers a theory of leadership that is argued to help drive forward the successful implementation of total quality management programs. Paralleling core principles of total quality management, the work asserts that leadership should demonstrate a focus for both internal and external customers, display the characteristic of collaboration, teamwork, and participation, and exhibit the spirit of continuous improvement. Doing so, it is argued, will serve to adjust the organization's culture and drive forward any and all total quality initiatives.

Shea and Howell (1998) researched the variables influencing the outcomes of total quality management efforts. Through proper analysis and evaluation of the literature, they isolated key variables that they believed to be responsible for the inconsistency of results. These variables are (a) persuasion, (b) leadership, (c) organizational structure, and (d) job design. The appropriate application of each variable, as proposed, could indeed positively influence the implementation, execution, and longevity of total quality management initiatives and their outcomes.

In a 1998 article titled "Critical Implementation Issues in Total Quality Management", Shin, Kalinowski, and El-Enein defend total quality management and its key principles. They argue that the numerous failures associated with total quality management implementation are not a result of total quality management principles. Rather, they stipulate that these failures are a result of a lack of understanding among organizations and their executives as to what total quality management is and how it should be approached. They provide the reader with eight lessons for successful total quality management implementation. These are presented below:

1. Know thyself.
2. Create a culture that is conducive to and supportive of TQM implementation.
3. TQM implementation should be clearly aligned with the company's strategic priorities, competitive environment, and goals.
4. Understand the necessary time and effort.
5. TQM implementation should be unique to each company.
6. Take a holistic approach.
7. Remember the key word.
8. Understand that TQM is not a magic bullet or panacea for quality.

Building on the work of total quality management scholars, Warwood and Roberts (2004) isolated success factors that were deemed contributors to the successful implementation of total quality management. These factors were (a) effective leadership, (b) application of best practice, (c) economic survival, (d) market orientation, (e) timing, (f) customer focus and service, (g) measurement, (h) investment in technology, (i) partnerships, (j) team orientation, (k) training and education, (l) diversity, and (m) demographics. They utilized literature reviews to identify these success factors and then tested for them in a series of surveys. The surveys were designed to substantiate or discredit any one individual success factor. What their research concluded was that effective leadership, application of best practice, economic survival, market orientation, and employee involvement were all extremely important to the success of any total quality management implementation program.

In an article taken from an address given to CEOs at a quality forum, Juran (1993) explains why quality initiatives have failed. He notes that our history has created a system conducive to poor quality and traces the roots of this dilemma back to Taylor, whose system

eventually separated planning from execution. Regarding the question of why quality programs failed in the 1980s, Juran asserts that organizations were preoccupied with slowing down imports as opposed to fixing their quality problems, that quality was never elevated to a top organizational priority, that benchmarking tools and key metrics were not employed to ensure proper measurement, and that leadership was misguided and laissez-faire at best. Juran (1993) prescribes a solution to fix these ailments for proper quality implementation in his statement that a successful CEO will “establish the vision and policies...train the hierarchy...establish the goals to be met...plan how to reach the goals and provide the resources...and measure quality as seriously as one would for profitability” (p. 38).

Mellahi and Eyuboglu (2001) conducted empirical research to discern the key factors influencing the success of total quality management implementation. Their study focused on banks in the Turkish economy. Their findings support those of other scholars. It was confirmed that organizations will be successful at implementation when (a) they are facing fierce competitive pressures and must change to survive, (b) top executives and management demonstrate a solid commitment to quality management and quality efforts, (c) management is highly knowledge, skilled, and properly equipped to execute and train others in total quality management, and (d) all employees are appropriately educated and trained in total quality management statistical measurement and techniques.

Terziovski, Sohal, and Samson (1996) conducted eight case studies on Australian based manufacturing and service oriented companies in an effort to discern best practices associated with the implementation of total quality management programs. They used cross case analysis to evaluate the data and synthesize conclusions. The trio surmised that for total quality management implementation to be successful, organizations must ensure the literacy skills of

employees, make certain that the direction of the business and its quality initiatives are in line with its vision and mission, make sure products and services are focused around customer requirements, be certain that quality can be measured and properly reported, establish cross functional improvement teams, ensure quality assurance systems are in place, and make certain that overhead reduction is not a part of any quality improvement initiative.

Lu and Sohal (1993) investigated the factors contributing to the successful implementation of total quality management programs. Their research model included various sizes and types of organizations serving various industries. Throughout the process the pair learned that many organizations failed as a result of poor statistical process control and measurement practices. Although statistical techniques varied by company, the use of trend charts was common. This data, although useful, is not the only piece of statistical information required for successful implementation. Total quality management implementation must also include Shewart's (1931) control charts along with proper supposition practices required for process improvement. As Lu and Sohal point out, organizations must incorporate statistical inference techniques if total quality management implementation is to thrive.

Lawler (1994) researched the compatibility of total quality management programs with those of employee involvement initiatives. He learned that the two are compatible and offers that total quality management efforts are more likely to succeed when employee involvement initiatives are employed in the process. Following up on his 1994 study, he reports in a 1999 article that employee involvement programs are becoming more common in the United States market place. His poll demonstrated that over 81% of employees involved with employee involvement programs were satisfied with their work and valued their contributions. Moreover, it was noted that of those organizations incorporating employee involvement initiatives, over

60% utilized quality circles, a total quality management tool. Employee involvement initiatives empower lower level organizational members to make decisions and take action on problems influencing their work area. As involvement progresses, organizations see improved productivity and enhanced financial performance. As such, Lawler's contributions demonstrate that key to a successful total quality management program is the inclusion of employee involvement initiatives.

Comparing and reviewing total quality management implementation frameworks, Yusof and Aspinwall (2000) evaluate the works of the quality gurus along with offerings of today's scholars. They suggest that the works of Deming (1994), Juran (1989), and Crosby (1984) offer improvement steps and not frameworks. They argue that Oakland (1993) and Dale's (2007) frameworks are lacking in originality and are based upon the work of the gurus closely following the PDCA cycle. In contrast, Yusof and Aspinwall (2000) submit that Kanji's (1996) model "is the first to provide a systematic way to implement TQM" (p. 290).

CHAPTER 3. METHODOLOGY

As noted in Chapter 1, the purpose of this research is to determine the requisite leadership skills and capabilities required for the success of total quality management and continuous improvement programs. It is theorized that many of the key components contributing to the successful implementation of total quality management are within the sphere of influence surrounding organizational leadership. As a result, leadership approach, style, and method incorporated by total quality management and continuous improvement practitioners are of concern and at the forefront of this effort. It is believed by the researcher that a relationship exists between a leader's ability to successfully implement and sustain a continuous improvement and total quality management program and his or her understanding of systems and continuous improvement strategies.

The focus of the research then will be to discern the leadership styles, leadership abilities, executive leadership knowledge, leadership's knowledge of quality, and leadership knowledge and awareness of systems that are required for the success of continuous quality improvement and total quality management programs.

Research Design

This study will incorporate the analytical approach to research. The analytical approach was chosen because it is the paradigmatic viewpoint that provides the foundation necessary for real quantitative study. Using a quantitative approach, this research will work to understand the cause and effect of any multitude of combinations (explanatics). Generally speaking, this study will be using this approach to learn how leadership styles and leadership knowledge are related to the success or failure of total quality management programs. This method will seek to discern

possible relationships existing between two or more of the variables provided later in this chapter.

The analytical approach to research uses post-positivist assumptions. Post-positivist assumptions are those assumptions associated with science and scientific methods (Creswell, 2003). As such, this study will reduce problems into smaller, more distinct concepts. This reductionist approach will provide the ability to test the independent variables and isolate them to ensure positive or negative relationship outcomes with the dependent variable.

Quantitative studies have very specific strategies of inquiry, utilizing experimental and non experimental designs. Researchers look to gather data through the experimentation process or by the surveying of people. The investigator uses these empirical data collection approaches to record and analyze responses in an effort to uncover variable relationships, along with trends that naturally emerge from the data. This study will utilize a non-experimental design for the data collection process in the form of a self-administered survey.

Self-administered surveys are commonly used by researchers looking to obtain quick and reliable feedback (Cooper & Schindler, 2006). These surveys can be conducted by way of mail, computer delivery, or intercept-based methods by which participants can quickly provide feedback to questionnaires. The self-administered surveys will be sent to participants using internet based technology, which will improve the ability to effectively contact the research participant.

As noted, the survey administered to participants will seek to answer the following research questions and associated hypothesis necessary to achieve the goal of the research problem.

Q1: Are executive leadership knowledge and priorities a factor in, or independent of, the success of total quality programs?

H1_A: TQM success of quality program implementation and sustainment is dependent upon executive leadership knowledge and prioritization.

H1₀: TQM success of quality program implementation and sustainment is not dependent upon executive leadership knowledge and prioritization.

Q2: Are executive leadership style and abilities a factor in, or independent of, the success of total quality programs?

H2_A: TQM success is dependent upon leadership style.

H2₀: TQM success is not dependent upon leadership style.

H3_A: TQM success is dependent upon leadership abilities.

H3₀: TQM success is not dependent upon leadership abilities.

Q3: Is executive leadership knowledge of quality programs a factor in, or independent of, the success of total quality programs?

H4_A: TQM success is dependent upon executive leadership's comprehension and understanding of systems.

H4₀: TQM success is not dependent upon executive leadership's comprehension and understanding of systems.

H5_A: TQM success is dependent upon executive leadership's comprehension and understanding of the field of quality.

H5₀: TQM success is not dependent upon executive leadership's comprehension and understanding of the field of quality.

H6_A: TQM success is dependent upon executive leadership's comprehension and understanding of change management.

H6₀: TQM success is not dependent upon executive leadership's comprehension and understanding of change management.

Sample

The sample frame for this study consists of general managers, quality managers, and other senior executives working within the U.S. economy to implement or sustain total quality management and continuous quality improvement initiatives. These individual groups were chosen for the sample frame because of their experience and knowledge within the fields of quality management and leadership.

Given the sheer size and scope of the U.S. economy and its diverse industries, the population as a whole is not easily identifiable. Therefore, the population size is unknown. As a result, exploratory research will be conducted. The sample population will consist of members from the National Association of Wholesalers (NAW). NAW consists of 19 industry segments ranging from healthcare and pharmaceuticals to electrical and mechanical supplies. According to NAW, 1 out of every 20 jobs in the U.S. is attributed to their membership. In addition, there are currently 250,000 wholesalers working within the domestic U.S. These wholesalers make up 4.2 trillion dollars worth of the U.S. gross domestic product. Although the total population of general managers, quality managers, and other senior executives working within the U.S. economy to implement or sustain total quality management and continuous quality improvement initiatives is unknown, given the size of NAW membership, in addition to the number of wholesalers operating domestically, it is believed that a sample found within the wholesale segment will be a good place to begin exploratory research. It is understood that this

segment, although robust, would need to be expanded during future research in order to validate understanding and reliability of research outcomes.

To be truly representative of the U.S. wholesale industry, $n = 25,000$, which is still too large given the constraints of time and cost. Instead of using the 19 wholesale industry segments making up the NAW membership, this exploratory research will focus on one segment: the electrical wholesale industry segment. The wholesale electrical industry segment was chosen because of 1) the researcher's familiarity and general tribal knowledge of this segment, 2) the consistency across the industry of organizational design and structure, and 3) the ability to control for extraneous variables such as business type and business size.

This segment offers a common approach to the market while exemplifying a mood or culture that is fairly homogenous in nature. As a result, it is believed that extraneous variables associated with participant characteristics can be somewhat controlled. According to the National Association of Electrical Distributors (NAED), an NAW member association, there are 200 companies within the electrical wholesale industry that currently have gross sales of \$30 million or more. These 200 NAED member companies have very similar business models and daily business practices. They have been selected for the sample as they demonstrate a more developed organizational structure when compared to that of the industries many so called mom-and-pop shops.

It is understood that the larger the samples size, the less opportunity for sample error. However, given the constraints of time and cost, this exploratory research must limit its sample to the 200 largest electrical wholesale companies working within the electrical industry. Using a 5% confidence interval and a 95% confidence level, a response rate of 132 is required. Given the access available, it is believed by the researcher that this response rate is attainable.

Although it is not 100% representative of the population, it is acceptable for the purpose of exploratory research.

Instrumentation/Measures

Variable development and measurement are key to the success of research projects and their associated efforts. To appropriately measure each component required for this study, variables were created for leadership style, leadership ability, executive leadership knowledge, leadership's knowledge of quality, leadership's knowledge of systems, and leadership's knowledge of change management. Table 1 below presents the variables required for instrument measurement. In addition, Appendix A contains the OM-QMQ survey.

Table 1. Variables and Measurement

Variables	Tool	Measurement
Leadership Style	MLQ 5X Short Survey	Transformational, Transactional, Situational, Servant, Authoritarian, Participative, Delegative
Leadership Abilities	EQi Survey	Emotion Identification, Emotional Influence, Emotional Understanding, Emotional Management
Executive Leadership Knowledge and Prioritization	OM-QMQ Survey	Understands Motivation, Planning, Strategy, Execution, & Performance Measurement.
Knowledge of Quality	OM-QMQ Survey	Familiar With The Works, Frameworks, Principles, Points, and General Teachings of Taylor, Shewart, Deming, Juran, Ishikawa, Ohno, Fiegenbaum, Crosby, and Oakland. Has Participated in or Directed a TQM Initiative.
Knowledge of Systems	OM-QMQ Survey	Has Been Trained and Educated on Closed, Natural, and Open Systems Perspectives. Has an Understanding of Complex Adaptive Systems.
TQM Success	OM-QMQ Survey	Successful TQM Implementation and Long Term Program Sustainability.

In order to properly measure each variable, it is necessary to select the appropriate scale. Data can be measured using four scales: nominal, ordinal, ratio, and interval (Norusis, 2006).

Nominal measures are used for classification; an example is gender. Ordinal measures are used

when range data exists. A common example of ordinal data is a species height or length. Interval measurements are concerned with the space or distance between two standard units along a scale. Interval scales lack a true zero, meaning zero is not a form of measurement. A good example of interval measurement is temperature on a Fahrenheit scale. A measurement of zero degrees Fahrenheit only provides a rating for measuring the heat level; it does not mean heat is absent or that heat is not present. Ratio measurement is similar to interval measurement. However, the main difference between the two is simply that ratio measurement includes a true zero, that is, weight measurements yielding 0 lbs.

During the execution of this research, variables will be measured using surveys that incorporate a Likert measuring scale. The ordinal scale will range from 1 – 5 and will result in continuous data. The data will be continuous and not discrete simply because it can take on any value within the range. The data collected from the surveys will be variable data. Variable data offers numerical measurements such as length or temperature. Conversely, attribute data measures characteristics. That said, many of our variables are measuring characteristics or attributes. Leadership style is measuring transformational or transactional leadership characteristics, while leadership abilities are measuring emotional intelligence characteristics, which could imply that much of our data is attribute data. Attribute data is a common qualitative data type and can be difficult to measure quantitatively. However, for the purpose of this research, all variables will be coded using Likert scaling methods to measure characteristics. Once engaged, the data realized from the variable measurement will yield various numerical values existing within the ordinal scales range resulting in data that is continuous in nature.

Data Collection

Questionnaires will be the primary source of data collection given their ability to return quality data in a relatively short period of time. The surveys will be used to identify each participant's leadership style, leadership abilities, overall executive leadership knowledge, leadership knowledge in the field of quality, and leadership's knowledge and awareness of systems. Each variable will be measured based upon its individual operational definition. This will make certain data is collected that either supports or refutes the engagement of each variable by each case from the total sample frame. Instrument design was developed to not only evaluate the ranked importance of each independent variable, but also to discern the effects, if any, the independent variables have upon the dependent variable. This will ensure that the null hypotheses are correctly tested and measured (Norusis, 2006). All questionnaires will be administered electronically using Survey Monkey to ensure a participant-friendly survey tool. Participants will be e-mailed invitations that include the Survey Monkey link providing an electronic access path to the survey. Appendix A provides a copy of the survey instruments offering a listing of all statements found within the collection tools. In addition, Appendix B demonstrates which survey statements seek to answer each hypothesis and its associated hierarchical research question.

Data Analysis, Validity, and Reliability

To measure leadership style, the MLQ 5X Short is being employed. The survey was developed by Bass and Avolio and has been used in numerous research studies spanning multiple industries and work environments. Reliability and validity have been established

demonstrating the tools effectiveness. In a validation study conducted in 2008, Muenjohn and Armstrong reaffirm the instrument when producing a Cronbach alpha of 0.86.

To ensure the proper measurement of leadership abilities the EQi will be engaged. The EQi has been administered to over 100,000 participants internationally. In addition, it has been proven to measure the emotional intelligence of an individual. Given the emotional intelligence competencies of emotion identification, emotional influence, emotional understanding, and emotional management, the EQi is an appropriate tool to measure the variable of leadership abilities. Dawda and Hart (2000) assessed the validity of the EQi and found the tool to be both reliable and valid.

Regarding the remaining independent variables of executive leadership knowledge, knowledge of quality, and knowledge of systems, a survey developed by the researcher is being employed. This survey is titled the Organizational Management Quality Management Questionnaire or OM-QMQ. The tool employs a five point Likert scale to ensure reliability, repeatability, and verification. Coding is engaged to ensure numerical representation of the data. Each respondent is asked their agreement to a specific statement that yields insights into their expertise (or lack thereof) in each of the tested variables.

The OM-QMQ will be field tested to help assure the instrument's operational effectiveness, general validity, and ability to provide the anticipated feedback (Fowler, 2002). Twenty-five surrogates will be administered the instrument and expected to provide feedback on the tool's content, wording, and general design (Cooper & Schindler, 2006). Field testing was chosen given the nature of the questions. The tool seeks to obtain concrete responses from participants surrounding specific areas of interest. It does not measure psychological factors or abstract inference which requires years of analysis and development for proper results.

After the required field test, a pilot study will be conducted. The study will be completed in order to discern the efficiency and effectuality of the research design. According to Cooper and Schindler (2006), “the size of the pilot group may range from 25 to 100 subjects...and respondents do not have to be statistically selected” (p.76). Therefore, 25 participants will be identified using a non-probability convenience sample. Once the research design is proven true, the actual research will be executed.

After survey execution, data collection, and data preparation, all data will be analyzed using SPSS statistical analysis software. This tool will allow for various statistical techniques while providing for the incorporation of sound visual data representation. Frequency tables will be incorporated to demonstrate how often responses occur for each variable. These responses will provide insights into the rate of recurrence that each variable is present in the study’s sample population. Additionally, normality checks of specific competencies will be conducted and visually demonstrated to the reader using basic histograms. Moreover, when illustrating the relationship between pairs of variables, scatter plots will be engaged. The research data should prove useful in identifying relationships existing between various independent variables in addition to the possible relationships present between the independent and dependent variables.

To further explore variable analysis, cross tabulation techniques will be conducted. These techniques will aid the study by incorporating additional elements; for instance, leadership style and leadership abilities can be visibly checked against each participant’s successful implementation and sustainment of continuous quality improvement programs (survey statement 32). Finally, a chi square statistics test will be used to test the null hypothesis of all six hypotheses. The test was chosen because of the categorical and discrete nature of each variable. The test will be administered using the .05 level of significance.

Ethical Considerations

Ensuring that participants are not harmed or inconvenienced by research interests is paramount to the success of any study. Moreover, it is the responsibility of research facilitators to ensure the fair and ethical treatment of all participants. Cooper and Schindler (2006) argue that participants are removed from harm's way and treated ethically when researchers "explain study benefits...explain participant rights and protections...and obtain informed consent" (p. 118). This study will make certain to do just that.

The facilitator of this research study will ensure participants understand the purpose of the research and its benefits. Upon initial contact, it will be necessary to make certain target participants fully comprehend what it is they will be doing, how they will do it, what the purpose of their participation is, and how it will contribute to the overall study. Moreover, tying their participation into the greater purpose of the study will only serve to further their understanding. Once participants are fully aware of the purpose and goal of the study, they will be made aware of the procedural methods associated with the research implementation process. Finally, once properly informed, all participants will be asked to provide their individual informed consent to help communicate that the participant was fully aware of their engagement and what it meant to participate.

CHAPTER 4. RESULTS

This chapter will present the findings of the research while providing statistical analysis as required. In the first section, survey responses by variable will be reviewed and findings will be presented to provide a sense of the collected data. In the second section, the null hypotheses will be tested using the chi-square test for independence. Hypothesis test results will be used to address the research questions. Finally, in the third section the conceptualization model will be contrasted against research outcomes.

Two hundred individuals within the sample population were contacted and asked to participate in the study. All individuals were sent an e-mail containing links that routed to each of the three survey instruments. Not all respondents answered all three surveys. Seventy-seven participants responded to the OM-QMQ, 67 responded to the EQi, and 64 responded to the MLQ 5X Short. Table 2 illustrates this outcome.

Table 2. Response by Instrument

	OM-QMQ	EQi	MLQ 5X
Number of Respondents	77	67	64

Survey Response Analysis by Variable

In this section, survey response analysis by variable is conducted. Much of the survey response by variable addressed within the OM-QMQ is evaluated using positive and negative scoring. The OM-QMQ looked to obtain concrete responses that lacked subjectivity; therefore, this survey yielded responses that were either positive or negative in nature. For instance, one survey question asked if it is the responsibility of executive leadership to define the company

culture. Understanding that it is indeed the responsibility of executive leadership to define the company culture, a positive response is the only acceptable answer.

The OM-QMQ

The variable of executive leadership knowledge and prioritization was addressed in eight of the survey questions within the OM-QMQ. As Table 3 illustrates, of the 77 participants that responded to the OM-QMQ, 73% indicated the knowledge and aptitude required for successful executive leadership knowledge and prioritization.

Table 3. Executive Leadership Knowledge and Prioritization

	Frequency	Percent	Valid Percent	Cumulative Percent
Demonstrates Executive Leadership and Prioritization	56	72.7	72.7	72.7
Does Not Demonstrate Executive Leadership Knowledge and Prioritization	21	27.3	27.3	100
Total	77	100	100	

Eight questions, Q1, Q4, Q5, Q6, Q12, Q20, Q22, and Q27 were developed to measure the importance of leadership involvement in the development, execution, measurement, sustainment, and success of quality programs (these questions can be found in appendix A). Responses were collected and then scored as negative or positive. The results are shown in Table 4. Across all eight questions, 471 positive responses were collected out of a total response of 616.

Table 4. Leadership Involvement Response Allocation (Knowledge and Prioritization)

	Q1	Q4	Q5	Q6	Q12	Q20	Q22	Q27	Total Response
# of Respondents	77	77	77	77	77	77	77	77	616
# of Negative Responses	13	38	29	10	11	27	6	11	145
# of Positive Responses	64	39	48	67	66	50	71	66	471
% of Positive Responses	83%	51%	62%	87%	86%	65%	92%	86%	76%

Table 4 shows that 76% of the participants believe executive leadership involvement is related to the success of quality programs.

Four questions, Q2, Q3, Q7, and Q11 were developed to measure the necessity of long term planning and strategy development inclusion into executive leadership's long term planning processes. The results are shown in table 5. Again, responses were collected and then scored as negative or positive.

Table 5. Planning and Strategy Response Allocation (Knowledge and Prioritization)

	Q2	Q3	Q7	Q11	Total Response
# of Respondents	77	77	77	77	308
# of Negative Responses	5	16	5	3	29
# of Positive Responses	72	61	72	74	279
% of Positive Responses	94%	79%	94%	96%	91%

Across all four questions, 279 positive responses were collected out of a total response of 308. This yields a finding that 91% of the participants believe total quality programs and their implementation plans must be included in executive leadership's long term planning processes.

Two questions, Q13 and Q14, were developed to measure the argument that quality programs require a minimum duration of 24 months to begin delivering the results expected of such a program. As noted earlier, all too often organizations in the United States abandon quality program commitment earlier than what is advisable.

Table 6. Leadership Knowledge Response Allocation (Knowledge and Prioritization)

	Q13	Q14	Total Response
# of Respondents	77	77	154
# of Negative Responses	31	56	87
# of Positive Responses	46	21	67
% of Positive Responses	60%	27%	44%

To ensure consistency, responses were collected and then scored as negative or positive. The results are shown in Table 6. Across both questions, 67 positive responses were collected out of a total response of 154. This yields a finding that only 44% of the participants believe total quality programs and their implementations require a minimum of 24 months to achieve successful outcomes. This finding is not in agreement with the arguments of the gurus who offer that quality programs are a long term executive concern. In fact, for decades the gurus have argued that quality in the United States fails as a result of short term thinking and a desire for immediate output. Based upon the responses realized within this research, it would appear their arguments and efforts continue to fall on deaf ears.

Table 7 illustrates that nearly 82% of participants demonstrated the knowledge and aptitude of quality required for success. Additionally, as indicated in Table 8, 61% obtained the required comprehension and understanding of systems to achieve program success. Altogether,

this data suggests that these individuals obtained the basic knowledge necessary to implement and sustain a quality management program. Overall, initial data appears to indicate that executive leadership knowledge of quality programs might be a factor in the success of quality programs. This will be statistically tested in a later section.

Table 7. Knowledge of Quality

	Frequency	Percent	Valid Percent	Cumulative Percent
Demonstrates Appropriate Knowledge of Quality	63	81.8	81.8	81.8
Does Not Demonstrate Appropriate Knowledge of Quality	14	18.2	18.2	100
Total	77	100	100	

Table 8. Knowledge of Systems

	Frequency	Percent	Valid Percent	Cumulative Percent
Demonstrates Appropriate Knowledge of Systems	47	61	61	61
Does Not Demonstrate Appropriate Knowledge of Systems	30	39	39	100
Total	77	100	100	

Two questions, Q15 and Q16, were developed to measure whether quality programs require executives and program implementers to obtain an understanding of systems and systemic thinking to begin delivering the results expected of quality management programs.

Table 9. Systems Thinking Response Allocation

	Q15	Q16	Total Response
# of Respondents	77	77	154
# of Negative Responses	21	20	41
# of Positive Responses	56	57	113
% of Positive Responses	73%	74%	73%

Responses were collected and then scored as negative or positive. The results are shown in Table 9. Across both questions, 113 positive responses were collected out of a total response of 154. Overall, 73% of the participants believe total quality programs and their implementations require executives and quality implementers to obtain systems knowledge and engage systemic thinking patterns. This finding is in agreement with the arguments of the gurus, especially Deming who offered in his System of Profound Knowledge that quality programs require systemic thinking patterns.

Thirteen questions, Q8, Q9, Q10, Q17, Q18, Q19, Q21, Q23, Q24, Q25, Q26, Q30, and Q31 were developed to measure the argument that quality programs require executives and program implementers to obtain an understanding and comprehension of the functional discipline of quality and quality management techniques, in order to achieve the results expected of total quality programs.

Table 10. Knowledge of Quality Response Allocation

	Q8	Q9	Q10	Q17	Q18	Q19	Q21	Q23	Q24	Q25	Q26	Q30	Q31	Total Response
# of Respondents	77	77	77	77	77	77	77	77	77	77	77	77	77	1001
# of Negative Responses	1	14	10	24	3	68	10	2	35	11	5	10	2	195
# of Positive Responses	76	63	67	53	74	9	67	75	42	66	72	67	75	806
% of Positive Responses	99%	82%	87%	69%	96%	12%	87%	97%	55%	86%	94%	87%	97%	81%

Responses were collected and then scored as negative or positive. The results are shown in Table 10. Across all 13 questions 806 positive responses were collected out of a total response of 1001. Overall, 81% of the participants believe total quality programs and their

implementations require executives and quality implementers to obtain an understanding and comprehension of the functional discipline of quality and quality management techniques.

Two questions, Q28 and Q29, were developed to measure the argument that quality programs require executives and program implementers to obtain an understanding and comprehension of change management techniques in order to achieve the results expected of total quality programs.

Table 11. Knowledge of Change Management Response Allocation

	Q28	Q29	Total Response
# of Respondents	77	77	154
# of Negative Responses	19	17	36
# of Positive Responses	58	60	118
% of Positive Responses	75%	78%	77%

Responses were collected and then scored as negative or positive. The results are shown in Table 11. Across both questions 118 positive responses were collected out of a total response of 154. Overall, 77% of the participants believe total quality programs and their implementations require executives and quality implementers to obtain an understanding and comprehension of change management techniques.

The variable of TQM Success was addressed by 11 questions found within the OM-QMQ: Q32, Q33, Q34, Q35, Q36, Q37, Q38, Q39, Q40, Q41, and Q42. As shown in Table 12, 84% of responses demonstrated proper success. Overall, as indicated by the frequency table in Table 13, nearly 86% of participants realize the characteristics required for TQM success. The results are shown below.

Table 12. TQM Success Response Allocation

	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Total Response
# of Respondents	77	77	77	77	77	77	77	77	77	77	77	847
# of Negative Responses	21	3	8	12	11	10	7	3	8	33	17	133
# of Positive Responses	56	74	69	65	66	67	70	74	69	44	60	714
% of Positive Responses	73%	96%	90%	84%	86%	87%	91%	96%	90%	57%	78%	84%

Table 13. TQM Success Frequency Table

	Frequency	Percent	Valid Percent	Cumulative Percent
Has Achieved Requirements for TQM Success	66	85.7	85.7	85.7
Has Not Achieved Requirements for TQM Success	11	14.3	14.3	100
Total	77	100	100	

MLQ 5X Short

Out of 77 participants only 64 completed the measurement tool selected to research the variable of leadership style. Forty seven percent of participants demonstrated transactional leadership styles while 53% proved to be transformational leaders.

Table 14. Leadership Style

	Frequency	Percent	Valid Percent	Cumulative Percent
Transactional Leadership Approach	30	39	46.9	46.9
Transformational Leadership Approach	34	44.2	53.1	100
Missing or Non Response	13	16.8		
Total	77	100	100	

The variable of leadership style was measured by the MLQ 5X Short survey instrument. As noted, 64 executives responded from the sample population of 200, yielding a survey response rate of 32%. The instrument isolated both transformational and transactional leadership style characteristics. Recall that servant leaders, emotionally intelligent leaders, and

situational leaders, all incorporate many of the characteristics that make up a transformational leadership approach. Conversely, autocratic, micro-managerial, and absent leaders, tend to engage transactional-based leadership characteristics.

Table 15 demonstrates the outcome of those within the group demonstrating transformational leadership styles while Table 16 illustrates the outcomes of those demonstrating transactional leadership styles.

Table 15. Group Average of Those Demonstrating Transformational Leadership Styles

Transformational Characteristics	Not at All	Once in a While	Sometimes	Fairly Often	Frequently, if not Always
Idealized Influence - Attributed					3.16
Idealized Influence - Behavior					3.3
Inspirational Motivation					3.32
Intellectual Stimulation					3.15
Individualized Consideration					3.44

Table 16. Group Average of Those Demonstrating Transactional Leadership Styles

Transformational Characteristics	Not at All	Once in a While	Sometimes	Fairly Often	Frequently, if not Always
Idealized Influence - Attributed				2.93	
Idealized Influence - Behavior				2.54	
Inspirational Motivation				2.78	
Intellectual Stimulation				2.53	
Individualized Consideration				2.86	
			Overall Average Rating		2.73

Survey participants demonstrated the incorporation of each transformational characteristic. This is positive, as it points to a desire to employ effective leadership practices. The five characteristics of transformational leadership are often utilized. However, it is noteworthy that these characteristics are only “fairly often” incorporated and not “frequently, if not always” incorporated by all those within the response population. This implies that sometimes transformational characteristics are substituted for transactional ones. In addition, those participants represented in Table 16 were found to often use contingent reward while at

times employing management by exception. The use of these characteristics is ill advised, as transactional elements can lead to poor employee performance and job dissatisfaction.

EQi:S

The variable of leadership abilities was measured using the EQi:S. Sixty-seven executives responded from the sample population, yielding a survey response rate of 33.5%. Interestingly, the 67 participants measured for leadership abilities all demonstrated a thorough deficiency in the area of emotional intelligence. Unanimously, the group scored 100% emotionally unintelligent pointing to very low emotional quotient scores. It is argued that leadership abilities are indeed a factor in the success of quality programs. However, as a whole this sample lacked the leadership abilities necessary to provide the direction, guidance, mentorship, empathy, understanding, and support required to achieve quality program success. This outcome creates questions surrounding the validity of the data and introduces the possibility for type II error later in the chapter.

Table 17. Leadership Abilities

	Frequency	Percent	Valid Percent	Cumulative Percent
Not Emotionally Intelligent	67	87	100	100
Missing or Non Response	10	13		
Total	77	100	100	

Scores were consistent across participants with the exception of a few outliers. Using aggregated scores, the group was measured using the BarOn EQi:S scoring process. Raw scores were arrived at and established. Standard scores were derived by matching the raw score to its corresponding standard score. Figure 3 illustrates the group raw score and group standard score summaries.

Item#	A	B	C	D	E	F	G	Item#
27	2				4			1
28		4	2					2
29	2			4				3
30			2				3	4
31				4	4			5
32		4					3	6
33	3				4			7
34		2	2					8
	2							9
35			2	4				10
36							3	
37				4	2			11
38		2					3	12
39	2				4			13
40		4	2					14
	2							15
41			2	4				16
42				4	4			17
43		4					3	18
44	2				4			19
45		4	3					20
46	2				4			21
47		4	2					22
48	2			4				23
49					2		3	24
50	2	4						25
51		4			2			26
	19	37	15	29	34	27	18	

Figure 3. Group EQ Scoring Summary

Participants scored well below the average emotional quotient (EQ) level, which, based upon previous research, translates to serious problems for anyone in a leadership role, especially those executives developing strategy and overseeing organizational quality programs. Column F in Figure 3 represents the group's overall EQ. A raw score of 27 puts this group in an area of deficiency and requiring growth. The data demonstrates that the executives in our sample populations are operating at a below average level. In addition, self awareness, empathy, and social skill were below average. A below average score in these areas indicates that as a whole this group is less than adequate at satisfying interpersonal relationships. They are not adept at

listening and therefore struggle to understand and appreciate the position or feelings of others.

Figure 4 visually demonstrates the emotional quotient competency scoring.

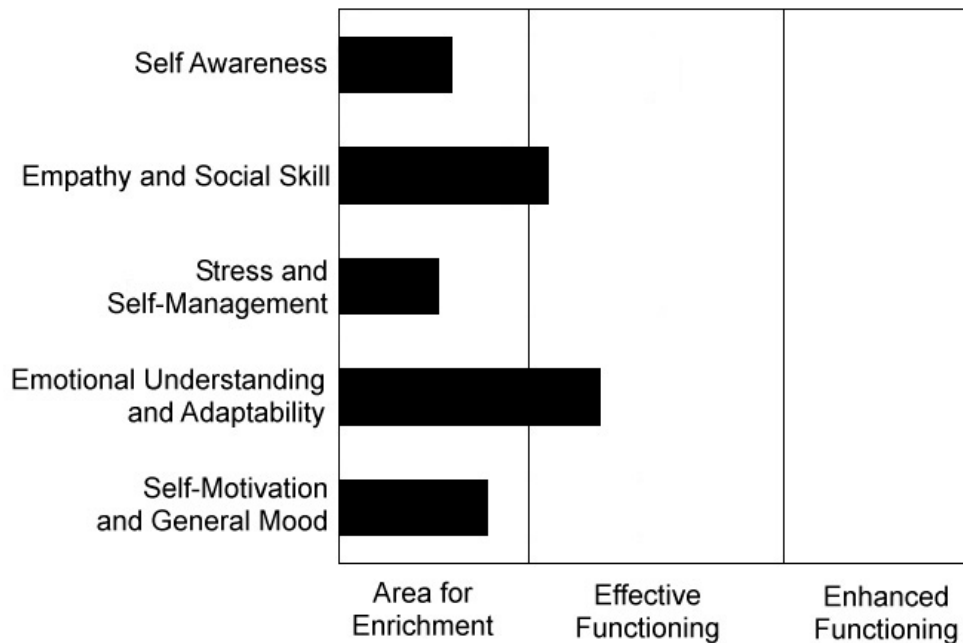


Figure 4. Group Competency Ratings

This section offered an overview of the collected data. In many cases, response outcomes were positive in nature. However, it was demonstrated that the data offers the potential to yield type II error, especially the data surrounding leadership outcomes. The ensuing section will conduct the statistics required to evaluate the validity of the null hypotheses while discussing the possibility for real error.

Variable/Hypothesis and Variable/Relationship Analysis

In this section, each hierarchical question and its associated hypotheses are represented.

Using the chi-square test for independence, hypothesis tests for independence are offered. Cross

tabulations are presented for specific independent variables and the dependent variable. Since all data was non-parametric and discrete, chi-square tests for independence are conducted for each cross tabulation to check for possible variable relationship and overall dependency. With tests for independence, the null is found to be rejected when the computed critical value is greater than the chi-square statistic.

Research Question 1: TQM Success and Executive Leadership Knowledge and Prioritization

Research question 1 looked to understand the relationship existing between executive leadership knowledge and prioritization and overall quality program success: H1 addresses Q1. H1 is measured by the variable of executive leadership knowledge and prioritization.

Q1: Are executive leadership knowledge and priorities a factor in, or independent of, the success of total quality programs?

H1₀: TQM success of quality program implementation and sustainment is not dependent upon executive leadership knowledge and prioritization.

H1_A: TQM success of quality program implementation and sustainment is dependent upon executive leadership knowledge and prioritization.

Q1 asked if a relationship between the variables of total quality management success and executive leadership knowledge and prioritization existed. To test the null hypotheses for H1, the variable of executive leadership knowledge and prioritization was statistically tested for significance using the chi-square test for independence. It was argued that total quality management success is dependent upon executive leadership knowledge and prioritization. Moreover, it was believed that without the appropriate leadership knowledge base/priorities,

total quality management programs are at risk. Table 18 below shows the collected data, and Table 19 shows the statistical independence test outcomes.

Table 18. TQM and Executive Leadership Knowledge and Prioritization Crosstab

		TQM Success		Total
		Has Achieved Characteristics Required for TQM Success	Has Not Achieved Characteristics Required for TQM Success	
Executive Leadership Knowledge and Prioritization	Demonstrates Executive Leadership Knowledge and Prioritization	47	9	56
	Does Not Demonstrate Executive Leadership Knowledge and Prioritization	19	2	21
Total		66	11	77

Table 19. TQM and Executive Leadership Knowledge and Prioritization Chi-Square Tests

H1	Value	Asymp. Sig. df (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.535(b)	1	0.465	
Continuity Correction(a)	0.134	1	0.715	
Likelihood Ratio	0.574	1	0.449	
Fisher's Exact Test			0.717	0.372
Linear-by-Linear Association	0.528	1	0.468	
N of Valid Cases	77			

The analysis yields a chi-square statistic of 0.535. With a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84. When compared to the critical value, the calculated chi-square indicates low dependency existing between the two variables. The alternative hypothesis cannot be accepted, and the null hypothesis cannot be rejected. Therefore, it cannot be concluded that TQM success of quality program implementation and sustainment is dependent upon executive leadership knowledge and prioritization.

Research Question 2: TQM Success and Leadership Style/Abilities

Research question 2 looked to understand the relationship existing between leadership style/abilities and overall quality program success: H2 and H3 address Q2. H2 is measured by the variable of leadership style and H3 is measured by the variable of leadership abilities.

Q2: Are executive leadership style and abilities a factor in, or independent of, the success of total quality programs?

H2₀: TQM success is not dependent upon leadership style.

H2_A: TQM success is dependent upon leadership style.

H3₀: TQM success is not dependent upon leadership abilities.

H3_A: TQM success is dependent upon leadership abilities.

H2 hypothesized that a relationship between the variables of total quality management success and leadership style existed. It was argued that total quality management success is dependent upon executive leadership style. Moreover, it was believed that without the appropriate leadership style that total quality management programs are at risk. Table 20 below shows the collected data, and Table 21 shows the statistical independence test outcomes.

Table 20. TQM and Leadership Style Crosstab

		TQM Success		Total
		Has Achieved Characteristics Required for TQM Success	Has Not Achieved Characteristics Required for TQM Success	
Leadership Style	Transactional Leadership Approach	26	4	30
	Transformational Leadership Approach	29	5	34
	Total	55	9	64

Table 21. TQM and Leadership Style Chi-Square Tests

H2	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.025(b)	1	0.875		
Continuity Correction(a)	0	1	1		
Likelihood Ratio	0.025	1	0.875		
Fisher's Exact Test				1	0.582
Linear-by-Linear Association	0.024	1	0.876		
N of Valid Cases	64				

The analysis yields a chi-square statistic of 0.025. With a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84. When compared to the critical value the calculated chi-square indicates no dependency existing between the two variables. The alternative hypothesis cannot be accepted, and the null hypothesis cannot be rejected. Therefore, it cannot be concluded that TQM success is dependent upon leadership style.

H3 hypothesized that a relationship between the variables of total quality management success and leadership abilities existed. It was argued that total quality management success is dependent upon executive leadership abilities. Moreover, it was believed that without the appropriate leadership abilities, total quality management programs are at risk. However, no

chi-square statistic could be yielded for the variable of leadership abilities given the fact that the variable is constant, in that all respondents yielded low EQ scores. This unanimous result indicates the unexpected result that leadership ability does not affect TQM success.

Research Question Three: TQM and Knowledge of Quality Programs

Research question 3 looked to understand the relationship existing between leadership knowledge of quality programs and overall quality program success: H4, H5, and H6 address Q3. H4 is measured by the variable of knowledge of systems, H5 is measured by the variable of knowledge of quality, and H6 is measured by the variable of knowledge of change management.

Q3: Is executive leadership knowledge of quality programs a factor in, or independent of, the success of total quality programs?

H4₀: TQM success is not dependent upon executive leadership's comprehension and understanding of systems.

H4_A: TQM success is dependent upon executive leadership's comprehension and understanding of systems.

H5₀: TQM success is not dependent upon executive leadership's comprehension and understanding of the field of quality.

H5_A: TQM success is dependent upon executive leadership's comprehension and understanding of the field of quality.

H6₀: TQM success is not dependent upon executive leadership's comprehension and understanding of change management.

H6_A: TQM success is dependent upon executive leadership's comprehension and understanding of change management.

A dependent relationship between total quality management and leadership's knowledge of systems was expected. It is hypothesized that executive comprehension and understanding of systems is related to the success of quality programs. It is argued that without the appropriate leadership incorporation of systemic thinking patterns, total quality management programs are at risk. To test the null hypothesis that TQM success is not dependent upon executive leadership's comprehension and understanding of systems, a chi-square test for independence was conducted. Table 22 below shows the collected data and Table 23 shows the statistical independence test outcomes.

Table 22. TQM and Knowledge of Systems Crosstab

		TQM Success		Total
		Has Achieved Characteristics Required for TQM Success	Has Not Achieved Characteristics Required for TQM Success	
Knowledge of Systems	Demonstrates Appropriate Knowledge of Systems	41	6	47
	Does Not Demonstrate Appropriate Knowledge of Systems	25	5	30
Total		66	11	77

Table 23. TQM and Knowledge of Systems Chi-Square Tests

H4	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.228(b)	1	0.633		
Continuity Correction(a)	0.02	1	0.886		
Likelihood Ratio	0.224	1	0.636		
Fisher's Exact Test				0.742	0.436
Linear-by-Linear Association	0.225	1	0.636		
N of Valid Cases	77				

The analysis yields a chi-square statistic of 0.228. With a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84. When compared

to the critical value the calculated chi-square indicates no dependency existing between the two variables. The alternative hypothesis cannot be accepted, and the null hypothesis cannot be rejected. Therefore, it cannot be concluded that TQM success is dependent upon executive leadership's comprehension and understanding of systems.

A dependent relationship between total quality management and leadership's knowledge of quality is expected. It is hypothesized that executive comprehension and understanding of the field of quality is related to the success of quality programs. It is argued that without the appropriate leadership knowledge base in the field of quality, total quality management programs are at risk. To test the null hypothesis that TQM success is not dependent upon executive leadership's comprehension and understanding of the field of quality, a chi-square test for independence was conducted. Table 24 below shows the collected data, and Table 25 shows the statistical independence test outcome.

Table 24. TQM and Knowledge of Quality Crosstab

		TQM Success		Total
		Has Achieved Characteristics Required for TQM Success	Has Not Achieved Characteristics Required for TQM Success	
Knowledge of Quality	Demonstrates Appropriate Knowledge of Quality	54	9	63
	Does Not Demonstrate Appropriate Knowledge of Quality	12	2	14
Total		66	11	77

Table 25. TQM and Knowledge of Quality Chi-Square Tests

H5	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.000(b)	1	1		
Continuity Correction(a)	0	1	1		
Likelihood Ratio	0	1	1		
Fisher's Exact Test				1	0.682
Linear-by-Linear Association	0	1	1		
N of Valid Cases	77				

The analysis yields a chi-square statistic of zero indicating that absolutely no relationship between the two variables exists. The test identifies zero dependency of total quality management success and an executive's knowledge of quality. The alternative hypothesis cannot be accepted, and the null hypothesis cannot be rejected. Therefore, it cannot be concluded that TQM success is dependent upon executive leadership's comprehension and understanding of the field of quality.

A dependent relationship between total quality management and leadership's knowledge of change management is expected. It is hypothesized that executive comprehension and understanding of change management is related to the success of quality programs. It is argued that without the appropriate leadership comprehension of change management, total quality management programs are at risk. To test the null hypothesis that TQM success is not dependent upon executive leadership's comprehension and understanding of change management, a chi-square test for independence was conducted. Table 26 below shows the collected data, and Table 27 shows the statistical independence test outcomes.

Table 26. TQM and Knowledge of Change Management Crosstab

		TQM Success		Total
		Has Achieved Characteristics Required for TQM Success	Has Not Achieved Characteristics Required for TQM Success	
Knowledge of Change Management	Does Not Demonstrate Appropriate Knowledge of Change Management	43	7	50
	Does Not Demonstrate Appropriate Knowledge of Change Management	23	4	27
Total		66	11	77

Table 27. TQM and Knowledge of Change Management Chi-Square Tests

H6	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.010(b)	1	0.922		
Continuity Correction(a)	0	1	1		
Likelihood Ratio	0.009	1	0.923		
Fisher's Exact Test				1	0.586
Linear-by-Linear Association	0.009	1	0.923		
N of Valid Cases	77				

The analysis yields a chi-square statistic of 0.010, which indicates no relationship existing between the two variables. The test identifies no dependency of total quality management success and an executive's knowledge of change management. The alternative hypothesis cannot be accepted, and the null hypothesis cannot be rejected. Therefore, it cannot be concluded that TQM success is dependent upon executive leadership's comprehension and understanding of change management.

This section evaluated relationship dependency existing between the independent variables and the dependent variables. Table 28 below offers a summation of findings and demonstrates that the null hypotheses were not rejected in all tests, indicating limited to no relationship dependency.

Table 28. Summary of Findings

Hypothesis	Null Rejected	Alternative Accepted
H1	No	No
H2	No	No
H3	No	No
H4	No	No
H5	No	No
H6	No	No

Statistical analysis offers no relationships between the independent variables and dependent variable. However, relationship dependency was found while conducting cross tabulation and chi-square analysis across independent variables. The variables demonstrating relationship dependency are presented below.

Table 29. Executive Leadership Knowledge and Prioritization and Knowledge of Quality Crosstab

		Knowledge of Quality		
		Demonstrates Appropriate Knowledge of Quality	Does Not Demonstrate Appropriate Knowledge of Quality	Total
Executive Leadership Knowledge and Prioritization	Demonstrates Executive Leadership Knowledge and Prioritization	52	4	56
	Does Not Demonstrate Executive Leadership Knowledge and Prioritization	11	10	21
Total		63	14	77

Table 30. Executive Leadership Knowledge and Prioritization and Knowledge of Quality Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	16.820(b)	1	0		
Continuity Correction(a)	14.209	1	0		
Likelihood Ratio	15.133	1	0		
Fisher's Exact Test				0	0
Linear-by-Linear Association	16.602	1	0		
N of Valid Cases	77				

The analysis yields a chi-square statistic of 16.82. Using a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84, therefore indicating a relationship existing between the two variables. With a low probability for error, the test identifies dependency between the independent variables of executive leadership knowledge and prioritization and knowledge of quality.

Table 31. Executive Leadership Knowledge and Prioritization and Executive Leadership Knowledge of Systems Crosstab

		Knowledge of Systems		
		Demonstrates Appropriate Knowledge of Systems	Does Not Demonstrate Appropriate Knowledge of Systems	Total
Executive Leadership Knowledge and Prioritization	Demonstrates Executive Leadership Knowledge and Prioritization	40	16	56
	Does Not Demonstrate Executive Leadership Knowledge and Prioritization	7	14	21
Total		47	30	77

Table 32. Executive Leadership Knowledge and Prioritization and Executive Leadership Knowledge of Systems Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.320(b)	1	0.002		
Continuity Correction(a)	7.787	1	0.005		
Likelihood Ratio	9.221	1	0.002		
Fisher's Exact Test				0.004	0.003
Linear-by-Linear Association	9.199	1	0.002		
N of Valid Cases	77				

The analysis yields a chi-square statistic of 9.32. Using a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84, therefore indicating a relationship existing between the two variables. With a low probability for error,

the test identifies dependency between the independent variables of executive leadership knowledge and prioritization and knowledge of systems.

Table 33. Executive Leadership Knowledge and Prioritization and Executive Leadership Knowledge of Change Management Crosstab

		Knowledge of Change Management		
		Demonstrates Appropriate Knowledge of Change Management	Does Not Demonstrate Appropriate Knowledge of Change Management	Total
Executive Leadership Knowledge and Prioritization	Demonstrates Executive Leadership Knowledge and Prioritization	42	14	56
	Does Not Demonstrate Executive Leadership Knowledge and Prioritization	8	13	21
Total		50	27	77

Table 34. Executive Leadership Knowledge and Prioritization and Executive Leadership Knowledge of Change Management Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.135(b)	1	0.003		
Continuity Correction(a)	7.587	1	0.006		
Likelihood Ratio	8.877	1	0.003		
Fisher's Exact Test				0.006	0.003
Linear-by-Linear Association	9.017	1	0.003		
N of Valid Cases	77				

The analysis yields a chi-square statistic of 9.135. Using a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84, therefore indicating a relationship existing between the two variables. With a low probability for error, the test identifies dependency between the independent variables of executive leadership knowledge and prioritization and knowledge of change management.

Table 35. Knowledge of Quality and Knowledge of Systems Crosstab

		Knowledge of Systems		
		Demonstrates Appropriate Knowledge of Systems	Does Not Demonstrate Appropriate Knowledge of Systems	Total
Knowledge of Quality	Demonstrates Appropriate Knowledge of Quality	43	20	63
	Does Not Demonstrate Appropriate Knowledge of Quality	4	10	14
Total		47	30	77

Table 36. Knowledge of Quality and Knowledge of Systems Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.585(b)	1	0.006		
Continuity Correction(a)	6.008	1	0.014		
Likelihood Ratio	7.466	1	0.006		
Fisher's Exact Test				0.013	0.008
Linear-by-Linear Association	7.486	1	0.006		
N of Valid Cases	77				

The analysis yields a chi-square statistic of 7.585. Using a degree of freedom of 1 and a significance level of 0.05, the chi-square table provides a critical value of 3.84, therefore indicating a relationship existing between the two variables. With a low probability for error, the test identifies dependency between the independent variables of knowledge of quality and knowledge of systems. Table 37 provides a summary of variable relationship dependency test outcomes.

Table 37. Summary of Variable Relationship and Dependency

	Leader Style	Leader Ability	Knowledge and Prioritization	Knowledge of Systems	Knowledge of Quality	Knowledge of Change Management	TQM Success
Leader Style		No	No	No	No	No	No
Leader Ability	No		No	No	No	No	No
Knowledge and Prioritization	No	No		Yes	Yes	Yes	No
Knowledge of Systems	No	No	Yes		Yes	No	No
Knowledge of Quality	No	No	Yes	Yes		No	No
Knowledge of Change Management	No	No	Yes	No	No		No
TQM Success	No	No	No	No	No	No	

The Conceptualization Model and Research Outcomes

In the first chapter, and at the beginning of this research, it was conceptualized that a relationship existed between a leader's knowledge of leadership styles/approaches, quality and systems, executive knowledge and prioritization, change management, and the success of total quality management and continuous quality improvement programs. The chi-square tests for independence and variable relationship analysis elements of this chapter addressed this conceptualization.

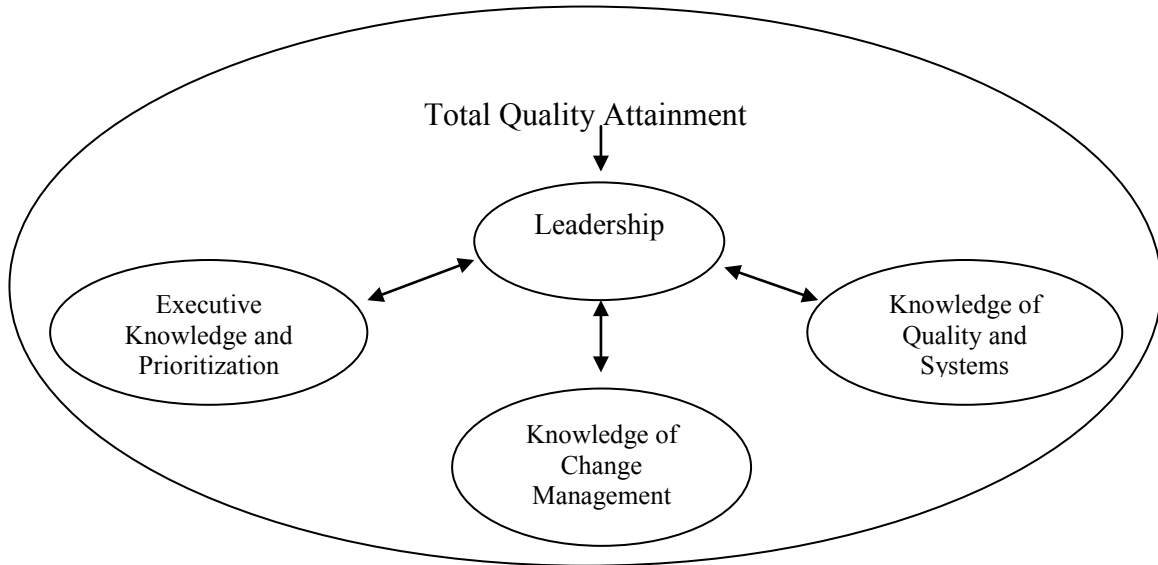


Figure 1. Antonaros Quality Attainment Conceptualization Model

The chi-square tests for independence demonstrated none of the relationships expressed in the conceptual model. All tests yielded no statistically significant relationships between independent variables and the dependent variable. Significance was tested at a level of 0.05 and yielded with 95% confidence no relationships between the dependent and independent variables. In all cases, the null hypotheses were not rejected and the alternative was not accepted. Therefore, it cannot be concluded that total quality attainment is dependent upon leadership, a leader's knowledge of quality and systems, knowledge of change management, and of overall executive knowledge and prioritization.

Although the research outcomes did not support the conceptualization model, relationship dependency was found to exist between several of the independent variables as is illustrated in Tables 30-37. In all cases these tables offer chi-square statistics that are significantly larger than the critical value, resulting in the unexpected finding that executive leadership knowledge and prioritization is dependent upon executive leadership's knowledge of

quality, systems, and change management. Additionally, it offers that knowledge of quality is dependent upon knowledge of systems. Therefore, the research outcomes surmise the following model.

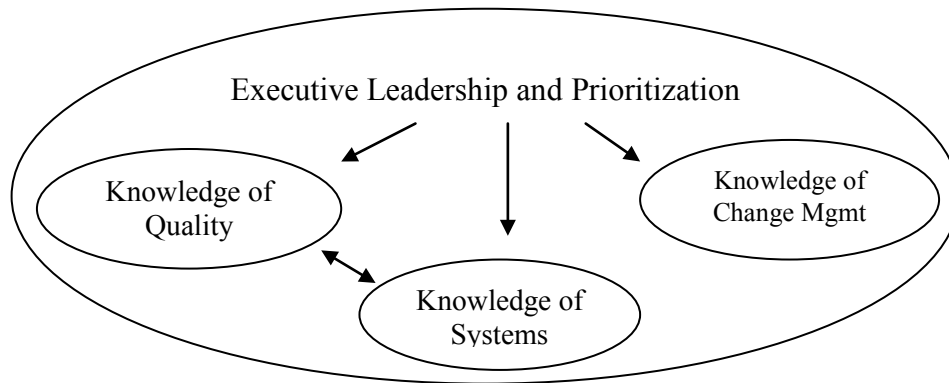


Figure 5. Variable Relationship Dependency Model

This chapter offered the findings of the research by presenting each variable and its associated hypothesis and then conducting cross tabulations to identify possible relationships between the independent variables and the dependent variable. Survey responses and research outcomes supported by statistical findings contradicted leadership theory and prior total quality management work. Relationship dependency proved nonexistent across all independent variables. The next chapter discusses these findings, their implications, and offers explanations for data output along with recommendations for future action.

CHAPTER 5. DISCUSSION, IMPLICATIONS, RECOMMENDATIONS

This dissertation sought to understand why the failure of total quality management and continuous quality improvement initiatives persists. It was hypothesized that a lack of knowledge existed concerning the role of executive leadership skill, capability, style, and knowledge as it related to the success of continuous quality improvement and total quality management programs. The existing literature indicated that senior leadership is a critical factor in the success or failure of total quality management and continuous improvement initiatives, and argued that the involvement and role of senior leadership is to ensure that the proper resources, focus, and support are awarded a quality effort in order to properly create the environment required for total quality management success (Gurnani, 1999; Lakshman, 2006; Mellahi & Eyuboglu, 2001; Santiago & Perles, 2002; Soltani et al., 2005; Warwood & Roberts, 2004; Yusof & Aspinwall, 2000).

Many of the causes associated with total quality failures are found within the scope of organizational leadership (Deming, 1994; Ishikawa, 1985; Juran, 1989). Therefore, a key purpose of this research was to determine the requisite leadership skills and capabilities required for the success of total quality management and continuous improvement programs. To accomplish this purpose, a model for understanding was developed and tested. It was conceptualized that a relationship existed between a leader's knowledge of leadership style/approaches, of quality and systems, of change management, of executive knowledge and prioritization, and the success of total quality management and continuous quality improvement programs.

The research tested the conceptualization model and found that it could not be concluded that total quality attainment was dependent upon leadership, leaders' knowledge of quality and systems, knowledge of change management, and of overall executive knowledge and prioritization. This finding is controversial and contradicts many of the teachings offered by the gurus and other quality management/business management scholars. Deming (1994), Juran (1989), and Ishikawa (1985) all discuss the importance of leadership involvement. Deming and Senge (2006) point to the necessity of systemic thinking in quality activities. Burns (1978), Bass (2006), Goleman (1998), Hersey and Blanchard (1974), and Greenleaf (1998) all make solid arguments for styles of leadership that must be incorporated to ensure desired outcomes. Kotter (1996) demonstrates that the correct approach to change management assures effective behavior and cultural alteration. With this knowledge, one can only surmise that the requisite leadership skills required for total quality attainment must be dependent upon leadership style/ability, leadership's knowledge of quality, leadership's knowledge of systems, and leadership's knowledge of change management. However, according to the present research outcomes, to surmise or conceptualize this is simply false.

The work of these seminal thinkers in their respective fields yields truth that is supported by research, quantitative facts, and in some cases qualitative understanding. Knowing that their work is legitimate, accepted, and taught, it is surprising that the research outcomes failed to realize findings that supported the acceptance of the alternative hypotheses and the overall conceptualization model. It is put forward then, that the possibility of type II error exists within the outcomes of the relationship dependency tests conducted upon each independent variable and the dependent variable. However, if indeed type II error does not exist, the null hypotheses

are accepted, and the research outcomes are valid, then leadership thinking and behavior must be revisited.

The outcomes told us that total quality management success was not dependent upon leadership style/abilities, executive leadership knowledge and prioritization, and leadership's knowledge of quality, systems, and change management. This implies that leadership plays a much smaller role in the outcomes of total quality management than what is commonly believed to be the case.

It has been argued for decades that the lack of success in western society with regards to total quality management is directly related to leadership's failed understanding and overall lack of support for total quality programs. Providing evidence that this may not be the case, the research might indicate that total quality management academics and practitioners need to revisit earlier quality practices, their associated paradigmatic viewpoints, and look for ways to integrate them into modern quality systems thinking. What may be needed is a return to work specialization (Fayol, 1919), process refinement (Taylor, 1911), and basic worker motivation (Mayo, 1933). Leadership's quality role thus becomes strategic, while labor and implementation teams become the focus for quality execution.

Using some of the basic principles provided by these management theorists and weaving them into the principles developed by Shewart (control charts) and Deming (the system of profound knowledge) the ingredients for success can be achieved. Using Fayol's approach, leadership can first define all required work specialization teams. These teams could be either self-managed work teams or task teams led by a supervisor. Implementing Taylor's principles and methods work teams (not management) could refine each component of their work processes, effectively making the work systematic and predictive. Incorporating Shewart's

control chart methodology into their improvement process, they are made aware of the benefits of their work and are rewarded based upon merit and their ability to achieve the desired performance outcomes. By working with each team, a quality engineer might evaluate their process improvements for feasibility and implement those that positively address the quality system as prescribed by Deming. The key to this approach is the integration of models prescribed by various theorists; that is, process control teams and systemic thinking become integrated with worker specialization and process refinement.

A specialized department working as a team can impact work processes in the same manner as Taylor addressed an individual's work flow. Leadership's role, still working within the functional parameters of the discipline as prescribed by its seminal thinkers such as Burns and Bass, becomes more strategic providing the vision, mission, and long term commitment to resources required for achievement, while labor's role becomes more involved in making quality a part of the daily business process and procedural outlay of the organization. Therefore, the end result achieved is a dual role of execution and mutual responsibility wherein both leadership and labor are accountable for total quality attainment.

Most surprising of all research outcomes is the fact that all research participants completing the EQi:S demonstrated extremely low emotional quotient scores. This finding gives pause and questions the validity of the survey instrument employed. An effective tool, being properly administered and scored, is highly unlikely to yield a constant outcome from a random sample. However, the EQi:S did just that. Although possible, it is highly improbable that the entire participant population is emotionally deficient and therefore has low EQs. Furthermore, 53% percent of the participants demonstrated a transformational leadership approach. Given that emotional intelligence is a transformational characteristic, it would be

expected that a percentage of those demonstrating transformational approaches would yield an average or above average EQ. As noted, this did not occur. It is recommended that additional research be done utilizing this tool to further test its ability to provide the output it is designed to deliver. If future research yields similar results, the tool should be substituted in favor of other psychological testing tools designed to measure a participant's emotional quotient. As it relates to the current study, the EQi:S proved contentious and unreliable. The survey yielded results that impeded the aim of the research process and potentially contributed to the possibility of type II error.

As illustrated by the statistics found within Chapter 4, an unexpected finding occurred while conducting cross tabulations and chi-square tests for independence of all independent variables; some relationships were found to exist. Executive leadership knowledge and prioritization was found to be dependent upon executive leadership's knowledge of quality, executive leadership's knowledge of systems, and executive leadership's knowledge of change management. Recall that the measurement for executive leadership knowledge and prioritization was "understands motivation, understands planning, understands strategy, understands execution, and understands performance measurement." Using this definition, the relationship between these independent variables can be explained. Planning, strategy, and execution are all elements found with the discipline of quality and quality management. To properly address quality, there must be a strategy and plan for proper execution and management. Quality cannot be achieved without the inclusion of planning, strategy, and execution.

Change management is directly connected to, and dependent upon proper motivation and motivational techniques. To ensure the motivation of a team to action, change management

teaches us that we require a properly communicated vision, a guiding coalition to drive forward the aim of the vision, and the ability to celebrate short term wins. When proper change management techniques are employed, motivation follows.

Finally, systemic thinking is interwoven into performance measurement. Mathis and Jackson (2008) define performance management as a “series of activities designed to ensure that the organization gets the performance it needs from its employees” (p. 327). These activities start with organizational strategies, the identification of performance levels required to achieve organizational strategies, the measurement and feedback of actual versus required performance, and the adjustments required to improve. Therefore, performance management is nothing more than the process of quantifying, measuring, correcting, and reporting system-wide service or quality performance levels. Thus, to implement system-wide performance management, one must understand systems theory and realize systemic thinking patterns.

In addition to the independent variable relationships discussed, it was also learned during cross tabulation and chi-square testing for independence that an executive’s knowledge of quality was dependent upon an executive’s knowledge of systems. This finding supports the teachings of Deming (1994) who introduced this possible relationship in his book, *The New Economics*. He states that “the obligation of any component is to contribute its best to the system, not to maximize its own...competitive measure...Some components may operate at a loss to themselves in order to optimize the whole system” (p.97). This statement indicates that for executives to maximize their knowledge of quality, and therefore their effectiveness at implementing quality programs, they must first understand the whole organizational system to ensure proper quality program design, performance management, and execution. Therefore, knowledge of quality is incomplete without knowledge of systems.

The implications associated with the research are threefold. First, without the support for the conceptualization model, the outcomes infer that senior leadership is not the single most critical factor in the success or failure of total quality management. This implies that leadership does not require day-to-day direct involvement in quality efforts and quality management programs. Given that this contradicts accepted thought by practitioners in the field, it is recommended that additional research be conducted that is not exploratory, but truly representative of the entire sample population in order to further test the conceptualization model. However, taken at face value, the research findings suggest other possibilities, such as an integration of older paradigmatic viewpoints with that of new ones. Modifications to Taylor (1911) and Fayol's (1919) contributions of work specialization and process refinement may prove to be useful when integrated with today's team approach to systemic process management. Further research should test this proposal. It is recommended that this test be experimental in design, and not simply non-experimental, in order to truly evaluate the plausibility of compatible integration.

Second, the unexpected relationships found among the independent variables of executive leadership knowledge and prioritization and executive leadership's knowledge of quality, systems, and change management suggest that an executive's quality management performance requires more than simple functional knowledge. Rather, executives should possess specific competencies that support their ability to understand motivation, understand planning, understand strategy, understand execution, and understand performance measurement. These competencies include those obtained through a complete understanding of quality, systems, and change management. Therefore, organizations seeking executives with strong managerial aptitudes should look to acquire those individuals with a keen understanding of

quality, systems, and change management. These findings imply, too, that organizations must re-focus their internal executive training and development programs. Training coordinators must look to move from general leadership training to a more holistic development program that addresses all executive competencies, including development surrounding the subject matter pertaining to quality management, systemic thinking, and change management. Improving executive understanding in the areas of quality, systems, and change management will improve upon the individual's overall knowledge and prioritization. Moreover, it will create a cross functional and complete executive that is prepared to address the needs of the organization.

Finally, the relationship dependency found among the independent variables of knowledge of quality and knowledge of systems demonstrates that quality attainment is dependent upon the sum of its parts and not simply the productivity of any one single component. The implication of this finding supports open systems theory and adds additional learning requirements for not only executives, but also all those working within the organization and its total quality management system. Those working to achieve total quality attainment must first ensure a thorough understanding of systems and systemic thinking patterns prior to total quality program implementation.

This exploratory research was conducted using a finite population of 200 companies found within the electrical wholesale environment. Given that this is limited sample, it is suggested that follow up research be conducted. Follow up research should engage a larger sample population that is truly representative of the whole. Although a population of 200 is adequate for exploratory research, it in no way is truly representative of the entire potential sample population; that is, it does not achieve the minimum participation or response required for large population sizes or unknown population sizes.

Summary and Concluding Comments

This dissertation found that total quality attainment is not dependent upon leadership, leaders' knowledge of quality and systems, knowledge of change management, or of overall executive knowledge and prioritization. However, it did discover that executive leadership knowledge and prioritization is dependent upon the executive leadership's knowledge of quality, systems, and change management. Additionally, it offered that knowledge of quality is dependent upon knowledge of systems. Collectively, these findings suggest that leadership must revisit older quality management theory that can be integrated and woven into more recent quality management concepts to achieve mutual responsibility between leadership and labor for total quality attainment. As a result, further research is required in several areas across both the executive and practitioner levels.

At the practitioner level, future research should re-visit the teachings of Taylor (1911), Fayol (1919), Mayo (1933), and Shewart (1931) for their practical application in today's work environment. Work specialization, process refinement, productivity studies, process control, and basic worker motivation are all aspects that continue, even today, to contribute to the effectiveness of the organization. Conducting additional research in these areas will raise awareness to their level of contribution, and therefore their overall level of significance.

At the executive level, future research needs to investigate the findings of dependency found to exist. Executive leadership and prioritizations dependency upon executive leadership's knowledge of quality, executive leadership's knowledge of systems, and executive leadership's knowledge of change management, and the dependency of knowledge of quality upon

knowledge of systems must be further tested to validate these findings and confirm the research outcomes.

It was recommended that a dual role of execution and mutual responsibility between leadership and labor be implemented. To achieve this duality, it was suggested that leadership focus on the vision, mission, and long term commitment to resources required for achievement while labor focus on the day to day process management and quality performance outcomes. This recommendation should be evaluated for reliability in future research. As a basis for testing, Deming's (1994) 14 points provide two areas of origin. Point two, adopt a new philosophy, should be used to investigate the possibility of a dual role of execution and mutual responsibility. Additionally, point six, institute training, should be used to test the need for both enhanced leadership and labor development programs that would allow for the duality suggested.

In addition to further testing the research outcomes and general recommendations, it was put forward that the research design be modified. It was advised that a larger sample, one that is truly representative of the population, be incorporated in future research to ensure the validity of research outcomes. Moreover, it was argued that another psychological test be incorporated in place of the EQ:i given its lack of reliability. These statements should also be explored further and tested in additional studies to ensure their accuracy. Table 38 provides a final summation of suggested future study.

Table 38. Summary of Future Research

Research Design	Practitioner Level	Executive Level
Representative sample	Significance of classic quality theorists	Variable dependencies found to exist
Reliability of EQ:i		Concept of duality

Additional research that investigates the recommendations offered and incorporates a representative sample of the entire population, may find support for the conceptualization model and its associated hypotheses. Conversely, additional research might also realize similar outcomes that support the findings of this study. Indeed, if that be the case, commonly accepted thinking will be questioned and our understanding of leadership, as it relates to total quality management, will be altered. Alas, this study offers up a timeless lesson: what is thought to be accepted and understood may only be a paradigmatic restraint that inhibits our accessibility to the truth.

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APPENDIX A: OM-QMQ SURVEY INSTRUMENT

From OM-QMQ, by Rich Antonaros, 2009

Section I

Directions: Slowly read each statement. Select the response that best describes your beliefs and feelings towards each statement.

1. Company wide quality initiatives can be successful without executive leadership involvement.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

2. Company wide quality initiatives must be and agenda item in executive leadership's strategic oversight planning sessions or review meetings.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

3. It is not necessary for quality improvement programs to be an agenda item at board level and executive leadership retreats.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

4. Executive leadership is responsible for all quality outcomes at all levels of the organization.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

5. Executive leadership is responsible to develop the processes and training required for customer satisfaction.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

6. Executive leadership cannot be held responsible for poor employee execution of company processes, and therefore cannot be held responsible for customer satisfaction.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

7. Executive leadership develops the quality strategy for the organization.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

8. A company's quality program should be an extension of its vision.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

9. Company culture determines the success of quality programs.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

10. It is the responsibility of executive leadership to define the company culture.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

11. Executive leadership must weave quality management concepts and methods into the vision, mission, and daily processes of the organization.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

12. Executive leadership is not responsible for creating a culture of quality; rather, this is the role of quality engineers or local onsite quality managers.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

13. Executive leadership should expect total quality programs to provide immediate returns.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

14. Company wide quality programs take more than two years to successfully implement.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

15. Company wide quality programs require executive leadership knowledge of systems thinking.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

16. Systems thinking is not necessary for successful company wide quality management programs.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

17. Company wide quality management programs are successful when program leaders are direct, demanding, and constantly overseeing the actions of employees.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

18. Effective leaders of company wide quality programs seek out various perspectives.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

19. Effective leaders of company wide quality programs delegate responsibility for quality outcomes.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

20. Effective leaders of company wide quality programs are closely involved with the day to day outcomes of the quality effort.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

21. Effective leaders of company wide quality programs remove barriers that rob employees of their pride of workmanship.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

22. Effective leaders of company wide quality programs focus all employees towards the accomplishment of quality outcomes.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

23. Effective leaders of company wide quality programs create a constancy of purpose for improvement of product or service.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

24. Effective leaders of company wide quality programs institute evergreen training philosophies.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

25. Effective leaders of company wide quality programs drive out fear of action within the organization.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

26. Effective leaders of company wide quality programs break down barriers between staff or department areas.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

27. Effective leaders of company wide quality programs institute leadership in place of slogans and exhortations.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

28. It is not important for executive leaders of company wide quality programs to publically celebrate small successes.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

29. It is not important for executive leaders of company wide quality programs to create a guiding coalition that champions the quality effort.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

30. Company wide quality management programs are successful when executive leadership restricts employee autonomy.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

31. Successful quality management leaders create a culture of mutual accountability.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

32. My organizations company wide quality management program implementation has been successful. The effort has helped improve our company's ability to obtain total customer satisfaction and customer loyalty.

Strongly Agree = 1 Agree = 2 Neutral=3 Disagree =4 Strongly Disagree = 5

Section II

Directions: Slowly read each statement. Select the response that best describes your situation.

33. My business achieves the customer service standards required for success.

Agree = 1 Disagree = 2

34. My business has achieved a high level of customer satisfaction.

Agree = 1 Disagree = 2

35. My business has achieved a high level of employee satisfaction.

Agree = 1 Disagree = 2

36. My business has achieved a high level of supplier satisfaction.

Agree = 1 Disagree = 2

37. My business realizes a high level of customer retention.

Agree = 1 Disagree = 2

38. My business realizes a high level of employee retention.

Agree = 1 Disagree = 2

39. My business realizes a high level of supplier retention.

Agree = 1 Disagree = 2

40. My business realizes a high level of key account retention, and rarely, if never, turns over accounts such as these.

Agree = 1 Disagree = 2

41. Revenue streams for my business, both top line and bottom line, are consistent and steady.

Agree = 1 Disagree = 2

42. My business regularly achieves a positive net profit before tax.

Agree = 1 Disagree = 2

APPENDIX B: HYPOTHESIS AND SURVEY STATEMENT DISTRIBUTION TABLE

	Q1	Q1	Q1	Q2	Q3	Q3	Q3
	H1	H2	H3	H4	H5	H6	H7
SQ1	X						
SQ2		X					
SQ3		X					
SQ4	X						
SQ5	X						
SQ6	X						
SQ7		X					
SQ8						X	
SQ9						X	
SQ10						X	
SQ11		X					
SQ12	X						
SQ13			X				
SQ14			X				
SQ15					X		
SQ16					X		
SQ17						X	
SQ18						X	
SQ19						X	
SQ20	X						
SQ21						X	
SQ22	X						
SQ23						X	
SQ24						X	
SQ25						X	
SQ26						X	
SQ27	X						
SQ28							X
SQ29							X
SQ30						X	
SQ31						X	

*This table is for the OM-QMQ. Note that Q2 H4 is addressed using the MLQ-5X and EQi. In addition, questions 32 – 42 of the OM-QMQ are situational questions used for analysis. They do not answer any hypothesis and are not included in this table.