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DO COMPANIES VALUE MAINTAINING ISO 9000 CERTIFICATION?

2009 CASE STUDY OF 41 US COMPANIES FIRST CERTIFIED IN 2000

A Thesis

Presented to

The Faculty of the Department of Architectural and Manufacturing Sciences

Western Kentucky University

Bowling Green, Kentucky

In Partial Fulfillment

Of the Requirements for the Degree

Master of Science

By

Sarah Joy Namara

December 2009

DO COMPANIES VALUE MAINTAINING ISO 9000 CERTIFICATION?
2009 CASE STUDY OF 41 US COMPANIES FIRST CERTIFIED IN 2000

Date Recommended_____December 7, 2009_____

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Dean, Graduate Studies and Research Date

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Sarah Joy Namara December 2009 48 Pages

Directed by: Drs. Arbuckle, Doggett, and Lightener

Department of Architectural and Manufacturing Sciences Western Kentucky University

The costs of obtaining and maintaining ISO certification are high. Moreover, studies have shown mixed results on the benefits of the certification. Consequently, the objective of this research was to verify whether or not companies do value maintaining the ISO 9000 certification.

The empirical study was conducted on 41 U.S. companies that were first certified in 2000. The companies formed an existing database as they were used by Dr. Arbuckle in 2004 in his doctoral dissertation. Of the 41 companies, 12 were found to be out of business, leaving a final sample size of 29. Data were gathered from this sample through telephone interviews and verified through the organizations' online documents. In this group, 23 companies were found to be still maintaining the ISO 9000 certification as of 2009.

When the statistical analyses were performed, the results clearly indicated that companies do significantly value maintaining the ISO 9000 certification. However, it was interesting to note that the primary reason behind maintaining the ISO 9000 certification was pressure from customers and not necessarily as a tool towards achieving quality production or continuous improvement. Indeed, such an observation may help to explain why even certified companies sometimes produce goods and services of inferior quality.

CHAPTER 1

INTRODUCTION

Since an immemorial time, the survival of communities has largely been through trade. Many societies have depended on one another for provision of goods and services that they cannot readily derive from their own resources. As communities develop and expand, this dependence becomes even more pronounced. The continuation and success of any trade is facilitated by a strong mutual partnership. In particular, trust and confidence are essential in maintaining a healthy customer-supplier relationship. As such, businesses always endeavor to satisfy their customers.

In pursuing this goal, firms may utilize one of the vast bodies of quality systems—Six Sigma, Total Quality Management, Malcolm Baldrige Award, International Organization for Standardization (ISO) 9000, etc. However, in some instances, customers may demand a particular quality standard. For example, a company that deals in electronics may require its supplier or the manufacturer to demonstrate confidence through ISO 9001 assessment. In such a case, the manufacturing company has no option but to seek ISO 9001 certification if it wants to retain business with that particular customer.

Firms seek certification and registration to verify compliance to these standards. Quality systems like ISO 9000 require businesses to say what they are going to do and then do what they say (Summer, 2006, p. 660). Although compliance with ISO 9000 is voluntary, the standard has been marketed in such a way that many companies believe it

is a requirement for doing business. Indeed, any company that lacks a certificate of compliance could be at a significant marketing

disadvantage if its competitors do have certification. Juran (1995) believes that this perception may be the most significant reason why there has been such a rush to become certified.

However, ISO 9000 certification and maintenance are not without cost. For instance, companies spend roughly $1,500 to $2,500 per employee for initial ISO 9000 registration (Tvrdik, 1997). Similarly, firms incur considerable amounts of auditors' and consultants' fees while seeking and maintaining this standard. Given such high costs and also considering that the registration has to be done after every three years, there have been doubts whether or not it is beneficial to continually pay for ISO 9000 certification and maintenance (Tricker, 2005, p.14).

1.1 Statement of Purpose

From the literature review, it was concluded that there were confusions whether or not ISO 9000 certification is worth obtaining and maintaining, making companies reluctant to seek and maintain the certification. The purpose of this study was to verify whether companies value maintaining the ISO 9000 certification.

1.2 Question of the study

Do companies value maintaining the ISO 9000 certification? This research established an empirical answer to this question. The companies who obtained ISO certification in 2000 were examined to ascertain if they were still in business and still maintaining the certification.

1.3 Justification

Although there has been much published work on various benefits associated with ISO 9000 certification, doubts persist whether companies that seek the certification actually maintain it given the high costs involved. The results obtained from the research will help the present and future firms in making decisions whether or not to obtain and continually pay for recertification.

1.4 Limitations

The major limitation that the researcher faced was that some companies, especially the ones that had dropped the certification, were not willing to release the information. Secondly, some respondents were not comfortable with the telephone-survey mode of data collection. In fact, most quality engineers would ask in surprise: Who are you? Who gave you my details? Sometimes they would even indicate that the number that the researcher had dialed was wrong.

1.5 Delimitations

To complete this study, the following delimitations were utilized.

1. The organizations would have to have received ISO 9000 certification in 2000.
2. The organizations would have to be publicly traded.
3. The organizations would have to be located in one place or have received a corporate certification.

1.6 Hypotheses

H_0: Companies do not value maintaining ISO 9000 certification

H_1: Companies do value maintaining ISO 9000 certification

CHAPTER 2

LITERATURE REVIEW

2.1 The Origins and Evolution of Quality Standards

Quality is not a new concept. Since an immemorial time, the quality of goods and services has always been monitored, either directly or indirectly (Mitra, 1998). However, the principles employed in quality-control have undergone significant changes over the years, and continue to evolve up to this day. These changes are mainly attributed to various historical periods. Essentially, there are four distinctive eras of history that have had enormous impact on the evolution of quality: the period of Egyptians builders, the Industrial Revolution, the two World Wars and the Post World Wars period.

The Egyptian pyramids are among the renowned Seven Wonders of the World. What is less known is that as early as 3000 B.C, the principles of inspection against standards existed among the Egyptians who built these pyramids. Imhotep—the architect who built the first Egyptian pyramid—set standards for stones to ensure they were uniform and used wooden gauges for measurement. This process of ensuring that stones were produced to particular standards led to the growth of the guilds and apprenticeships in medieval Europe (Hoyle, 2006).

Guilds were associations of merchants or crafts-persons in medieval Europe, formed to give help and advice to its members and to make regulations and set standards for a particular trade. Subsequently, these guilds trained apprentices to become skilled professionals. The process of apprenticeship was lengthy (five to nine years) and under tight control of a master tradesman. The emphasis on duration and close monitoring was

due to the fact that the skill of the workman rather than his equipment would determine the quantity and quality of his output (Hoyle, 2006, p.111). A graduated apprentice became a journeyman, who upon proof of technical competence would become a master journeyman. He would then establish his own workshop where he hired and trained new apprentices. This continued relationship of master-apprentice training assisted in sustaining the quality of products from generation to generation.

In ancient Rome, the guilds established trading practices and monopolized trade. Even though these guilds disappeared from the European society for more than six centuries when the Roman Empire fell (because they were sanctioned by the central government), they survived in the Byzantine Empire (now known as Istanbul) where their primary function was to enforce rigid controls particularly for financial and tax raising purposes on every craft and trade in the city (Hoyle, 2006).

As communities grew forming towns, the work of guilds advanced. By the 11th century in Europe, the guilds performed a variety of functions including monopoly of trade, setting of standards for the quality of goods, and integrity of trading practices. They also controlled the distribution and sale of food, cloth, and other goods. In addition, they compelled foreign merchants to pay a fee if they wanted to participate in local trade. In other cases, they completely rejected some outside merchants from participating in the trade. This guild system was not only employed in Europe, but also in India, China, Japan, and in the Islamic world through the 20th century. However, towards the sixteenth century, the guild system declined due to the emergence of regulated companies and other associations of wealthy merchant-capitalists (Hoyle, 2006).

In 1300, Edward I, the king of England made a law that no gold or silver should be sold until tested by the "Guardians of the Craft**"** (Hoyle, 2006).

During the early ages, the production of goods and services was done primarily by individuals or small groups of individuals. These groups were usually in the form of family-owned businesses. In most cases, the standard of quality of the products or services was determined by the same persons responsible for producing them. For this reason, this first step in quality revolution is referred to as the *operator quality control* phase (Mitra, 1998, p.2). Although it may appear that there would easily be a conflict of interest when a producer *judges* the quality of his goods, pride in workmanship was highly regarded, and so the individuals strove to ensure that their goods and services were of commendable quality.

The *operator quality control* phase was followed by the *foreman quality control* phase. This phase became more pronounced during the Industrial Revolution. At the time, many industries had begun adopting the concept of division of labor, a practice that ushered in great increases in production. Adam Smith's 1776 *Inquiry into the Nature and Causes of the Wealth of Nations* led to the introduction of specialization in organizations for the next 200 years. Smith observed that a number of specialist workers each performing a single step in the manufacture of a pin could make far more pins in a day than the same number of generalists each engaged in making whole pins. Under his influence, work was divided into its simplest tasks and each task assigned to a specialist (West, 1999).

Smith's unprecedented concept meant that an individual was only responsible for a portion of a product and not the entire product. Likewise, individuals who performed

similar activities were put together. Then, a *foreman* (supervisor) was assigned to ensure that the workers were producing quality items. This was after businesses realized that supplying faultless goods encouraged repeat orders. Later, this principle became the foundation of quality specialists. Indeed, in the 19th and 20th centuries, the military personnel used similar principles to establish armies of inspectors (Hoyle, 2006).

During the same period that Smith's concept of specialization was gaining favor among many European industries, Eli Whitney introduced a revolutionary system for producing interchangeable parts (Mitra, 1998). In order to be interchangeable, the parts must be nearly identical. This allows the assembler to randomly select a part from a group and assemble it with a second randomly selected part. For this to occur without problems, the machines must be capable of producing parts with minimal variation, within the specifications set by the designer. If parts are not made to specification, a randomly selected part may not fit together easily with its mate. By introducing the concept of interchangeability, Whitney had also created the need for increased quality control.

When the European settlers migrated to North America, they brought with them concepts of the Industrial Revolution. In keeping with their *home* practices, the craftsmen became factory workers, and the masters became factory foremen/supervisors. In this case, quality was assured as before through the skills of the craftsmen coupled with supervisory audits or departmental inspections (Juran, 1988).

It was in late 19th century when Americans broke sharply with the European tradition by adopting the Taylor System of Scientific Management. This system is centered at the concept of separating planning from execution. In the 1880s, Frederick

Winslow Taylor conducted studies at Bethlehem Steel in North America with the aim of maximizing efficiency of the workers and machines in the factory. He devised detailed systems that he called scientific management. These systems relied on time and motion studies, which he used to determine the best methods for performing tasks in the least amount of time. Under his task concept, the work of every worker was planned in advance and each employee received written instructions. These instructions described in detail the task to be accomplished, the means to be used, and the time allowed for doing the work. In addition, the work was to be planned by a joint effort of the worker and the management. Although Taylor's work was not directly related to quality control but focused primarily on managing the manufacturing process, it led to a considerable rise in productivity. In fact, by the late 1880's Taylor had succeeded in doubling the work done by the skilled machinists working under him (Juran, 1988).

It should be noted that up to this period, the function of the quality department was seen as separating the good product from the bad. The defective product that escaped to the customer was to be compensated through customer services based on warranties (Mitra, 1998).

During the Industrial Revolution, there was an increased use of power-driven machinery for manufacturing. This practice led to a decline in the price of products and processes; as well as an increase in the number of workers reporting to a foreman (Mitra, 1998). As a result, much attention was now turned towards the quantity of goods produced rather than their quality.

However, when free competition flooded the market, price began to fail as a distinguishing feature. The manufacturer had to revert to quality in order to produce

goods that were not only as cheap as those of their competitors but also of better quality. Motivated by this need, the first full-time inspectors appeared on the scene, initiating the third phase called the *inspection quality control* phase (Feigenbaum, 1961). During this period, the employer had a set of workers to produce goods as fast as possible. At the same time there was another set of employees whose job was to ascertain that quality was maintained at as high a level as possible.

Inspection involved the measuring, examining, testing, or gauging of one or more characteristics of a product or service. This inspection idea was comparable to today's established standards, ISO, that determine whether or not the product or service conforms to the standards.

Nonetheless, it should be noted that the aforementioned inspection method had a number of flaws. In particular, it gave a wrong perception that the responsibility of quality control lies entirely in the inspection department. Philosophically, this approach encourages the false notion that good quality can be inspected into a product and bad quality out of the product. Furthermore, inspection occurring only after the part or assembly had been completed can be costly. For instance, if large numbers of defective products have been produced and the problem has gone unnoticed, then scrap or rework costs will be high (Summer, 2006, p.12).

This method of ensuring quality control stayed in use until the arrival of the tremendous mass-production requirements of World War II. The war led to the fourth phase of quality control which is known as *Statistical Quality Control (SQC).* Individuals involved in SQC were primarily concerned with monitoring and control of variations in products or services. The concept of using statistical charts that later became

the fundamental tool of quality control was introduced by Walter A. Shewhart of Bell Telephone Laboratories in 1924. At the same time H.F Dodge and H.G. Romig, also of Bell Telephone Laboratories used statistical inferences to develop acceptance sampling as a substitute for 100 percent sampling. In the late 1920s, Shewhart and the mentioned colleagues pioneered the application of statistical methods within other U.S. companies such as Hawthorne Works of Western Electric Company and abroad. Nevertheless, their pioneering work had less impact on these industries. However, Shewhart's control chart gained acceptance and by the 1980s was widely used in England as a major element of statistical process control (Juran, 1989).

Soon, companies came to realize that it was more beneficial to use the charts to prevent the problems/defects rather than using them to detect poor quality. Consequently, the emphasis and use of quality control chart methods was shifted from detection to prevention of poor quality. This phase of preventing defects by applying statistical methods to control the process is referred to as *Statistical Process Control (SPC).* The most significant difference between prevention and inspection is that with prevention, the process, rather than the product, is monitored, controlled, and adjusted to ensure correct performance (Summer, 2006, p14). This concept is still utilized in ISO quality systems.

Remarkably, the ability to use statistically based control charts changed the role of the quality inspector from one of identifying and sorting defective products to one of monitoring the stability of the process and identifying when it had changed. In addition, this phase contributed significantly to the more attainable process of sampling inspection rather than 100 percent inspection (Feigenbaum, 1961).

Statistical process control is still used by some companies to create products and services that can consistently meet product specifications and customer expectations. It reduces the variability between products or services so that the results match the desired design quality; achieves process stability that allows predictions to be made about future products or services; assists in the problem-solving process; and minimizes production costs by eliminating the costs associated with scrap or rework (Summer, 2006).

Throughout World War II, production requirements in the American Industry escalated. The 100-percent inspection, which was often not feasible, was replaced by the principles of sampling plans. The *American Society for Quality Control (ASQC)*, formed in 1946, reinforced the concepts of statistical quality control that were formerly established by Shewhart in the 1920s (Juran, 1989). In 1997 the members of ASQC voted to change the name of the organization to the American Society for Quality (ASQ), a name that would broaden the scope of the society.

In addition, a set of sampling inspection plans for attributes known as MIL-STD-105A was developed in 1950 and sampling plans for variables called MIL-STD-414 in 1957 by the military. The MIL-STD-105A plans later went through several modifications from MIL-STD-105A to MIL-STD-105B, MIL-STD-105C, MIL-STD-105D, and MIL-STD-105E—the last version issued in 1989, but canceled in 1991. This standard was adopted by the international standards organization as ISO 2859 (Mitra, 1998, p.3).

In the postwar years, the application of the quality control procedures during the wars started to decline, particularly in the U.S. industries where such procedures had been established. The decline was due to the fact that World War II had virtually destroyed the production capacity of Europe and Asia. In contrast, the U.S. production greatly

expanded since its production capacity largely remained unaffected. There was also a great need for the U.S. to produce enough consumer goods for its people and for Europeans and Asians as well. As such, much emphasis was put on quantity rather than quality. This resulted in a steady decrease in quality for every product in the U.S. market while other countries, such as Japan, started taking a lead in quality production (Sweeney, 1993).

During World War II, Japan was totally destroyed. Thereafter, the Japanese embarked on a concerted effort of reaching their national goals through trade instead of military means. Most of the manufacturers who were involved in military production now turned towards civilian production. However, to be competitive in the international market at that time, one had to have a good national reputation, especially because of the poor quality goods that had flooded the market prior to the World Wars (Juran, 1989, p.7). In order to meet this challenge, the Japanese wholeheartedly embraced the concept of quality control. For example, they sent teams to other countries in order to study their approaches to quality. In addition, they invited foreign scholars to come to Japan and conduct training courses. Edwards Deming—one of the quality gurus from the U.S. — was invited by the Union of Japanese Scientists and Engineers (JUSE) in 1950. He gave lectures to managers, engineers, and scholars on statistical quality practices. Following Deming's visitation and contributions to Japan's economic industry, a prize named in his honor was established in 1951, with JUSE serving as secretariat to the awarding committee. The Deming prize was comprised of the prize itself and Deming application prizes. The Deming prize was awarded every year to a person whose contribution was seen as outstanding in theoretical research and in practical application of statistical

methods including those that promoted increased use of statistical methods in the industries. On the other hand, the Deming application prize was awarded every year to the organizations that had achieved outstanding improvement in their quality control. Expectedly, the Deming application prizes provided a powerful incentive for Japanese companies to promote and achieve their quality control activities (Juran, 1988, 35F.1).

The Japanese engineers found statistical methods very effective in achieving their quality goals. However, after the first decade of statistical methods introduction from the U.S., many Japanese managers started feeling that the methods were limited and they wanted a change (Juran, 1988, 35F.3). In their quest for an improved change, they invited another American quality expert, J. M. Juran, in 1954. This time, Juran's lectures were mainly focused on the strategic role that management plays in the achievement of an effective quality program. His lectures expanded the concept of quality control from the narrow field of manufacturing and inspection to operations in almost all branches of production. Upon quickly realizing the profound effects the quality principles would have on their future business as means of gaining a competitive edge in the world market, the Japanese Engineers and top management made a strong commitment to a massive program of training and education (Mitra, 1998, p.3). Resulting from all these quality efforts, Japan became the top nation to design and manufacture super quality industrial products and export them to foreign countries.

Meanwhile, new developments in the area of sampling inspection plans were taking place in the U.S. In 1958, the Department of Defense (DOD) developed the *Inspection and Quality Control Handbook H107*, which was concerned with single-level continuous sampling procedures and tables for inspection by attributes. This book was

later revised to include multilevel continuous sampling procedures as well as topics in life testing and reliability (Mitra, 1998, p.4).

At the same time, the first national standard on quality program requirements, MIL-STD 9858, was issued by the U.S. DOD. This standard formed the foundation of all quality system standards that followed. It contained requirements such as corrective and preventive action, data analysis and improvement, removal of special cause variation, contract review, work instructions, and records and document control (Hoyle, 2006).

It is interesting to note that the development and application of quality standards were first emphasized in the defense industry. For instance, the capability of a supplier of military goods or services had to be first evaluated using quality assurance models before being granted any contract. Suppliers who had not registered to the appropriate defense standards would not be invited to tender for the work. In such an industry where national security was at stake, it paid not to take any risks. The experiences of ammunition and equipment failure during the two World Wars led to a series of solutions embodied within defense standards to prevent such occurrences. Failure prevention was thus a driving force, although cost was also an important issue. Such strict measures on quality standards were rarely emphasized in the commercial sectors where contracts were often awarded not on high quality products but rather on the lowest price in order to ensure profits. Later in 1975, Canada made advances in quality initiatives by being the first nation to develop and publish quality system standards for the commercial sector (non-military). The publication was in the form of Canadian Standards Association's Z299 series (Hoyle, 2006).

The latest and most distinguished phase in quality revolution began in the 1960's. It is known as *Total Quality Control (TQC).* Other frequently used terms that are synonymous to TQC include Total Quality System (TQS), Continuous Quality Improvement (CQI), Companywide Quality Assurance (CQA), and Total Quality Management (TQM). In TQC, the involvement of several departments and the management was introduced. Formerly, quality matters were assigned only to people from the so-called inspection and quality control department. In this regard, quality control was seen as the responsibility of the inspection department. However, during the TQC period, quality became a matter not of one particular department but of everyone and every department in the organization (Mitra, 1998, p.4). The transformation of quality control concepts from the initial narrow view to today's companywide involvement can be attributed to several persons and events. However, the contributions of Feigenbaum, author of *Total Quality Control*, to this cause in the United States were among the greatest. No wonder he is referred to as the father of Total Quality Management (Koarik, 1995, p.31).

In about the same period of TQC, Shigeo Shingo introduced the concept of zero defects. Zero defects implies that every item built conforms to a particular specification (Koarik, 1995, p.33). The concept emphasized the issue of achieving productivity through worker involvement. The idea of zero defects proved to be very useful in the production of critical products and assemblies, such as missiles and rockets, used in space programs by the National Aeronautics and Space Administration (NASA) (Mitra, 1998, p.5).

Along similar lines, quality control circles continued to grow in Japan. A quality circle consisted of a group of workers and supervisors who met to solve job oriented quality problems. These circles were created after realizing the importance of first-line workers in achieving quality products (Juran, 1988, p.35F.4). As such, managers had to boost the worker's motivation and morale through consultations and discussions in informal subgroups. This strategy is still emphasized in today's standards such as ISO 9000, which encourages increased employee's participation in organizational activities leading to the enhancement of employee's morale.

In the 1980s, awakened by Japan's progress and strong competition in producing high quality products, the U.S. companies began carrying out awareness campaigns on the importance of quality. They began to favor companies that employed quality systems. These promotional efforts tried to point out certain characteristics that were superior to those of similar products. The top management realized the importance of integrating quality philosophies in the production of goods and services at all levels. Accordingly, many businesses adopted training programs in quality control for all levels of workers (Mitra, 1998). Moreover, as computer use exploded during the 1980s, quality control software programs were introduced to the market. Ideas of a total quality system emphasizing vendor quality, product design assurance, product quality audit and other related areas increased.

Fueled by the campaign awareness, and the new technology, it was not long before big companies, such as Ford and General Motors Corporation, adopted the quality philosophy in particular statistical quality control methods and demanded their vendors to be documented in these methods. Thus, smaller companies who had not used statistical

quality control methods previously were forced to adopt them in order to maintain their contracts (Mitra, 1998). It is worth noting that these quality initiatives were not only taking place in Japan and the U.S but worldwide.

In the United Kingdom (UK), large companies, such as the British Aircraft Corporation, British Leyland and General Post Office, developed a range of evaluation and vendor control tools to assure product quality. Then there was the question of warfare material. As the arms race expanded in the 1960s, the U.S. military flooded the industry with standards. In 1968, MIL-Q-9858 was adopted as a basis for the NATO Allied Quality Assurance Publications (AQAP) for application to all member countries engaged in joint defense programs (Hoyle, 2006). In 1970, shortly after the publication of NATO Quality Assurance Standards, the UK Ministry of Defense (MoD) released Def Stan 05-08, which was a version of AQAP-1 (Hoyle, 2006). In 1972, the British Standards Institution (BSI) released BS 4891 as a guide to Quality Assurance. In 1973, Def Stan 05-08 was revised and other several standards issued to match the AQAP standards. In 1974, BSI issued BS 5179 as a complement to the UK MoD standards. These standards were heavily based on the defense standards although they were also aimed at the non-military market. Meanwhile, the U.S. military continued to publish standards governing functions of quality such as Engineering systems, Configuration Management, Corrective Action, Supplier Quality Assurance (QA), Software QA, and Calibration.

In 1975, when Canada developed and published quality system standards for commercial sector or non-military, BSI was triggered to publish BS 5750 in three parts for contractual purposes in 1979. The BS 5750 was similar to the three UK Defense Standards and three AQAP standards. At the same time, contemporary standards were

published in other countries covering the same scope and by 1983 many more countries had joined the procession with only slight differences between them. These multiple quality standards created a need for a standard that was international in nature.

2.2 The ISO 9000 Family

In 1982, the UK Government's White Paper on standards, quality and international competitiveness prompted the birth of a quality system certification infrastructure (BS 5750 certification). The purchasers began to require their suppliers to register with BS 5750 and some were even pressured to achieve certification by certain dates otherwise they would be removed from the list of approved suppliers. To stay competitive, the UK's department of trade and industry launched a scheme that offered grants to offset the costs of using consultants to help industries achieve BS5750 registration (Hoyle, 2006, p.117).

By 1984, BSI had drafted a revision to BS 5750 1979. However, an international interest in this subject encouraged the International Organization of Standardization (ISO) to embark on an international standard for quality systems that would remove the confusion of many standards that were in circulation. In 1987, ISO 9000 was published by ISO technical committee 176 (ISO/TC176) as a set of six standards: ISO 8402 (Quality-Vocabulary), ISO 9000-1, ISO 9001, ISO 9002, ISO 9003 and ISO 9004-1 all bearing a strong resemblance to the original BS 5750 family of standards. The ISO technical committee consisted of members from over 26 countries. Subsequently, other countries not directly involved in the establishment of ISO 9000 developed equivalent national standards acceptable to the majority of the ISO committee countries. They accordingly followed guides in the ISO 9000 series in an attempt to codify the body of

knowledge on quality management through international standards. For example, the UK MoD published Def Stan 05-91, 05-92, and 05-93 as their equivalents to ISO 9000 (Hoyle, 2006).

Throughout the 1990s, the popularity of ISO 9000 grew. Initially the standard was used entirely within the manufacturing sector and, due to its military pedigree; it was still intended mainly for contractual purposes. However, the recognition that came with certification brought a shift from manufacturing to other sectors such as education, health care, transport, agriculture, and so forth. By 1993, the number of certifications had risen to 27,000. By 1999, the number was 274,040 worldwide. This was a great achievement considering that over a period of 40 years, the teachings of Juran and Deming had apparently not influenced as many organizations (Hoyle, 2006).

When ISO 9000 was developed, it was agreed, due to being an international standard, the ISO 9000 family would be reviewed every five years. So, as part of the plan the first review was done in 1992. At the time, few changes in detail, rather than in the concept were made (Hoyle, 2006, p.118).

The second edition was published in 1994. The most notable change of ISO 9000:1994 was the streaming of the numbering system, plus about 250 other changes. These included an explicit requirement that all members of the organization maintain job profiles that define their authority and responsibility. Design reviews were also now compulsory throughout the work package lifetime, and documentation control was extended to ensure that all data was kept up to date. Other changes clarified the standard, making it easier to read. Interestingly, there were no significant changes altering the way most companies were running their businesses (Tricker, 2005, p.13).

The third version, ISO 9000:2000, was published in 2000. This version included a description of the basic approach to quality management, as well as a revised vocabulary to reflect the usage of new and revised terms and associated definitions contained in ISO 9001:2000 and ISO 9004:2000. The requirements of the three quality standards available for certification (i.e., ISO 9001:1994, 9002:1994 and 9003:1994) were all combined into one standard—ISO 9001: 2000. This standard focused towards proving confidence through demonstration in product conformance to established requirements and comprised a clause that entitled permissible exclusions. This clause allowed organizations to formally omit certain non-applicable requirements of the standard, yet still claim conformance to it. However, this is only for organizations whose products, customers, and/or applicable regulatory requirements do not need to meet the full requirements of ISO 9001:2000. For example, organizations whose products require no design activities can claim to be in compliance with ISO 9001:2000 without including the requirements for design and/or development (Tricker, 2005, p.20).

On the other hand, ISO 9004:2000 focused on internal quality management. ISO 9004 can also be referred to as a link to total quality management programs based on continuous improvement to sustain customer satisfaction.

ISO 9001:2000 and ISO 9004:2000 were developed as a consistent pair of QMS standards based on eight quality management principles with a common process-oriented structure and harmonized terminology. These were designed to be used together, or could be used as stand-alone documents, though only ISO 9001:2000 can be used for certification purposes.

Up to now the ISO 9000 standard is continually being revised by standing technical committees and advisory groups, who receive feedback from those professionals who are implementing the standard.

The fourth and latest version is ISO 9001:2008, which was published in 2008. The modifications that were introduced in ISO 9001:2008 serve mainly to clarify and make individual formulations more precise (for example in section 4.1 the word identify was changed to determine, section 7.51d, devices to equipment, section 7.21 related to applicable, and so on) to the existing requirements of ISO 9001:2000. Other changes intended to improve consistency with ISO 14001:2004. Otherwise, there were no new requirements. In fact, ISO/TC 176 emphasizes that with this resolution, the changes in transitioning from ISO 9001:2000 to ISO 9001:2008 are not as far-reaching as they were from ISO 9001:1994 to ISO 9000:2000 (http://www.lrqausa.com).

2.3 ISO 9000 Certification; Its Challenges

ISO 9000 certification has become a global treasure. It has been sought and obtained by thousands of businesses in their quest to demonstrate that their procedures meet ISO Standards. Although it first gained popularity in Europe, by the end of 2005, ISO 9001 had been adopted by well over 161 countries/economies. By the same year, a grand total of 776,608 certifications had been sought, China ranked number one, Japan was number three, and the United States ranked sixth worldwide in certificates (Sweatt, 2008).

As an illustration to the perceived usefulness of ISO certification, it has been noted that most American auto manufacturers require all of their suppliers to become ISO certified if they wish to maintain their contract as suppliers. In addition, the American

Institute of Certified Public Accountants **(**AICPA) observes that there are other strong proponents of the ISO 9000 certification such as the electronic, chemical, and industrial equipment sectors. It is also noted that there is an estimated 13,000 U.S. service businesses, law firms, health care providers, and insurance companies that have acquired ISO 9000 certification. This figure continues to grow daily (Kaye, 2000), an indication that ISO 9000 certification is having a great global trade implication. ISO 9001 is increasingly becoming a requirement for federal suppliers and contractors, driving the U.S. into adopting the ISO 9000 certification.

Obviously, the estimated increases in ISO 9000 certification tell us that there must be excellent reasons/benefits why organizations seek and maintain the certification. However, before attempting to review these reasons or benefits behind obtaining and maintaining ISO 9000 certification, it is important to consider the experiences that organizations undergo as a direct result of seeking and maintaining the certification.

Murray P. Dwight, the president of Dwight D.I.C. Inc., a gauge calibration laboratory, says that they began their journey by learning about the requirements of ISO 9000, including documentation, procedures, and training and then decided to assign one or two knowledgeable employees, including himself, to consciously read up on the ISO 9000 requirements (Dwight, 1996). Sadly; however, it was not long before realizing that they could not make it on their own and so they had to find a consultant. On finding one, the consultant was given the role of coordinating and creating the documentation for the organization. The president asserts that at first the consultancy work was resisted by some of the employees who disliked the idea of having to expose the many facets of their personalities and job habits to a young engineer who seemed to have the right to go

anywhere and do *anything*. Additionally, many employees thought that the engineer would become the operations manager as soon as he finished the project. As a consequence, there was resentment toward him and the president.

Nonetheless, the company had to find effective means to overcome this challenge. As such, the engineer had to sit down with the people in each department and ask each person about his role and how he/she felt it could be done better. At the end of the day, everyone in the entire department had a voice in developing the system and a role in the final process for his/her department. The employees began to realize that they too had a say about their jobs; that they were actually the experts; and that everyone had to be part of the project for it to be a success. This brought a feeling of togetherness among the employees that improved their company's processes and procedures.

Dwight concluded that it was a continuing journey that required lots of effort and time, but after eight months they were successfully audited by a large international accrediting firm, receiving their ISO 9002 certificate. After the accreditation, they had to rigorously follow the procedures in the documentation, knowing well that they were going to face another audit in six months **(**Dwight, 1996).

Dwight's company is not alone. Sybase had its own experience as well. Sybase, the sixth largest software company in the world, has achieved ISO 9001/TickIT (a quality-management certification program for software) registration in more than 80% of its U.S. engineering groups. Sybase indicates that it had to make many of initial investments before they could be certified. The initiatives included hiring external consultants and technical writers, devoting half of the managers' time to each group being

registered, providing at least six hours of training for each person to each group being registered, and providing internal auditor resources (Malcolm, 1996).

Dwight's and Sybase's experiences imply that seeking, obtaining, and maintaining ISO 9000 certification, or any other quality system initiative, is not a light exercise. It is extensive, requiring a lot of investment in terms of time and money. It also requires dedication and endorsement from all the stakeholders within the organization. For instance, all the employees, including the top management, have to be involved. As Dr. Juran rightfully observes, quality does not come from the quality department but in all aspects of the business (Summer, 2006, p.47). Indeed, different organizations may carry out varied activities, but all- in- all the exercise of implementing ISO 9000 is not a trivial one. Effectively achieving this goal entails costs and personnel resources that should not be overlooked.

2.4 Is it worth Obtaining and Maintaining ISO Certification?

From the challenges discussed, one may ask whether it is worth obtaining and maintaining ISO 9000 certification**.** The answer to this question is not definite. Some organizations that have sought and obtained ISO 9000 certification claim to have benefited from the system; others have cursed the system saying it is a fad, expensive, and worthless. Brown (1996) asserts that the perceived value of ISO 9000 certification has varied from being highly successful to merely increasing workload and business costs (Power, 2007).

In many instances, there are compelling elements of evidence that ISO 9000 is beneficial. This can be found in many empirical studies that have been carried out and in reports from some companies that have obtained and maintained ISO 9000. An apparent

example is Dwight Inc., the gauge calibration laboratory mentioned earlier. The company's president indicates that they gained a lot from the certification. For instance, he says that implementing the ISO system helped them to follow procedures and documentation which in turn made their company more efficient, the work flow better, as well as eliminating the frustrations such as "Where does this go?" and "How do we do this?." Dwight continues to say that due to the improved procedures, training and understanding of their jobs, they were able to produce nearly 50% more than they did before, using the same resources (Dwight, 1996).

Furthermore, the president asserts that the ISO 9002 certification helped the company to gain more customer confidence. Following the company's certification and recertification after every six months, their customers were assured that the services offered were accurate and complete, and that the company did not take shortcuts in meeting and going beyond customer satisfaction. In achieving this confidence, the jobs had to be done in accordance with the quality assurance procedures required by the ISO standards. Consequently, customers' complaints about realistic prices were lessened. As Dwight comments, "I can get it done cheaper," never arose from any customer after seeing the certificates and data sheets the company provided them (Dwight, 1996).

From its experience with ISO 9000, Dwight Inc. concludes that striving to be certified was definitely worth the effort, time, and money they invested. However, he cautions that it was not easy; the proposed changes in operations always brought threats to the security of some employees. Nevertheless, as they moved through the learning process and people realized that they were absolutely dedicated to becoming ISO 9002 certified, any feelings of opposition gradually changed to a grudging acceptance and

eventually to positive efforts by all to be part of a successful company. In the end, the process gave them a sense of unity and an understanding that quality is a collective goal (Dwight, 1996).

Dwight Inc.'s experience agrees with a study carried out by Dun & Bradstreet (Kaye, 2000). The study indicates that there are many organizations benefitting from implementing ISO 9000 system. Of the respondents polled, 88% reported better documentation with an ISO 9000 system, 83% indicated greater quality awareness shown by its employees, 53% noted enhanced internal communication, and 40% indicated an increase in operational efficiency (Kaye, 2000). Clearly, this study carries compelling evidence that the ISO 9000 system offers numerous benefits if effectively implemented.

Dun and Bradstreet's study seems to mirror the observations (noted earlier) that were made at Sybase, the software company. Malcolm (1996) asserts that the first evidence of returns from the quality system appears when the *engineer* in the fourth cubicle, who violently resisted the training and audit, said to a fellow employee, "You know, it's really nice to always be able to get a current copy of the functional specification." The evidence mounts when proposed management shortcuts are publicly vetoed by *engineers*, who say, "That isn't the right way to do it; we've got to stick to the process we agreed on" (Malcolm, 1996). At this point, weak areas are easily identified in audits and required solutions are put in place in a timely manner. Things then get better throughout the organization. The story of Sybase reaffirms this thought. After being certified they were able to obtain several major sales contracts both international and domestic. Furthermore, defect rates reduced in delivery processes, and the quality of their software improved as did customer satisfaction (Malcolm, 1996).

Malcolm's comments give the plausible sense that ISO 9000 helps employees to follow the right procedures and processes as specified in the quality system. This is an important step in meeting quality and rightly doing so the first time. Among others, the practice leads to fewer supplier-related errors and rejects, reduces scrap and reworking, and minimizes downtime in tight schedules. It also leads to less frustration since everyone can now more easily meet the stated requirements, saving the organization money (Voel, 1994, p.47).

Another empirical study done by Arbuckle (2004) shows that there were significant benefits for organizations that were ISO 9000 certified compared to those that did not have the certification. From his findings, Arbuckle (2004) indicates that organizations that were certified had the following increases: 58.45% revenue, 50.14% sales, 58.36% stockholder equity, 49.01% total assets, and 67.89% ROA in the year of certification compared to the non-certified organizations. However, he notes that benefits began to drop in the following two years.

Gains from ISO 9000 certification are again supported by Beattie (1996) in his study on *Strategic Benefit from the Implementation of ISO 9000*. Of the firms polled, 42% indicated that they had improved their market share as a result of ISO 9000 certification, and another 4% claimed that their sales turnover had improved. The number of firms that claimed the certification had helped them in winning new customers was 16% and 4% claimed that they had been able to differentiate themselves from their competitors. Firms claiming to have improved productivity as a result of ISO 9000 certification totaled 14%, and 6% claimed that operating a quality management system

helped them to survive difficult trading times; 20% of firms had improved communications with their own suppliers as a result of implementing the ISO system.

In his analysis, Beattie also notes that the more enlightened firms used ISO 9000 as an opportunity to improve the internal operations of the firm. For example, 28% of the firms studied claimed to have improved employee morale. He asserts that this may be attributed to employee involvement in a major management strategy such as implementing the ISO 9000 (Beattie, 1996).

There is also evidence that maintaining ISO 9000 certification has the ability to reduce market barriers. A study carried out by Lloyd's Register Quality Assurance (1993) found that most of the benefits associated with ISO 9000 certification were mainly external. The results showed that 69% of the managers believed that the ISO 9000 certification enabled them to improve their business performance by allowing them to bid for work from which they were otherwise excluded.

Similarly, a study by Power (2007) shows that over 70% of the respondents reported production improvements, improved customer satisfaction, and better staff morale. This demonstrates that when quality management systems are properly used, organizations can become much more competitive. Certified quality management systems do not achieve major benefits alone, but when they are combined with quality improvement initiatives, substantial improvements can be achieved.

However, in spite of all the aforementioned benefits associated with ISO 9000, there are still some organizations that claim the certification is not worth the resources. Magee, an employee from Alpha Graphics, a printing franchise laments:

> A few years ago, our company decided to get all of its shops certified using the ISO 9000 standard. The promise was that we were going to double our work after we got certified, for probably the next eight years. However, I did not get one extra customer as a result. And even if I marketed it and said, “Hey, we're ISO certified,” people would just stare at me and wonder, “What does that mean?” (Neubauer, 2009, p.20)

From Magee’s experience, ISO 9000 was a nightmare for their organization. However, this failure may not be justified because people have a tendency of playing a blame game when things are not going well. In such situations, employees and the management begin by blaming one another or even the customers. In the last resort, they start blaming the system, calling it unmanageable (Senge, 2006). Surprisingly enough, Magee is not alone.

In Beatie’s (1996) study that was cited earlier, nearly one-quarter of the companies did not identify any strategic benefit at all; and the remaining firms generally identified only one strategic benefit from the implementation of ISO 9000. Similarly, a longitudinal study done by Pinar and Ozgur (2007) to examine the impact of ISO 9000 certification on business performance bears some resemblance to Beatie’s (1996) study.

Pinar and Ozgur wanted to determine if there was a difference between the performances of ISO 9000 certified firms and non-ISO 9000 firms. Their study compared the mean stock returns and average stock variances of ISO 9000 certified and non-ISO 9000 firms over various time periods of one year, two years, three years, and four years between 1997 and 2005. The results showed that the ISO 9000 certified firms generally

seemed to have higher mean returns than those of non-ISO 9000 firms, but they were not significantly higher for all time periods. In addition, when they compared the average variances of ISO 9000 firms and non-ISO 9000 firms, the researchers found that ISO 9000 firms had lower variances than non-ISO 9000 firms over a nine-year period. It appeared that, in addition to higher performance given by higher average stock returns, ISO 9000 certification seems to reduce the variability of the stock returns, making these stocks less risky. One interesting observation made was that the variances of stock returns for ISO 9000 and non-ISO 9000 firms declined over time and converged after nine years. The researchers concluded that, in the long-run, ISO 9000 may not be an important factor in reducing the variability of their performance or variance of the return (Ozgur, 2007).

Many firms, particularly the smaller ones, have had experiences reaffirming that the benefits born of ISO 9000 certification are short-lived. There are various reasons for this tendency. Rayner and Porter (1991) assert that firms set out to implement ISO 9000 without any clear idea of the benefits likely to be achieved or the costs and efforts involved. This concern is also raised by John Sprouster, the chief executive of The Australian Quality Council, who said that ISO 9000 is inappropriate for small businesses. Sprouster argued that the costs involved in establishing the system and the time required in the documentation is not worthwhile for small firms. (Gome, 1995). He also notes that small businesses sometimes get certified for the wrong reasons such as marketing benefits and a ticket to government work (Gome, 1995). Sprouster's observation is also supported by Bell (1994), who stated that it costs a 10-person company as much as five times more per employee to implement and certify an ISO 9000 quality system than it

does a 100-person company. Bell also claimed that the authors of ISO 9000 never intended these standards to be applied to small businesses.

Nevertheless, Malcolm (1996) from Sybase asserted that most attendees in quality seminars show up with an agenda that they intend to confirm at the meeting. Such an agenda could be that ISO 9000 is worthless; ISO 9000 will restrict their creativity; ISO 9000 is not rigorous enough to help companies get their operations under control; ISO 9000 will take so much effort that it will delay high-priority projects; or ISO 9000 is a fad. He goes on to conclude that "if one seeks to confirm a prejudice, it will get confirmed" (p.89). More still, continuous pressure from the marketplace might plant another seed of doubt that drives some attendees not to attend another seminar. In Malcolm's view, ISO 9000 is not magic; it simply helps a company to become aligned with its customers and provides a shared direction for improvement.

Certainly, the organization should understand that ISO 9000 is not the end of the road but a vehicle to help them achieve their quality goals. Therefore, benefits achieved will highly depend on the motives behind the company's seeking of ISO 9000. For example, the study by Power (2007) showed that the organizations that sought ISO 9000 certification with a proactive approach, driven by a continuous improvement strategy, were more likely to derive significant benefits as a result. Power also found out that organizations could effectively use ISO 9000 certification as a means of promoting and facilitating a quality culture, where the quality auditor is an important player in the process. Furthermore, his study indicated that there was a strong positive association between a continuous improvement strategy and improved business performance. The link between a continuous improvement strategy and benefits derived from certification

was perceived to be significantly stronger by the operations managers and CEOs than by the professional quality assurance managers.

Hoyle (2006) asserts that numerous organizations are driven to seek ISO 9000 certification by pressure from the customers, government and market rather than an incentive to improve business performance. As such, the organizations simply look for the quickest route to certification. This could be why the benefits are short-lived. This might explain the observation made by Arbuckle (2004) where the benefits of ISO implementation began to drop in the next two years after certification; and that made by Pinar and Ozgur where the variances of stock returns for ISO 9000 and non-ISO 9000 firms declined over time and converged after nine years.

From the above literature, it is seen that different companies and researchers have varying observations about the benefits of ISO 9000 implementation. Stirred by these differences and the high costs involved in obtaining and maintaining the certification, the researcher wishes to carry out a study aimed at establishing whether companies do value maintaining ISO 9000 certification.

CHAPTER 3

METHODOLOGY

The purpose of this study was to establish an empirical answer to the question stated earlier, that is, whether companies significantly value maintaining the ISO 9000 certification. To determine an answer to this question, a group of 41 companies that had received ISO 9000 certification in 2000 was obtained from the ISO 9000 registered Company Directory North America, published by QSU publishing company in Fairfax, VA. QSU is a company that collects, analyzes and publishes data on more than 90,000 certified organizations worldwide (www.thefreelibrary.com). The 41 companies formed some existing data since they had previously been used by Dr. Arbuckle in his 2004 study on "A Comparative Study of Selected Measures of Performance of Organizations Before and After Obtaining ISO 9000 Certification as Compared to the S&P 5000 Index." In this group, those still in business were examined to ascertain whether they were still maintaining the ISO 9000 certification as of 2009.

To collect data, the researcher used telephone survey and online organizational documents. The survey consisted of three questions: (1) Is the company still in business? (2) If yes, is the company still ISO 9000 certified? (3) If yes, is there a customer who requires the certification? Answers to questions (1) and (2) were verified from online organizational documents or by requesting for copies of certification.

The survey by telephone approach was primarily used because it was economical given that the participants were scattered nationwide. This approach was also flexible and gave an immediate feedback. If the participant, for example, did not understand a

question or needed further explanation on a particular issue, it was possible to converse with that individual.

After collecting the data, the researcher then used the binomial distribution (tests about proportions) for analysis. The binomial distribution is applied when a random experiment is repeated a fixed number of times, with each trial having two possible outcomes — a success or a failure. The probability of success, say, is the same for each trial, and the trials are statistically independent (Hogg, 2001).

In this study, the experiment entailed calling companies to ascertain whether they were still ISO 9000 certified. In each trial, a company was randomly called and the response recorded. The probability of success or failure (company still certified or not) remained the same from trial to trial, resulting in a series of yes's and no's.

In this study, the hypotheses were as follows:

H_0: Companies do not value maintaining ISO 9000 certification

H_1: Companies do value maintaining ISO 9000 certification

In testing the above hypotheses, there is a possibility of committing Type I and Type II errors. Type I error is committed when is falsely rejected; while Type II error is committed by failing to reject when it is actually false.

Often, an value of is used to determine whether the results of a test are significant or not. However, there is nothing sacrosanct about using this Alpha value, and different values can be used depending on the level of confidence desired (Evans, 2004). For example, since the literature review in this study gave the implication that companies would be reluctant to maintain the ISO 9000 certification given that maintenance costs

are high and the benefits are not straightforward, the researcher used a smaller Alpha value of in order to reduce the possibility of committing Type I error.

CHAPTER 4

FINDINGS

This chapter presents the outcomes of the study. The results are reported against three questions that were used in the research. Further information that emerged during the data collection is also presented**.**

4.1 Is the company still in business?

Out of the 41 companies that had obtained their ISO 9000 certification in 2000, 12 were found to be out of business leaving a final sample size of 29.

4.2 If yes, is the company still ISO 9000 certified?

Out of the 29 companies that were still in business, 23 were found to be still ISO certified. This was a success rate of about 79%. The researcher also found that most of the companies that were still certified had one or more of the following items on their websites: copies of the certification, an ISO Logo, or conspicuously catchy praises such as “ISO Certified Company”. This kind of advertisement implied that these companies were proud of their ISO certification. Indeed, when asked whether they were still ISO 9000 certified, some of them were eager to elaborate even further. For example, they would say that they were not only ISO 9001 certified but were ISO 14000 certified as well.

4.3 If yes, is there a customer who requires the certification?

Out of the 23 companies that had maintained the ISO 9000 certification, the researcher was able to obtain responses from 15 of them. Out of these, 12 reported that they had at least one customer who required them to be certified; otherwise the customer would be unwilling to do business with them. This yielded a yes-response rate of 80%. Table 4.1 gives a summary of the results obtained from the three questions above.

In addition to the customer requirement, some companies indicated other reasons that motivated them to maintain their ISO certification. The following are some of the reasons that were given, together with the corresponding number of companies that gave such a reason: to gain a competitive advantage, 3; to be able to sell goods or services internationally, 2; A prerequisite for doing business, 2; for continuous improvement, 2; and to produce high-quality products, 1.

Table 4.1. Summary of the results

Company in Business	Maintained Certification	Dropped Certification	Customer Requirement
1	✓		
2	✓		✓
3	✓		✓
4	✓		
5	✓		✓
6	✓		
7	✓		✓
8	✓		
9	✓		
10		✓	
11	✓		
12		✓	
13	✓		
14		✓	
15		✓	
16	✓		✓
17	✓		✓
18	✓		
19	✓		
20	✓		✓
21	✓		✓
22		✓	
23	✓		✓
24	✓		✓
25	✓		
26	✓		✓
27	✓		✓
28			
29		✓	
Total (29)	23	6	12

CHAPTER 5

ANALYSIS OF DATA

5.1 Statistical Tests of the Hypotheses

To complete the study, the researcher employed the binomial distribution (tests about proportions) to test the following hypotheses first formulated in chapter one:

: Companies do not value maintaining ISO 9000 certification

: Companies do value maintaining ISO 9000 certification

By letting be the probability of success (finding that a company has maintained the certification), the researcher tested the above hypotheses by equivalently testing against, where. This value of was chosen because the sample contained only two types of companies—those still certified and those that had dropped the certification.

Since the sample size was n = 29 and the number of companies that had maintained the certification was y = 23, the test statistic was calculated accordingly as

By using a significance level of, it was found that

Consequently, the null hypothesis was rejected and the alternative hypothesis accepted (Hogg, 2001, p. 429). These results indicated that at a significance level of , companies do value maintaining ISO 9000 certification.

5.2 Why do Businesses Maintain ISO 9000 certification?

As mentioned in section 4.3, a large number (80%) of companies that had maintained the certification did so because it was a customer requirement. In addition to customer requirement, some companies shared with the researcher other reasons that motivated them to maintain the ISO certification.

One of the reasons was to gain a competitive advantage. This assertion agrees with the suggestion in the literature review that any company that lacks a certificate of compliance could be at a significant marketing disadvantage if its competitors do have the certification.

The ISO certification was also regarded as a prerequisite for doing business. One of the companies that stated this reason supplies products to the military. In this regard, their reason supports the reviewed history behind quality standards, i.e., that the standards were first developed in the defense industry and that to deal in military products a company requires certification. In fact, the company's quality manager insisted that "we have to maintain the ISO certification because it's formality for doing our business."

Some businesses believed that ISO certification helps them to enlarge their market by enabling them to sell goods or services internationally. This reason reinforces the findings by Lloyd's Register Quality Assurance (1993) cited in the literature that 69 % of the managers believed that the ISO 9000 certification enabled them to improve their business performance by allowing them to bid for work from which they were otherwise

excluded. Indeed, ISO 9000 being an international standard opens up market opportunities worldwide.

Continuous improvement and production of high-quality products were also cited as reasons for seeking and maintaining ISO certification. These reasons seem to mirror Beattie's analysis cited in the literature review that the more enlightened firms use ISO 9000 as an opportunity to improve their internal operations. The reasons also reaffirm the note in the review that when ISO 9000 is effectively implemented it leads to high quality products.

Nonetheless, it was quite *disheartening* that out of the fifteen companies that shared their reasons for maintaining ISO 9000, only one cited quality production as a key reason. Ideally, production of high-quality products should be the primary reason for seeking and maintaining the certification. Unfortunately, most of the aforementioned responses confirm that this is clearly not the case.

A closer look at the above reasons reveals that most businesses seek and maintain the ISO certification because of some kind of pressure, mainly customer requirement. No wonder 80% of the responding businesses cited customer requirement as a primary reason for their maintaining of the ISO 9000 certification.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

In this study, contemporary literature was reviewed and a survey conducted to establish an answer to the question of whether companies value maintaining the ISO 9000 certification. The following hypotheses were considered and tested:

: Companies do not value maintaining ISO 9000 certification

: Companies do value maintaining ISO 9000 certification

Following the statistical tests performed in Chapter 5, was rejected and accepted. Rejecting the null hypothesis and accepting the alternative hypothesis indicated that companies do value maintaining the ISO 9000 certification. These results were contrary to indications from the literature review. In the review, it appeared that companies that seek and obtain the certification would be reluctant to maintain it given that the costs involved are high and the benefits are not straightforward. However, this study clearly showed that companies significantly do value maintaining the ISO 9000 certification.

Interestingly though, it was noted that the primary reason behind maintaining the ISO 9000 certification was customer pressure. In addition to customer requirement, other reasons that were easily cited included being a prerequisite for doing business, giving businesses a competitive advantage, and enabling companies to sell their products internationally. In this respect, this study reinforced Hoyle's (2006) assertion that numerous organizations are driven to seek ISO 9000 certification by pressure from the customers, governments and markets rather than an incentive to improve business performance.

In brief, this research showed that companies significantly do value maintaining the ISO 9000 certification and that these companies seek and maintain the certification mainly because customers require it.

This research suggests that further study should be carried out to establish any actual benefits—improved product quality, improved business processes, reductions in waste/scrap, and innovation demonstrated through continuous improvement—that the companies may have derived from maintaining ISO 9000. This suggestion has primarily been motivated by the fact that most of the companies did not cite any of these as reasons behind their maintaining of the ISO 9000 certification; they overwhelmingly cited customer requirement as the main reason.

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