

The Effectiveness of ISO 9001:2000 in the Public Sector: A Case Study of the Nova Scotia Regional Development Authorities

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EXECUTIVE SUMMARY

Practicing quality management can vastly assist organizations in creating a culture that is customer oriented, ensures that consistency of processes governs activities, fosters an environment of continuous improvement, and engages all employees around creating and implementing the goals of the organization (Deming, 1982, Connor, 1997; Birkinshaw & Mol, 2005).

Since 2005, eleven Regional Development Authorities (RDA's) within the Province of Nova Scotia have been certified as ISO 9001:2000 registered entities. This commitment to quality management has provided an excellent case study of how public sector entities have applied quality management principles within their operations. Conducting a comprehensive evaluation on the effectiveness of ISO 9001:2000 to date among RDA's also provides an opportunity to reflect on where the quality management system has been successfully implemented and to identify opportunities for improvements in moving forward by the RDA's that are practicing ISO 9001:2000.

This research study involved interviews with all eleven Regional Development Authorities, as well as four additional stakeholders in the ISO 9001:2000 registration process who provided initial funding and support to the RDA's as they became certified. Research questions were framed around the eight categories of ISO 9001:2000 quality management principles, which include customer focus, leadership, involvement of people, implementing a process approach, implementing a systems approach to management, continual improvement, implementing a factual approach to decision making and mutually beneficial supplier relationships. Respondents were asked to rank the pre and post ISO 9001:2000 environments on a scale of one to ten to allow for a comparison of means. After analysis of the interview data, several key findings emerged. Overall, Regional Development Authorities have witnessed benefit from implementing ISO 9001:2000 within their organizational environments, with statistically significant improvements being made in the areas of customer focus, leadership, process approach, system approach to management, and mutually beneficial supplier relationships at a 99% confidence level. The study was unable to demonstrate significant improvements in the areas of factual approach to decision making, continual improvement and involvement of people at the 99% confidence level.

When asked to rate the effectiveness of ISO 9001:2000 on their operations in each of the eight areas of quality management, respondents chose implementation of processes, involvement of people and continual improvement as the three top areas in which improvements have been made, despite the fact that the data from the pre and post ISO environments was unable to show significant improvements in the areas of involvement of people and continual improvement at the 99% confidence level. However, it should be noted that when adjusting the level of confidence to 95%, the data illustrated that a significant improvement in the means between the pre and post ISO 9001:2000 environments was found in both areas of involvement of people and continuous improvement.

With the successes of ISO 9001:2000 within RDA's now captured and measured, this research provides a contribution to the academic literature with respect to the applicability of ISO 9001:2000 within public sector organizations. Furthermore, several recommendations have been made for future academic research and for RDA's to consider for improvements to the effectiveness of ISO 9001:2000 moving forward.

These recommendations include:

Recommendation 1) Sharing the results of this research with the NSARDA Board of Directors. This recommendation is based on the observation that many RDA's were not familiar with the eight quality management principles of ISO 9001:2000. As a result, RDA's have not been able to maximize the benefits that ISO 9001:2000 can provide within each of these areas. By ensuring that RDA's fully understand what ISO 9001:2000 can do, NSARDA can enable RDA's to utilize their quality management systems more effectively.

Recommendation 2) Establishing a process for sharing best practices among RDA's. This recommendation is based on the observation that many RDA's have developed innovative tools within their ISO 9001:2000 systems. Sharing these successes will assist in avoiding a duplication of effort for other RDA's that may be trying to accomplish the same goals; will generate new excitement around the potential of ISO 9001:2000; and will provide a greater level of standardization and consistency among the RDA network.

Recommendation 3) Providing education and training to RDA's on improving the integration of ISO 9001:2000 into their existing systems. During the course of the research, it became apparent that some RDA's have not fully understood how ISO 9001:2000 should be incorporated as a part of their daily operations. As a result, by implementing ISO 9001:2000 procedures as a separate initiative that is not integrated into the daily functions of the office, these RDA's have not been able to maximize potential benefits and are often duplicating efforts. As NSARDA has a strong track record in delivering educational programs to their membership, it would be ideal for them to take a leadership role in this area and provide additional training to the RDA's.

Recommendation 4) Re-conducting this research in three to five years. As many RDA's are now in the process of revisiting their quality manuals, and two new RDA's are just beginning the initial registration process, it will be worthwhile to determine the effectiveness of ISO 9001:2000 in three to five years to track improvements that have been made based on the implementations of the other recommendations contained within this report.

Recommendation 5) Conducting further empirical study to contribute to the existing academic literature on quality management. There has been little research to date that has provided empirical evidence to support Deming's principles of quality management. The RDA's provide an excellent case study to provide such evidence, as there are many parallels between Deming's principles and the eight quality management principles of ISO 9001:2000. Although this research provides preliminary support, further work is

needed to gauge specific results within each RDA as they pertain to Deming's model. To address this, the eleven RDA's that participated in this case study should be re-interviewed with respect to each of the seven underlying areas of Deming's Management Principles as proposed by Anderson et al. (1994).

Based on the research findings, Regional Development Authorities provide an excellent case study that contributes to the academic literature on how the public sector can benefit from adopting quality management systems. Through this study, opportunities for improved benefit to the RDA's as they continue to implement ISO 9001:2000 have also been identified, which will serve to strengthen RDA operations into the future.

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INTRODUCTION

The ISO 9001:2000 standard was developed to assist organizations in creating a culture that is customer focused and that ensures that organizations are better equipped to meet or exceed the expectations and needs of their stakeholders. The standard creates internal controls on processes which allow organizations to continuously improve their operations and provide standardized levels of service. Although originally designed for the manufacturing sector, ISO 9001:2000 is becoming increasingly popular in non-traditional private and public sector entities.

In 2005, all Regional Development Authorities (RDA's) across the Province of Nova Scotia became ISO 9001:2000 certified. This was a project that was championed and administered through the Nova Scotia Association of Regional Development Authorities (NSARDA) and funded by both the Province of Nova Scotia and the Federal Government. This initiative signified the first time in North America that an entire association of public sector economic development agencies received such a designation. As noted by Honourable Ernest Fage, Minister of Economic Development for the Province of Nova Scotia, at the official press event for the occasion "we're celebrating a benchmark Nova Scotia is creating in the community economic development community world-wide. Each and every RDA in our jurisdiction either has, or very shortly will have, ISO 9001:2000 designation....reaching the pinnacle of international quality management" (Fage, 2005).

One of the main issues with the implementation of ISO 9001:2000 within RDA's is that since the initial registration process, there has been no formal evaluation conducted of the process to determine the areas in which it has had the most benefit and to identify areas in which there has been little, or negative, impact.

The main objective of this research is to conduct a study of the effectiveness of ISO 9001:2000 on the eleven certified RDA's across the Province of Nova Scotia. The results of this research will provide a validation of ISO 9001:2000 certification efforts to date among RDA's and will identify opportunities for improvement to maximize the benefits of ISO 9001:2000 in the future. This research also provides a contribution to the literature in terms of the benefit and applicability of quality management systems within the public sector, of which to date little has been written.

This paper examines the current academic literature and highlights the main theories and trends of quality management, with an emphasis on Deming's Management Model and the benefits and weaknesses associated with quality management systems. The literature review also examines the shift toward New Public Management in the public sector, of which quality management is a key component.

The paper then discusses the conceptual framework for the research and highlights the methodology that was utilized. Key findings are summarized and presented in terms of their contributions to the academic literature. The key findings are then used to provide an overall assessment of the effectiveness of ISO 9001:2000 for RDA's and to provide an

indication of areas in which it has had the greatest impact. The paper concludes with recommendations for next steps, both in terms of academic study and for the Nova Scotia Association of Regional Development Authorities to utilize to ensure maximization of the benefits of ISO 9001:2000 into the future.

BACKGROUND

Regional Development Authorities are not-for-profit, public entities funded by all three levels of government. RDA's are mandated to provide regional economic and community development services to the regions that they service. RDA's have been operating in a formally recognized manner since 1994. As of 2001, RDA's have contributed to the creation and maintenance of a provincial coordinating body, the Nova Scotia Association of Regional Development Authorities.

In 2003, NSARDA, on behalf of its membership, began securing funding for each Regional Development Authority within Nova Scotia to undertake the ISO 9001:2000 registration process. The lone exception to the scope of the project was the South West Shore Development Authority, which had already become registered in the summer of 2003. The total value of the project was budgeted at \$210,000, which included \$120,000 for a consultant to work with the RDA's on the development of their Quality Manuals, \$12,000 in project fees for NSARDA, and \$78,000 to cover third party registration and audit fees for the first three years. Funding was secured through the RDA's (\$24,000), ACOA and Enterprise Cape Breton Corporation (\$156,000) and the Province of Nova Scotia Department of Economic and Rural Development (\$30,000).

The premise for undertaking certification was multi-dimensional and was summarized in NSARDA's 2003-2004 Annual Business Plan as follows:

The challenging funding environment of RDA's has increased the need for standards to help improve the quality and performance of each RDA and offer accountability to the stakeholders...The critical component to establishing standards for the RDA's is to ensure that the flexibility and responsiveness for each RDA and their community is maintained while developing common practices and processes to support and manage continued RDA growth...(these standards) must provide repeated processes, quality management of each RDA, develop a level of accountability and transparency, and create a common operational environment for the RDA's at a provincial level...The model that best addresses this challenge is based on the ISO 9001:2000 standard (Boston, 2003, p. 23).

In 2004, RDA's began preparing for their initial registration. Through the external funding that was received, each RDA was allocated financial resources to cover the expenses associated with the initial registration and surveillance audits for the subsequent three years.

Over the course of 2004 and early 2005, RDA's diligently worked on developing their Quality Manuals and implementing appropriate procedures. As a result of this effort, in the summer of 2005, each RDA was successful in obtaining their ISO 9001:2000 designations.

Since 2005, each RDA has undergone an annual surveillance audit and in 2008, each RDA was subjected to a full audit review. Over this time frame, some RDA's have continued to operate under their original Quality Manual, others have made modest alterations and a few have undertaken complete reissues. However, all RDA's have continued to actively use the ISO framework, albeit in different ways and to varying degrees. In 2008, maintaining the ISO 9001:2000 designation became a formal requirement for funding for RDA's to receive their contributions from the Province of Nova Scotia.

Since 2005, one new RDA, Greater Halifax Partnership, has joined NSARDA and one, Annapolis Digby Regional Development Authority, has replaced one of the original twelve RDA's that was ISO 9001:2000 registered, the Western Valley Regional Development Authority, which was dissolved in 2005 shortly after obtaining their designation. Under the requirements of the Province of Nova Scotia, these two RDA's must now become designated under ISO 9001:2000. Additionally, NSARDA, although the champion behind the initial ISO 9001:2000 registration process, has not yet become ISO registered. As such, plans are underway for the organization to undertake the process in the coming fiscal year along with the remaining two RDA's.

In light of the fact that the majority of RDA's have been ISO 9001:2000 certified for three years, three others are in the process of becoming certified (including NSARDA), and ISO 9001:2000 registration is now a formal funding requirement of the Province of Nova Scotia, a review of the effectiveness of ISO 9001:2000 on RDA's is timely and essential. Several critics, both internal and external to the organization, have observed the tremendous resource requirements of RDA's that appear to be required to both receive and maintain ISO certification. Others question whether the benefits derived from enhanced quality management and customer service outweigh the demands placed on the RDA's to administer ISO 9001:2000. With these concerns in mind, this research paper will provide a thorough analysis of the effectiveness of ISO 9001:2000 to date.

LITERATURE REVIEW

Overview of Quality Management Approaches

As noted by Connor (1997), the quality movement has one core idea: goods and services must achieve the highest attainable quality and not accept anything less. This concept has achieved a dominant place in the minds of managers in the late 20th century (Connor, 1997). There are many varying approaches to the concept of quality management (Connor, 1997). The first, and most widely recognized, approach is known as the Total Quality Management approach. Total Quality Management (TQM) is the practice of transforming the way organizations work to achieve the goal of highest attainable quality. In TQM, organizations use specific methods or tools, however sometimes in the absence of an overall plan or commitment to an organizational philosophy of total quality management. The guru approach is when managers learn and embrace the philosophy of a particular leader in quality theory and implement this within their own organization. The organizational exemplar approach occurs when organizations visit and learn from other organizations that are well known for their success with total quality management. The Japanese total quality approach occurs when organizations examine implementation strategies and techniques used by Japanese winners of the Deming prize. Finally, the prize criteria approach occurs when organizations use criteria for the Deming Prize or Baldrige Award to identify specific areas of improvement within their own organization (Connor, 1997).

There are several assumptions that are made by those organizations that practice areas of the quality movement (Spencer, 1994, Connor, 1997). The first is that despite a strong emphasis on statistical control procedures, all versions of the quality movement hold that people are critical to achieving quality objectives (Connor, 1997). The second is that assumptions are made regarding how people can be motivated to work energetically and intelligently toward achieving organizational objectives and mandates. This latter assumption centers around the idea that people want to contribute to the success of the organization (Connor, 1997). The third assumption is that managers can manipulate or shape the organizational culture to enhance performance or ensure survival (Spencer, 1994).

One of the derived benefits of quality management systems is the outcome of management innovation, which is, at an operational level, the generation and implementation of new practices, processes, structures or techniques which result in observable change to the way in which work is accomplished (Birkinshaw & Mol, 2005, p.831). However, there are also identified weaknesses with respect to quality management systems. Connor (1997) notes that the one idea that quality management systems offer is to “do perfect work”, which is an often unrealistic expectation. Connor (1997) tempers this finding by noting that despite this being the only new idea it brings, that quality management systems also remind organizations of two very important concepts: that people want to experience meaning in and from their work and that teams are the key to organizational effectiveness. The challenge, and often weakness of quality management systems, is in the ability to allow people to derive meaning from their work

and to build effective teamwork within organizations. Furthermore, Connor (1997) notes that there are four negative consequences that can arise from quality management systems. These include 1) management fears and egos can prevent them from serving their employees, as well as their customers, and giving them the freedom to fail; 2) TQM is silent on the people aspect of quality, with its main focus being on training in a limited and technical sense; 3) operationally, TQM is more talk than action when it comes to participation by non-management people in meaningful decisions; and 4) quality teams are too easily used by management to blur the division between work time and personal time and may take embracing TQM principles to the extreme and detriment of their well being.

An additional weakness with quality management systems is that very little study has been conducted within the academic literature to determine the economic and social consequences of their adoption (Westphal et al., 1997). Without this empirical evidence of success, critics have questioned the effectiveness of quality management systems, citing the inability of quality management systems to transfer to all organizations, high levels of initial investment and the absence of operationalization (Hyde, 1992). Furthermore, critics also caution that adopting quality management systems require extensive discipline and significant organizational investments (Hyde, 1992)

Deming's Principles of Quality Management

Of the many authors on quality management systems, one of the most renowned is Deming, who proposed a 14 point model in the early 1980's that captured the principles of quality management and served as a guideline for appropriate organizational behaviour and practice regarding quality management (Anderson et al, 1994, Connor, 1997, Deming, 1982). Deming's model is founded in a customer-led definition of quality and places a main emphasis on process. It is a holistic approach that has, to date, primarily been applied within a manufacturing environment. Externally, Deming emphasized the need for anticipating customer needs and surprising customers with the end result. Deming also emphasized the need to form strong relationships with suppliers. Internally, Deming viewed top management as the primary change agent, tasked with the role of promoting quality and working on the continuously improving the quality management system (Deming, 1982). Deming viewed the management style as one that is participative and felt that quality needed to become engrained within the organization's culture (Appleby & Clark, 1997).

Specifically, the 14 points proposed by Deming included: creating consistency of purpose for improvement of product and service; adopting the new philosophy; ceasing dependence on mass inspection; ending the practice of awarding business on price tag alone; constantly improving the system of production and service on a permanent basis; instituting modern methods of training on the job; instituting modern methods of supervising; driving out fear; breaking down the barriers between departments; eliminating numerical goals for the workplace; eliminating work standards and numerical quotas; removing barriers that hinder hourly workers; instituting a vigorous program of

education and training; and creating a structure in top management that will ensure that each of the points will be implemented (Deming, 1982).

Deming placed an emphasis on statistical process control, resulting in a philosophy of continuous improvement within the organization. What is also a key consideration of the Deming's principles of quality management is the emphasis on human capital within the organization as a necessity for quality success. Deming also placed a strong emphasis on employee involvement and participation, as well as on education and training. He strongly believed that through quality management, employees would witness increased job satisfaction through quality and pride in their workmanship (Appleby & Clark, 1997).

As noted by Spencer (1994), Deming's Management Model seems to "graft mechanistic and organismic concepts into a coherent whole" (p. 467). Spencer also noted that Deming's model emphasizes an organizational system that is embedded into a broader environment (p. 458). Anderson et al (1994) specifically discuss this by examining the concepts in which the Deming's principles of quality management is founded. The seven main concepts that they discuss include: visionary leadership; internal and external cooperation; learning; process management; continuous improvement; employee fulfillment; and customer satisfaction. Additionally, through their research, Anderson et al (1994) concluded that Deming's principles of quality management theoretically concerns the creation of an organizational system that fosters cooperation and learning for facilitating the implementation of process management practices. This leads to continuous improvement of processes, products and services, as well as to employee fulfillment. This in turn results in customer satisfaction and firm survival. Furthermore, in order for all of these elements to fall into place as a result of quality management, organizational leadership must be present to create and communicate visions around quality management and continuous improvement and to provide support to the development and sustainability of an organizational system that is receptive to process management practices (p. 473).

Although Deming is considered a founding father of academic work related to the quality movement, little empirical evidence has been provided in the academic literature in support of his theories. As noted by Anderson et al. (1994), "despite the apparent effect that the Deming's principles of quality management has had on the practice of management around the world, there is little empirical research support for its effectiveness beyond anecdotal evidence" (p. 473). Furthermore, Anderson et al. (1994) note that academic attention on the Deming management method has been surprisingly sparse considering the role that the Deming method has played in the formalization and advancement of management theory. Even in the research presented by Anderson et al. (1994), the main objective was to "propose and articulate a theory of quality management underlying the Deming management method, leaving verification of the proposed theory for later" (p. 473). These concepts, and the Deming Management Method, will be discussed in greater detail throughout this research paper.

Defining ISO 9000

The ISO 9000 series are standards that define requirements (9001) and guidelines (9004) for quality management systems. These standards were first issued in 1987 and revised in 1994 and 2000. The 2000 revision is “probably the most major change in the history of the standard and is considered to have brought it up to date with modern developments in quality thinking and practice. The new version of ISO 9000 places more emphasis on process management and resource management” (Bendell & Boulter, 2004, p. 296). This revision also moved the standard closer to achieving the principles of TQM.

The ISO 9000 standards are generic, which means that the same standards can be applied to any organization regardless of size and scope. As noted by van de Heuvel et al. (2005), these standards can apply “whether its product or service, in any activity whether it is a business enterprise or a public administration of a government department” (p. 362). ISO takes a systems and process approach to improving organizational performance and strives to meet customer quality requirements; meet applicable regulatory requirements; enhance customer satisfaction; and achieve an environment of continuous improvement. At the end of December 2002, more than 560,000 registrations of ISO 9000 had been issued in 159 countries (van de Heuvel et al., 2005). The most popular perceived benefits of ISO 9000 certification are improved documentation, improved quality perception, disciplined work environment, consistency across the organization, and improved customer confidence (Bhuiyan & Alam, 2005, Williams, 2003). Additionally, organizations become ISO registered for many reasons (Casadesus & Karapetrovic, 2005, Williams, 2004). In a recent study by Williams (2004), it was found that the four main reasons organizations became ISO 9000 certified were customer pressure, improved efficiency/productivity, higher grade product, and image/marketing advantage.

The International Organisation for Standardization (ISO) defines quality as an aggregate measure of the degree to which a product meets its needs (Ruzevicius, 2005). Furthermore, ISO defines the product as a result of any action or process (Ruzevicius, 2005). There are eight quality management principles that define the ISO 9001:2000 standard: customer focus, leadership, involvement of people, process approach, systems approach to management, continual improvement, factual approach to decision making and mutually beneficially supplier relationships.

TQM versus ISO

The concepts of TQM and ISO have been in the forefront of academic discussion since the early 1980's. As noted by Martinez-Costa et al. (2008), although some authors consider the quality management movement to be a fad, “after two decades it is still an important area of research in management as demonstrated by many papers still published on this topic” (p. 23).

The concept of Total Quality Management has been defined in many ways by various academics. One of the most comprehensive definitions of TQM was summarized by Hyde (1992), which stated:

TQM is both a philosophy and a set of guiding principles that represent the foundation of a continuously improving organization. TQM is the application of quantitative methods and human resources to improve materials and services supplied to an organization, all of the processes within an organization, and the degree to which the needs of the customer are met, now and in the future. TQM integrates fundamental management techniques, existing improvement efforts, and technical tools under a disciplined approach focused on continuous improvement (p. 26)

Many studies have examined the success and failure rates of TQM over the past few decades. Some have reported TQM failure rates as high as 60-67%, while others have been more optimistic, citing 83% of surveyed companies as having had a very positive experience with TQM (Sila, 2007). The majority of studies, however, have tended to present a positive correlation between TQM and performance and/or customer satisfaction (Martinez-Costa et al., 2008).

There is much debate in the literature on how ISO 9000 standards tie into the TQM philosophy. As noted by Gotzamani & Tsiotras (2001), there are eight key questions that commonly appear in the literature with respect to ISO and their relationship to TQM. These include:

- Can quality assurance standards boost and increase a company's commitment to quality?
- Do they really encourage continuous improvement?
- What are the real motives behind certification?
- Is it a sign of commitment or is it just another marketing tool?
- Can it serve as a first step towards total quality management (TQM) when this is the company's final target?
- What will this "certification fashion" leave behind it when the temporary competitive advantage of certification is lost?
- Will it have emphasized and strengthened the importance of quality throughout the company?
- Will it have left a modernized system of quality management, with the capability to evolve into TQM, or will it just leave a complicated, bureaucratic and non-flexible system, together with a general feeling of disappointment and discontent about quality and quality improvement programs?

Ultimately, several authors, (Gotzamani & Tsiotras, 2001; Piskar & Dolinsek, 2006), do feel that organizations that become ISO 9000 registered can utilize that foundation as a step toward implementing a TQM approach. As noted by Piskar & Dolinksek (2006) "companies without an implemented quality management system, as well as enterprises with the existing quality system can (utilize the research findings of ISO) in order to ensure continuous improvement of their business activities in the direction of the TQM business model" (p. 1333).

Through recent research, Gotzamani & Tsiotras (2001) found that companies that were ISO 9000 registered performed better in the eight basic TQM categories (leadership, strategic quality planning, quality data, human resource management, project management, suppliers, customers, and product design) after registration than they scored in the pre-ISO environment. The companies' TQM performance after ISO certification was found to be most prominent in the areas of "product design", "strategic quality planning" and "process management", with a greater need for improvement in the areas of "human resource management" and "supplier relations". It was also found that companies with a lower performance in TQM prior to ISO certification benefit more from it, however even in cases where companies scored higher in TQM prior to certification, ISO 9000 certification did offer some progress toward improvements in TQM. This study also noted that the ISO 9001:2000 standard, which was not in place at the time of the research, now addresses some of these weaknesses as it aims at "customer satisfaction assurance" and not just "product quality assurance" (Gotzamani & Tsiotras, 2001, p. 1340). Biazzo & Bernardi (2003) follow up on this notion by stating that the new ISO 9001:2000 model "harmonizes normative requirements with a concept of quality management that is in line with the developments in the field of TQM...(this) can be an important catalyst and stimulus for organizational innovation" (p. 164).

Several authors, however, disagree that ISO is an effective process for achievement of TQM within organizations. Dick (2000) noted that only 40% of ISO certified firms met the requirements for the Baldrige Award. Furthermore, Dick (2000) stated that ISO accreditation can be too easily achieved by those who just want the badge; the standards can lead to an inappropriate emphasis (fostering bureaucratic paperwork rather than quality improvement); quality differentials are less between firms than they were (good quality is now the norm rather than the exception); and that TQM quality initiatives provide greater business performance improvement opportunities than ISO 9000 quality management systems (p. 369). Furthermore, in a recent study Casadesus & Karapetrovic (2005) found that the perceived benefits of ISO registered organizations have in fact been decreasing since 1998. However, despite some of the negative coverage of ISO within the academic literature,, Saraiva & Duarte (2003) forecasted an evolution in the total number of certificates issued in the world between 2002 and 2006 and a recent study by Corbett et al (2005) was able to identify a positive financial impact on companies that had adopted ISO 9000.

Quality Management Systems in the Public Sector

Over the past few decades, the public sector has shifted towards adopting more business-like practices within their operations and procedures, a practice that is often referred to as New Public Management (NPM) (Beckett, 186). This movement has primarily arisen from public demands that government operate more like a business, in that it become more cost-effective, competitive, entrepreneurial and dedicated to pleasing the customer (Box, 1999). The literature, however, is mixed on how applicable and beneficial adopting private sector practices have been for the public sector. Some academics argue that public and private organizations are too fundamentally different to use similar practices. As noted in the literature, the main differences between the two are ownership (member of

political communities versus entrepreneurs and shareholders); funding (taxation versus customer fees); and control (political forces versus market forces) (Boyne, 2002). Based on these differences, some have argued that adopting private sector practices into the public sector is counterproductive and that the fundamental differences between private and public sector entities act as barriers to the transfer of management techniques from one to the other (Boyne, 2002). In an earlier work, Allison (1979) notes that “the notion that there is any significant body of private management practices and skills that can be transferred directly to public management tasks in a way that produces significant improvements is wrong” (p. 472). Furthermore, Rosenblum (1998) notes that NPM “would remake public administration in the image of business apparently without recognizing the degree to which the Constitution places substantive, procedural and organizational constraints on government that simply do not apply to private enterprise” (p. 1).

Other academics, however, argue that public managers can learn significant and useful lessons from their private sector counterparts. In a study conducted by Boyne (2002), it was found that little empirical evidence exists that supports the argument that the public and private sectors are fundamentally too different. In this study, it was argued that using this argument provides a “narrow and uncertain foundation for rejecting the element of New Public Management that seeks to draw lessons from the private sector” (p. 116). Specifically, as noted by Boyne (2002), one of the earliest and most enduring features of the shift toward NPM has been the adoption by the public sector of successful private-sector techniques such as management by objectives, total quality management and devolved management. By using these techniques, public sector entities can become more entrepreneurial, flexible and decentralized. They can also serve to empower employees, introduce quality circles, measure performance and focus on quality (Osborne, 1993).

There is much that the public sector can learn from studying quality management practices in the private sector. The basic elements of New Public Management in the public sector have placed an emphasis on the need to “improve service quality and an equally relentless emphasis on customer satisfaction” (Connor, 1997, p. 501). As noted by Kettl (1997), governments have moved toward focusing on customer satisfaction and providing “quality as the customer defines it” (p. 447). Furthermore, many organizations, large and small, manufacturing and service, profit and non-profit, have embraced the belief that effective quality management can enhance their competitive abilities and provide strategic advantages in the workplace (Anderson et al., 1994).

Redman et al (1995) summarize the recent pressures on the public sector that make quality management systems appealing. These pressures include: legislation that now gives more choice to consumers; compulsory competitive tendering; increasing pressures on cost restraint; the demands of value for money reforms; and more demanding customer requirements (p. 22). Furthermore, quality management in the public sector, and particularly in local governments, has been driven by rising customer expectations, constraints on spending, government policy and the politicization of quality (Appleby & Clark, 1997).

In recent times, TQM is being touted as the necessary modernization process that will make governments more effective and fiscally responsible (Hyde, 1992). However, little exists in the academic literature on quality management in the public sector. As noted by Redman et al. (1995) “much of the literature has concentrated on private sector, profit generating, services...we appear to know rather less about quality management practices in the public sector (p. 21).

Within the limited academic literature that does exist, several authors tout the potential of quality management in the public sector. As noted by Redman et al (1995), TQM has been proposed as the solution to all of the complex problems facing the public sector. Specifically, it has been viewed as a mechanism to achieving efficiency and culture change in the civil service (Redman et al., 1995). However, there are obstacles that face public sector organizations that wish to adopt TQM (Hyde, 1992). The first is that quality management systems have to be developed and made accessible to all levels. Secondly, in developing quality measurement systems, employees must be able to participate in the initial design stage to ensure that “not only will the information and analysis generated have meaning for them but that it is continuously developed and refined by workers” (Hyde, 1992, p. 31). The third obstacle is that TQM negotiations and discussions with unions must lead to true involvement and not just additional consultation. The fourth obstacle is that major modifications must be made in applying customer feedback on quality for recipients of public sector products and services. Fifthly, TQM in the public sector must strive to realign budgeting and resource allocation systems with quality improvement systems. Finally, TQM and human resource management systems must be completely refocused. As noted by Hyde (1992) “efforts must range from reforming work design to recalibrating compensation and performance appraisal and training and development systems to complement the organization’s quality management process” (p.33).

Critics of implementing quality management systems in the public sector also caution that the success of implementation may come at the expense of declining levels of service provision, job losses, the intensification of work for public sector staff, the undermining of trade union influence and employment conditions; and increases in the level of stress-related illnesses and ill health retirements among public sector employees (Redman et al., 1995). One of the biggest challenges, therefore, facing the public sector in implementing TQM is charting a path that will balance the measurement requirements and participative management demands and reconcile budgetary and personnel management conflicts (Hyde, 1992).

With specific respect to implementing ISO 9000 within the public sector, achieving certification is a growing trend. Organizations are choosing ISO because it is viewed as a business management tool and it encourages a team approach to implementing processes that are geared to monitoring, measuring and improving results. As noted by Moffat (2002), while ISO 9000 is only one vehicle of quality management, it is an internationally recognized set of standards and ultimately results in better value for tax payer dollars.

In a recent study by van de Heuvel et al. (2005) of the results of ISO 9001:2000 in a public setting, it was found that there are a number of advantages that resulted from implementing ISO. In their study, customer focus was re-established; processes became clearly identified and subject to continuous improvement; performance measurements were introduced and provided an integrated picture of results; and the documentation system served the organization's needs without leading to bureaucracy.

The following section frames the context for this research paper. It provides a summary of the eight quality management principles of ISO 9001:2000 and how they were intended to have benefit within the participating Regional Development Authorities. It then provides a discussion on the main hypothesis for this research.

CONCEPTUAL FRAMEWORK

This research paper is focused on providing the Nova Scotia Association of Regional Development Authorities with an in-depth analysis of the effectiveness of the ISO 9001:2000 registration process to date for their member organizations, along with recommendations for improvements in moving forward. As no formal study has yet been conducted on the benefits and challenges of ISO 9001:2000 for certified Regional Development Authorities, it is timely to conduct such research and provide recommendations to maximize benefits of the quality management systems.

Initially, NSARDA proposed that the ISO 9001:2000 certification would have a positive affect on their member Regional Development Authorities within the eight quality management principle categories of ISO 9001:2000. These areas of intended benefit included customer focus, leadership, involvement of people, process approach, systems approach to management, continual improvement, factual approach to decision making and mutually beneficially supplier relationships. A description of the intended benefits within each of these areas is depicted in Figure 1.

Figure 1: Quality Management Principles and Intended Benefits Driving RDA ISO 9001:2000 Certification.

Benefit	Description
Customer Focus	RDA's depend on their customers and therefore should understand current and future customer needs, meet customer requirements and strive to exceed customer requirements.
Leadership	RDA leaders establish unity of purpose and the direction of the organization. They create an environment where people can become fully involved in achieving the organization's objectives.
Involvement of People	People at all levels within the RDA are recognized as the essence of the organization, and their full involvement enables their abilities to be used for the organization's benefit.
Process Approach	A desired result is achieved more efficiently when related RDA resources and activities are managed as a process.
System Approach to Management	Identifying, understanding and managing a system of interrelated processes for a given objective improves the RDA's effectiveness and efficiency.
Continual Improvement	Continual improvement should be a permanent objective of the RDA.

Factual Approach to Decision Making	Effective decisions by the RDA are based on the analysis of data and information.
Mutually Beneficially Supplier Relationships	The RDA and its suppliers are interdependent, and a mutually beneficial relationship enhances the ability of both to create value.

Source: Boston, 2003, p. 24

It was anticipated that RDA's would better understand the requirements of their customers and be better able to exceed customer expectations. It was also thought that RDA's would create unity of purpose and direction of their organizations where all employees would become fully involved in achieving the organization's objectives. Additionally, benefits were to include better recognizing and maximizing the contributions of staff members within each RDA; improved management of resources and activities through a controlled process; improved effectiveness and efficiency of RDA operations through the management of a system of inter-related processes; and fostering an environment of continuous improvement within RDA's. Finally, ISO 9001:2000 was intended to provide RDA's with the ability to make more effective decisions through the sound analysis of data and to create an environment of mutual benefit for both RDA's and their suppliers.

Through this research, it is hypothesized that ISO 9001:2000 certification within RDA's is associated with improvements in all eight areas of quality management principles of ISO 9001:2000. Specifically, it is anticipated that ISO 9001:2000:

- Helps RDA's improve customer focus;
- Helps RDA's improve their abilities to exceed customer requirements;
- Helps involve staff members in achieving the objectives of RDA's;
- Helps provide clarity in organizational direction;
- Helps improve staff morale;
- Helps improve staff cohesiveness;
- Helps maximize the talents and abilities of RDA staff members;
- Helps to recognize staff as essential components of RDA success;
- Helps facilitate the development of effective processes;
- Helps achieve greater effectiveness in achieving objectives;
- Helps achieve greater efficiencies in achieving objectives;
- Helps foster an environment committed to continual improvement;
- Helps encourage a more factual approach to decision making;
- Helps improve RDA and supplier relationships;
- Helps to create improved mutual benefit between RDA's and their suppliers.

Hypothesis: For each of the above listed benefits of ISO 9001:2000, it is anticipated that there will be a positive difference between the pre and post ISO 9001:2000 environments at a 99% confidence level.

Null Hypothesis: For each of the above listed benefits of ISO 9001:2000, it is anticipated that there will be no difference between the pre and post ISO 9001:2000 environments at a 99% confidence level.

The following section describes the methodology used in framing and conducting this research paper. The elements of research design, sampling, data gathering approaches and methods of analysis are all discussed.

METHODOLOGY

Research Design

This research paper utilized a combination of both primary and secondary research. A comprehensive review of the secondary literature on quality management systems, including ISO 9001:2000, was first undertaken to provide an indication of the level of success quality management systems have brought other organizations in both the public and private sectors. During this research phase, an emphasis was placed on Deming's principles of quality management. Conducting secondary research was essential in providing the background needed to undertake the primary research phase of the research project. The main weakness of this approach was that the volume of literature that was applicable in a public sector setting was limited. Additionally, there were limited empirical studies found that related to the effectiveness of quality management systems, including ISO 9001:2000.

The eleven ISO 9001:2000 registered RDA's within the Province of Nova Scotia were chosen as the target for the primary research of this report. Additionally, the four initial funding and administrative partners on the ISO 9001:2000 certification initiative for RDA's were also chosen. Two separate interviews were designed and conducted with participants throughout the month of February 2009. The interview approach was chosen to encourage open discussion, ensure a response rate of 100%, and to allow for Regional Development Authorities to have more than one representative attend the interview to provide input and discussion into the interview questions

Sample

The full population of Regional Development Authorities was represented in the research study, with all eleven RDA's and all four funding and administrative partners participating in the interviews. Achieving a participation rate of 100% allowed for the opinions and experiences of all stakeholders to be included in the research findings.

Data Gathering Approaches

The first stakeholder group consisted of four separate interviews with representatives from Enterprise Cape Breton Corporation, Nova Scotia Association of Regional Development Authorities, Atlantic Canada Opportunities Agency and Nova Scotia Department of Economic and Rural Development. A copy of the stakeholder interview questions for this group has been attached as Appendix 1. Each of these groups served as funding partners and administrators in the ISO 9001:2000 registration process for Regional Development Authorities. Interviews were conducted with a senior level staff member from each organization who was involved with the project since the inception. Three of these interviews were conducted in person and the other was administered over the phone. Figure 2 depicts how the interviews with this stakeholder group were conducted.

Figure 2: Method of Interview Delivery – Funding and Project Administration Stakeholder Group

Organization	In Person	Phone
Atlantic Canada Opportunities Agency	√	
Enterprise Cape Breton Corporation	√	
Nova Scotia Association of Regional Development Authorities		√
Nova Scotia Department of Economic and Rural Development	√	

The interview questions for this stakeholder group were more general in nature and encouraged primarily qualitative responses. Stakeholders in this group were asked about their initial expectations of ISO 9001:2000, as well as the contributions they made to the project in terms of both financial and in-kind support. These stakeholders were also asked whether or not they have seen improvements within the ISO 9001:2000 certified RDA’s in each of the eight categories of ISO 9001:2000 quality management principles. The interview process concluded by asking if ISO 9001:2000 registrations have improved the effectiveness of RDA operations and if an investment in the initiative would be made again if the project were to start over. These two final questions were designed to gauge the overall satisfaction in the success of RDA ISO 9001:2000 certification from a more external perspective.

The second stakeholder group that was interviewed consisted of the Regional Development Authorities that have been successfully ISO 9001:2000 registered. A copy of the stakeholder interview questions has been attached as Appendix 2. The Chairperson, Executive Director and ISO Coordinator from each RDA were invited to participate in the interview. There was a variation in terms of attendance at each RDA interview, with the Executive Director of each RDA making the decision as to who would be in the best position to respond to the interview questions. Figure 3 depicts interview representation for each of the participating Regional Development Authorities.

Figure 3: Participation at Regional Development Interviews

RDA	Executive Director	ISO Coordinator	Chairperson	Other RDA Staff Person
Antigonish	√	√	√	
Cape Breton		√		
Guysborough	√			
Colchester		√		
Cumberland	√	√		
Kings		√	√	
Hants	√			
Lunenburg-Queens		√		
Pictou	√	√		
South West Shore		√		√
Straight Highlands	√	√		√

Interviews with this stakeholder group were ideally conducted in person, however as an alternate, several phone interviews were also held. Figure 4 illustrates the method of delivery for the RDA interviews.

Figure 4: Method of Interview Delivery – Regional Development Authority Stakeholder Group

RDA	In Person	Phone
Antigonish	√	
Cape Breton	√	
Guysborough	√	
Colchester	√	
Cumberland		√
Kings	√	
Hants	√	
Lunenburg-Queens		√
Pictou	√	
South West Shore		√
Straight Highlands	√	

The interview questions for this stakeholder group were more comprehensive in nature and provide a mix of qualitative and quantitative responses. RDA participants were asked to rate both the pre and post ISO 9001:2000 environments in each of the eight quality management principle categories, and discuss how any improvements have been associated specifically with the ISO 9001:2000 certification. RDA's were also asked specific questions surrounding their financial and in-kind contributions to the initiative since its inception and what cost savings have been identified as a result. Respondents were also asked to rate overall how beneficial they felt ISO 9001:2000 has been in each of the eight categories being evaluated and how costly the process has been with respect to financial and human resources. To conclude the interviews, RDA's were posed two questions: whether or not the benefits of ISO 9001:2000 outweigh the costs and whether or not they would recommend similar entities to become ISO 9001:2000 registered.

Method of Analysis

The results of the interviews conducted with both stakeholder groups were compiled and analyzed to determine improvements made within each RDA with respect to the eight areas being examined and in overall benefit. For each category of analysis, the percentage change between the pre and post ISO 9001:2000 environments was calculated and the mean change was presented. Qualitative data was used to gauge the level of impact of ISO 9001:2000 on the reported percentage changes and examples, where given, were provided to substantiate the findings. Hypothesis testing was then used to determine whether or not improvements were made in each category as hypothesized.

FINDINGS

Context

An overall overview of the context of Regional Development Authorities, including their operating budgets, level of staffing and status of ISO 9001:2000 registrations has been summarized in Appendix 3. Also included in this summary is the level of initial and ongoing financial and in-kind support that has been given to the ISO 9001:2000 certification processes since the inception of the project.

Rationale

Prior to examining the effectiveness of ISO 9001:2000, it is imperative to understand the rationale and expectations that both RDA's and their funding partners initially had for the process. The funding and administrative partners of the ISO 9001:2000 registration initiative for Regional Development Authorities initially became involved for several key reasons. The primary reason was that it was felt that ISO 9001:2000 registration would provide consistency and standardization among RDA's from across the province in the areas of reporting and management of projects. It was also felt that ISO would provide common operational core procedures based on the eight elements contained within the ISO framework that could be tailored to meet the needs of each individual RDA. Additionally, it was anticipated that undertaking the registration process would allow for improved operational environments within RDA's, would allow the RDA's to be recognized internationally, would allow the RDA's achieve enhanced credibility, and would provide a benchmark for purposes of accountability.

Conversely, the majority of RDA's, at 73%, decided to undertake the ISO 9001:2000 registration process because either the existing registered RDA, South West Shore Development Authority, or NSARDA convinced them that it was a reasonable initiative to become involved in. These RDA's felt that since it was being positioned as a pan-provincial initiative, they had little choice but to become involved with their peers.

Of the remaining 27% of RDA's, reasons for becoming involved in ISO 9001:2000 primarily included the notion that registration would provide credibility for the RDA's and would allow for improved business activity and recognition on an international stage. There was also the anticipation that ISO would provide the tools needed for improved management and organizational succession.

The following sections will provide details on each of the ISO 9001:2000 eight categories of quality management principles that were studied. For each section, the research rationale will be provided, followed by an assessment of the pre-ISO 9001:2000 environment, an assessment of the post-ISO 9001:2000 environment, a qualitative discussion on the results, and general observations. For each category, the results of the hypothesis testing will also be provided,

Customer Focus

Research Rationale

Customer focus is one of the eight quality management principles of ISO 9001:2000, and is an area in which intended benefit was to be realized by RDA's. As noted in the initial funding proposal for the ISO 9001:2000 project, RDA's depend on their customers and therefore should understand current and future customer needs, consistently meet customer requirements and strive to exceed customer expectations.

Customer Focus Findings – Pre-ISO 9001:2000

Pre-ISO registration, RDA's ranked their ability, on average, to focus on customer needs at a 6.6 on a scale of 1 to 10, with one being not at all focused and ten being completely focused. The range of responses varied from 1 to 10. Although many RDA's felt that they have always been client focused, some noted that pre-ISO their projects had little evaluation and follow up with respect to how well they focused on the needs of their customers. Others felt that they had challenges identifying precisely who their clients were.

Customer Focus Findings – Post ISO 9001:2000

After ISO registration, RDA's ranked their ability, on the same scale of 1 to 10, on average at 8.8, with a range of 7 to 10. The average percentage change between the pre-ISO and post-ISO rankings was 33.33%. Figure 5 provides an overall summary of the results for the area of customer focus.

Figure 5: RDA Responses in the Area of Customer Focus

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA's Able to Identify Specific Benefit from ISO 9001:2000
Customer Focus				
Focus on Customer Needs	6.6	8.8	33.33%	100%
Ability to Exceed Customer Requirements	6.8	8.4	23.53%	73%

The null hypothesis for the area of customer focus was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-2.891554959$, $df=10$ and $p=0.008$. Since $p=0.008$ and the t-value is larger than the tabled t-value of 2.764, the null hypothesis can be rejected at a 99% confidence level.

Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 99% level.

Customer Focus Findings - Summary

100% of RDA's surveyed were able to provide examples where ISO registration assisted in improving their ability to focus on the needs of their clients and customers. RDA's felt that ISO holds them accountable to focusing on customer needs and helps to capture data in a more effective and formalized manner. It also provides a mechanism for enhancing open communication between the RDA and their clients and documenting expectations at the front end of all projects. An example provided by one RDA is that through ISO 9001:2000, a community support agreement was developed which enables both their staff and their clients to agree to, and sign off on, the terms of work prior to the initiative being undertaken. As one RDA noted "ISO 9001:2000 has forced us to think about the chain of event process – who the customers are, what their needs are, and how these link to the services we provide".

Exceeding Customer Expectation Findings – Pre-ISO 9001:2000

With respect to how RDA's are effectively able to exceed customer requirements, RDA's on average provided a ranking of their ability pre-ISO of 6.8 on a scale of 1 to 10, with one being not at all effectively and ten being completely effectively. The range of responses varied from 1 to 9. Overall, RDA's felt that they had decent systems in place to monitor how well they were exceeding customer requirements, however some RDA's indicated that they experienced challenges in responding quickly to clients, that they did not adequately measure client satisfaction levels and that record keeping of feedback was inconsistent.

Exceeding Customer Expectation Findings – Post-ISO 9001:2000

Using the same scale, RDA's ranked their ability to effectively exceed customer requirements at an 8.4 post-ISO registration, with a range of 7 to 10. The average percentage change between the pre-ISO and post-ISO rankings was 23.53%. These results are also depicted in Figure 5.

The null hypothesis for the area of exceeding customer requirements was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-2.272535635$, $df=10$ and $p=0.023$. Since the p-value is greater than 0.01, the null hypothesis cannot be rejected at a 99% confidence level. It can, however, be rejected at the 95% confidence level, as the t-value is greater than the tabled t-value of 1.812. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 95% level.

Exceeding Customer Expectations Findings – Summary

With respect to exceeding customer requirements, 27% of RDA's did not feel that ISO made a difference. Of the other 73%, RDA's felt that ISO holds them accountable in striving to exceed customer requirements. It was also indicated that ISO has provided the RDA's with the tools needed to capture performance-related data and analyze it in a meaningful way. Through this analysis, the RDA's have been able to make improvements to their programs and services so that results can continually be enhanced.

Leadership

Research Rationale

Leadership is one of the eight quality management principles of ISO 9001:2000 and is an area in which Regional Development Authorities anticipated deriving benefits through the registration process. As noted in the initial proposal, the goal under the leadership category was for RDA leaders to establish unity of purpose and direction of the organization and to create an environment where staff members are fully involved in achieving the organization's objectives.

Activeness of Staff Members Findings – Pre-ISO 9001:2000

Prior to ISO 9001:2000 registration, RDA's provided an average ranking of 7.4 on a scale of 1 to 10 when asked to rate how active staff members of the organization were in achieving the organization's objectives. The range of responses varied from 4 to 10. Of those RDA's that ranked lower on the scale, it was felt that meeting the objectives of the organization were not handled as a team approach and objectives were not clearly defined.

Activeness of Staff Members Findings – Post-ISO 9001:2000

In the post-ISO 9001:2000 environment, the average response to the same question was an 8.9, with a range of 8 to 10. The average RDA percentage change between the two time frames was 20.27%, however 45% of RDA's indicated that ISO 9001:2000 did not help improve how active staff members within their organization are in achieving organizational objectives.

The null hypothesis for the area of activeness of staff members in achieving the objectives of the organization was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-2.97309$, $df=10$ and $p=0.007$. Since $p=0.007$ and the t-value is larger than the tabled t-value of 2.764, the null hypothesis can be rejected at a 99% confidence level. Therefore, it appears as though

there is a significant difference between the pre and post ISO environments at the 99% level.

Activeness of Staff Members Findings - Summary

Of those RDA’s that saw benefit, most felt that ISO 9001:2000 had helped to establish clear procedures around involvement of staff and had facilitated the development of clear objectives for the organization as a team. As one RDA noted “all staff members now have input into the business plan. The management style has moved from director-oriented to team-oriented. Since staff members are involved in creating the objectives for the organization, they take more care and accountability in ensuring that they are implemented”. A summary of these results is presented in Figure 6.

Clarity of Organizational Direction Findings – Pre-ISO 9001:2000

Prior to ISO 9001:2000, RDA’s provided an average ranking of 7.0, on a scale of one to ten, in response to how clear the direction of the organization was. The range of responses varied from 3.5 to 10. RDA’s felt that their objectives were clear, although some respondents indicated that there were no processes in place to ensure that objectives were being followed through.

Clarity of Organizational Direction Findings – Post-ISO 9001:2000

On the same scale in the post ISO 9001:2000 environment, RDA’s provided an average ranking of 8.8, with a range of 7 to 10. The average percentage change between the pre and post ISO 9001:2000 environments was 25.71%. These results are presented in Figure 6.

Figure 6: RDA Responses in the Area of Leadership

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA’s Able to Identify Specific Benefit from ISO 9001:2000
Leadership				
Active Staff Involvement in Achieving Objectives	7.4	8.9	20.27%	55%
Clarity of Organizational Direction	7.0	8.8	25.71	45%

The null hypothesis for the area of clarity of organizational direction was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-3.730019233$, $df=10$ and $p=0.001$. Since $p=0.001$ and the t-value

is larger than the tabled t-value of 2.764, the null hypothesis can be rejected at a 99% confidence level. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 99% level.

Clarity of Organizational Direction Findings - Summary

Despite this increase, 55% of RDA's felt that ISO 9001:2000 had little effect on the clarity of direction for their organizations. Of those RDA's that felt ISO 9001:2000 was of benefit, it was indicated that registration provided the tools to ensure clarity and direction for their organization.

Involvement of People

Research Rationale

Involvement of people is one of the eight quality management principles of ISO 9001:2000 and is an area in which RDA's had anticipated seeing benefit through undertaking the ISO registration process. As noted in the initial funding application, the objective of this principle was for individuals at all levels within RDA's to be recognized as the essence of the organization. It was also to ensure that their full involvement within each RDA would enable their abilities to be used for the benefit of the organization.

Staff Cohesiveness Findings – Pre-ISO 9001:2000

When asked to rate, on a scale of 1 to 10, the level of staff cohesiveness prior to ISO 9001:2000 registration, the average response given by RDA's was a ranking of 6.9, with a range of 2 to 10. A summary of these results is presented in Figure 7.

Staff Cohesiveness Findings – Post-ISO 9001:2000

In the post ISO environment, the average response rose to 8.4, with a range of 7 to 10. The average percentage change in responses between the two time frames was 21.74%, although 54% of respondents indicated that ISO 9001:2000 did not assist with improvements in this area.

The null hypothesis for the area of staff cohesiveness was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-1.826795678$, $df=10$ and $p=0.049$. As the p-value is greater than 0.01, the null hypothesis cannot be rejected at a 99% confidence level. The null hypothesis can, however, be rejected at the 95% confidence level as the t-value is greater than the tabled value of 1.812. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 95% level but not at the 99% level.

Staff Cohesiveness Findings - Summary

Of those that witnessed an improvement in staff cohesiveness as a result of ISO 9001:2000, the main ways cited in which ISO had an impact were in bringing the team together through the Management Review process and through allowing team members to better understand and appreciate the job functions of their co-workers through the auditing process.

Staff Morale Findings – Pre-ISO 9001:2000

When asked to rate, on a scale of 1 to 10, the level of staff morale prior to ISO 9001:2000 registration, the average response by RDA’s was a ranking of 6.6, with a range of 2 to 10. These results are depicted in Figure 7.

Figure 7: RDA Responses in the Area of Involvement of People

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA’s Able to Identify Specific Benefit from ISO 9001:2000
Involvement of People				
Staff Cohesiveness	6.9	8.4	21.74%	45%
Staff Morale	6.6	8.4	27.27%	27%

Staff Morale Findings – Post-ISO 9001:2000

In the post-ISO environment, the average response rose to 8.4, with a range of 5 to 10. The average percentage change in responses between the two time frames was 27.27%, although 73% of RDA’s indicated that ISO 9001:2000 did not assist with improvements in this area.

The null hypothesis for the area of staff morale was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-1.871671394$, $df=10$ and $p=0.045$. As the p-value is greater than 0.01, the null hypothesis cannot be rejected at a 99% confidence level. The null hypothesis can, however, be rejected at the 95% confidence level as the t-value is greater than the tabled t-value of 1.812. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 95% level but not at the 99% level.

Staff Morale Findings - Summary

Several of the responding RDA's indicated that the process of implementing ISO 9001:2000 damaged the morale of their staff. As noted by one such RDA "ISO hindered morale due to the fear of being issued quality improvement reports". Of the RDA's that did feel that ISO had a positive impact, the main reason was cited was now having the processes in place to bring staff members together as a team where they could easily see their contributions being included, which improved their satisfaction and morale.

Process Approach

Research Rationale

Improved process approaches are another of the eight quality management principles of ISO 9001:2000. As noted in the initial funding application for the ISO 9001:2000 initiative, the desired result of this quality management principle is achieved when related RDA resources and activities are managed as a process to improve overall effectiveness.

Process Approach Findings – Pre-ISO 9001:2000

When asked to rate the effectiveness of processes within the RDA pre-ISO, on a scale of one to ten, RDA's provided an average ranking of 5.6, with a range of 1 to 9. These results are illustrated in Figure 8.

Figure 8: RDA Responses in the Area of Process Approach

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA's Able to Identify Specific Benefit from ISO 9001:2000
Process Approach				
Effectiveness of Processes	5.6	8.2	46.43%	91%

Process Approach Findings – Post-ISO 9001:2000

When asked the same question in the post ISO environment, RDA's provided an average ranking of 8.2, with a range of 5.5 to 9.5. The average percentage change between the two time periods was 46.43%, with 91% of RDA's providing examples that ISO 9001:2000 has helped improve the effectiveness of their processes. These results are also depicted in Figure 8.

The null hypothesis for the area of process approach was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it

was determined that $t=-4.413435993$, $df=10$ and $p=0.000$. Since $p=0.000$ and the t-value is larger than the tabled t-value of 2.764, the null hypothesis can be rejected at a 99% confidence level. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 99% level.

Process Approach Findings - Summary

Overall, RDA's felt that ISO processes have allowed them to better track, analyze and access data on a regular basis. One RDA noted that prior to ISO 9001:2000, they did not have a process in place to track and manage financials. This was not an ideal situation for managing projects with a large scope. As a result of ISO 9001:2000, this RDA now has a purchasing policy in place and has the tools needed to effectively monitor project financials, tie them into the budget, and report on the results in a timely manner.

System Approach to Management

Research Rationale

Taking a systems approach to management is another of the eight quality management principles of ISO 9001:2000. As noted in the original funding application, identifying, understanding and managing a system of interrelated processes for given objectives should improve the effectiveness and efficiency of RDA's.

Effectiveness of Achieving Mandate Findings – Pre-ISO 9001:2000

When asked to rate, on a scale of one to ten, the effectiveness of their organizations to achieve its mandate and objectives prior to ISO 9001:2001 registration due to the understanding and implementation of inter-related processes, RDA's provided an average ranking of 6.2, with a range of 1 to 9. RDA's commented that in some cases processes were not integrated or accessible and lacked continuity. As one RDA noted "when the people changed, the processes changed".

Effectiveness of Achieving Mandate Findings – Post-ISO 9001:2000

When asked to provide the same ranking in the post-ISO environment, RDA's provided an average ranking of 8.2, with a range of 5 to 10. A summary of these results is depicted in Figure 9.

Figure 9: RDA Responses in the Area of Systems Approach to Management

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA's Able to Identify Specific Benefit from ISO 9001:2000
Systems Approach to Management				
Effectiveness to Achieve Objectives Due to Inter-Related Processes	6.2	8.2	32.26%	64%
Efficiency to Achieve Objectives Due to Inter-Related Processes	6.0	8.4	40.00%	82%

The null hypothesis for the area of effectiveness of achieving the mandate of the organization due to a series of inter-related processes was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-3.520563335$, $df=10$ and $p=0.003$. Since $p=0.003$ and the t-value is larger than the tabled t-value of 2.764, the null hypothesis can be rejected at a 99% confidence level. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 99% level.

Effectiveness of Achieving Mandate Findings - Summary

The average percentage change between the pre and post ISO environments was 32.26%, with 64% of RDA's providing examples of how ISO has assisted them in this regard. As one RDA noted "developing a series of inter-related processes provided us with tools to manage our resources, provided us with a roadmap, and allowed us to become more accountable. This has ultimately improved our effectiveness as an Agency". A summary of these results are presented in Figure 9.

Efficiency of Achieving Mandate Findings – Pre-ISO 9001:2000

When asked to rate, on a scale of one to ten, the efficiency of their organizations to achieve its mandate and objectives prior to ISO 9001:2000 registration due to the understanding and implementation of inter-related processes, RDA's provided an average ranking of 6.0, with a range of one to nine. RDA's commented that processes were not documented and could vary on a daily basis from one staff member to another.

Efficiency of Achieving Mandate Findings – Post-ISO 9001:2000

When asked to provide the same ranking in for the environment post-ISO registration, RDA's provided an average ranking of 8.4%, with a range of 5.5 to 10. These results are illustrated in Figure 9.

The null hypothesis for the area of efficiency of achieving the mandate of the organization due to a series of inter-related processes was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t = -3.61448698$, $df = 10$ and $p = 0.002$. Since $p = 0.002$ and the t-value is larger than the tabled t-value of 2.764, the null hypothesis can be rejected at a 99% confidence level.

Efficiency of Achieving Mandate Findings - Summary

The average percentage change between the pre and post ISO environments was 40.00%, with 82% of RDA's providing examples of how ISO has assisted them in terms of achieving improved efficiencies. Some of the main examples cited were consistency in processes and improved accessibility of processes, and RDA results, to all staff members.

Continual Improvement

Research Rationale

One of the eight quality management principles of ISO is that continual improvement should become a permanent objective of the RDA. As such, this was one of the areas that was studied to determine whether or not ISO 9001:2000 has had a positive effect.

Continual Improvement Findings – Pre-ISO 9001:2000

When asked to rate, on a scale of 1 to 10, how committed to continuous improvement RDA's were prior to ISO 9001:2000 registration, RDA's on average provided a ranking of 6.9, with a range of one to ten. As one RDA noted "we did not have a clear idea of what continuous improvement really meant".

Continual Improvement Findings – Post-ISO 9001:2000

When asked the same question in the post-ISO environment, RDA's provided an average ranking of 8.9, with a range of 7.5 to 10. These results are depicted in Figure 10.

Figure 10: RDA Responses in the Area of Continual Improvement

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA's Able to Identify Specific Benefit from ISO 9001:2000
Continual Improvement				
Commitment to Continual Improvement	6.9	8.9	28.99%	91%

The null hypothesis for the area of continual improvement was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-2.41017636$, $df=10$ and $p=0.018$. As the p-value is greater than 0.01, the null hypothesis cannot be rejected at a 99% confidence level. It can, however, be rejected at the 95% level of confidence as the t-value is greater than the tabled t-value of 1.812. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 95% level but not at the 99% level.

Continual Improvement Findings - Summary

The average percentage change between the pre and post ISO environments was 28.99%, with 91% of RDA's providing examples of how ISO has helped in the area of continuous improvement. As noted by one RDA "ISO 9001:2000 has helped to lay out clear steps and processes and ensure consistent discussion. If someone has a complaint, there is now a process to write it down and provide resolution". Other RDA's indicated that they are now better able to learn and improve by recording and analyzing trends. A summary of these results is presented in Figure 10.

Factual Approach to Decision Making

Research Rationale

Taking a factual approach to decision making is one of the eight quality management principles of ISO 9001:2000. As noted in the initial funding applications for the ISO initiative for RDA's, effective decisions by the RDA should become based on the analysis of data and information through the ISO 9001:2000 registration process.

Factual Approach to Decision Making Findings – Pre-ISO 9001:2000

When asked to rate, on a scale of one to ten, how factual the decisions made by the organization were prior to ISO 9001:2000 registration, RDA's provided an average ranking of 7.1, with a range of 2 to 10. Most RDA's indicated that they felt that the decisions that they made were fairly factual.

Factual Approach to Decision Making Findings – Pre-ISO 9001:2000

When asked the same question for the post ISO environment, RDA’s provided an average ranking of 8.5%, with a range of 7 to 10. A summary of these results is presented in Figure 11.

Figure 11: RDA Responses in the Area of Factual Approach to Decision Making

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA’s Able to Identify Specific Benefit from ISO 9001:2000
Factual Approach to Decision Making				
Factual Approach to Decision Making	7.1	8.5	19.72%	64%

The null hypothesis for the area of factual approach to decision making was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t=-2.375917394$, $df=10$ and $p=0.019$. As the p-value is greater than 0.01, the null hypothesis cannot be rejected at a 99% confidence level. It can, however, be rejected at the 95% level of confidence as the t-value is greater than the tabled t-value of 1.812. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 95% level but not at the 99% level.

Factual Approach to Decision Making - Summary

The average percentage change between the pre and post ISO responses was 19.72%, with 64% of RDA respondents providing examples of how the ISO designation has helped improve their ability to make factual decisions. As stated by one RDA “ISO procedures ensure that we our research, address gaps and connect to stakeholders in our decision making process”. Several other RDA’s noted that by improving documentation, organizational performance could be better examined and decisions more easily quantified.

Mutually Beneficial Supplier Relationships

Research Rationale

Improving mutually beneficial supplier relationships is one of the eight quality management principles of ISO. As noted in the initial funding application for the ISO 9001:2000 initiative, it was intended that ISO registration would ensure that RDA’s and

their suppliers became interdependent and that a mutually beneficial relationship would enhance the ability of both to create value.

RDA and Supplier Relationship Findings – Pre-ISO 9001:2000

When asked to provide a ranking, on a scale of 1 to 10, on the relationship RDA’s had with their suppliers prior to ISO 9001:2000, RDA’s provided an average ranking of 7.3, with a range of 3 to 10. RDA’s felt that being located in smaller communities and having limited supplier needs allowed them to have solid relationships with their suppliers pre-ISO 9001:2000.

RDA and Supplier Relationship Findings – Post-ISO 9001:2000

When asked the same question in a post ISO environment, the average rating was 8.2, with a range of 6 to 10. These results are illustrated in Figure 12.

Figure 12: RDA Responses in the Area of Mutually Beneficial Supplier Relationships

Quality Management Principle	Average Pre-ISO Ranking	Average Post-ISO Ranking	Average Percentage Change	Percentage of RDA’s Able to Identify Specific Benefit from ISO 9001:2000
Mutually Beneficial Supplier Relationships				
Relationships with Suppliers	7.3	8.2	12.33%	55%
Mutual Benefit Between RDA and Suppliers	7.2	8.4	16.67%	73%

The null hypothesis for the area of RDA and supplier relationships was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t = -2.318694479$, $df = 10$ and $p = 0.021$. As the p-value is greater than 0.01, the null hypothesis cannot be rejected at a 99% confidence level. It can, however, be rejected at the 95% level of confidence as the t-value is greater than the tabled t-value of 1.812. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 95% level but not at the 99% level.

RDA and Supplier Relationship Findings - Summary

The average percentage change between the two responses was 12.33%, with 54% of respondents able to identify examples of where ISO has had a positive effect on supplier relationships. These RDA’s felt that ISO 9001:2000 has allowed them to better document

issues with suppliers and to make more informed decisions on when to use certain suppliers and when to not use their services.

Mutually Beneficial RDA and Supplier Relationships Findings – Pre-ISO 9001:2000

When asked to provide a ranking, on a scale of one to ten, on how mutually beneficial supplier and RDA relationships were prior to ISO 9001:2000, RDA's provided an average rating of 7.2%, with a range of 3 to 10.

Mutually Beneficial RDA and Supplier Relationships Findings – Post-ISO 9001:2000

When posed the same question in a post-ISO environment, RDA's provided an average ranking of 8.4, with a range of seven to ten. The average percentage change between the pre and post ISO environments was 16.67%, with 73% of RDA's able to identify examples of where ISO has had a positive effect.

The null hypothesis for the area of mutually beneficial RDA and supplier relationships was that there would be no difference between the pre and post ISO 9001:2000 environments. The alternative hypothesis was that there would be a positive difference between the pre and post ISO environments at a confidence level of 99%. Using the t-test for a paired two sample, it was determined that $t = -2.797154639$, $df = 10$ and $p = 0.009$. As the t-value is larger than the tabled t-value of 2.764, and the p-value is less than 0.01, the null hypothesis can be rejected at a 99% confidence level. Therefore, it appears as though there is a significant difference between the pre and post ISO environments at the 99% confidence level.

Mutually Beneficial RDA and Supplier Relationships Findings – Summary

Several RDA's commented that ISO has allowed them to provide direct feedback to suppliers in a more direct and formalized manner. It has also provided a process for suppliers to provide feedback directly back to the RDA's. As noted by one RDA "ISO has provided a venue to provide feedback and advice to local suppliers which makes them become more competitive in the bidding process in the future".

Overall

Feedback from Funding and Administrative Partners

Based on the research conducted, all four funding partners indicated that the ISO registration process for RDA's has met their initial expectations. Furthermore, all four funding partners also stated that they felt that RDA operations have become more effective in the post-ISO environment. All four also indicated that they felt that their investment into the initial project to get the RDA's ISO 9001:2000 registered was a worthwhile investment and that the benefits have outweighed the costs. Funders stated that ISO ultimately has provided a framework for continuous improvement, accountability, marketing, growth, sustainability and improved effectiveness. Several

fundings did, however, note that they did not feel that the benefits of ISO 9001:2000 have been fully realized within each RDA and that there is room for further maximization of the tool. Respondents in the funding group also indicated that success with ISO 9001:2000 is also very much tied into leadership and that in order to achieve great results, leaders of the organization must understand what ISO can provide and ensure that it is implemented effectively.

Benefits versus Costs

With respect to the RDA's, 64% felt that the benefits of ISO registration outweighed the costs within their organizations. As noted by one RDA "it has given us organization, processes and good feedback. It has been extremely beneficial to business and strategic planning processes and how we operate overall". Another RDA added that "it has allowed us, as we grew, to structure ourselves to respond to community needs in an organized manner and make the operation more efficient and effective". Of the RDA's that felt that the costs outweighed the benefits, the main reason cited was lack of proper implementation when RDA's were initially registered. These RDA's found that many of the suggested procedures were more applicable in a manufacturing-type setting and more care should have been taken to ensure RDA's were adopting effective and relevant procedures in the first place. Although weary of the benefits to date, one of the RDA's did note that "we are not interested in ISO 9001:2000 if we do not look at improving our initial processes, but we are certainly willing to try".

Recommendations for Similar Entities to Become ISO 9001:2000 Certified

Eighty-two percent of RDA's stated that they would recommend that similar entities become ISO registered to improve their operations. As summarized by one RDA, ISO "puts processes and procedures in place to enhance discussion between all staff members. ISO is the vehicle to ensure that these discussions happen". Another RDA noted that ISO "increased efficiency, effectiveness, provides new tools and provides better linkages to stakeholders through feedback". One of the two RDA's that would not recommend ISO 9001:2000 to other similar entities noted that RDA's should be able to look at all ways of managing quality management and pick the one most suited to their needs.

Summary of ISO 9001:2000 Effectiveness

To summarize the overall effectiveness of ISO 9001:2000 on their organizations, RDA's were asked to rank how beneficial ISO 9001:2000 has been to their organization on a scale of 1 to 10, with 1 being not at all beneficial and 10 being extremely beneficial, for each of the eight quality management principles categories. Figure 13 provides a summary of the rankings for each category.

Figure 13: Derived Benefit of ISO 9001:2000 within the Eight Quality Management Principles Categories (Scale of 1 to 10, n=11)

Category	Mean	Median	Mode	Range	Standard Deviation
Implementation of Processes	7.32	8	8	3.5 to 10	2.30
Involvement of People	7.14	8	8	2 to 9	2.20
Continual Improvement	6.73	8	8	3 to 9	2.33
Inter-related Systems Approach to Management	6.00	7	8	1 to 10	2.95
Leadership	5.36	6	6	1 to 10	2.90
Customer Focus	5.27	5	6	1 to 9	3.02
Factual Approach to Decision Making	5.23	5	9	1 to 9	2.95
Mutually Beneficial Supplier Relationships	4.82	5	7	1 to 10	3.14

RDA's collectively felt that the strongest benefits of ISO 9001:2000 were in the areas of implementation of processes, involvement of people and continual improvement. The area that RDA's felt was the weakest in terms of perceived benefit was in mutually beneficial supplier relationships. Interestingly, at the 99% confidence level, the data was not able to support that there was a significant difference between the means of the pre and post ISO 9001:2000 environments in the areas of involvement of people and continual improvement. When adjusting the confidence level to 95%, however, the data does demonstrate a significant improvement between the means in these areas.

The proceeding section will provide a general discussion of some of the trends and observations that were made throughout the research process. Following this, recommendations will be made for how NSARDA can strive to improve maximization of the effectiveness of ISO 9001:2000 moving forward.

DISCUSSION

As previously noted, this research paper strived to provide an in depth analysis of the success of the ISO 9001:2000 registration process within RDA's to date, along with recommendations for improvements in moving forward to maximize its effectiveness. The following section will provide a discussion of results of the effectiveness of ISO 9001:2000 on RDA's and the subsequent section will provide recommendations for how NSARDA can maximize the benefits of ISO 9001:2000 moving forward.

ISO 9001:2000 Quality Management Principles

Overall

As noted in the results section, the main benefits to RDA's, from their perspective, have been witnessed in the areas of Implementation of Processes, Involvement of People, Continual Improvement and an Inter-related Systems Approach to Management. In all eight areas of quality management principles, there has been a significant improvement in the mean rankings between the pre and post ISO 9001:2000 environments at minimally a 95% level of confidence, although only the areas of customer focus, leadership, implementing a process approach, implementing a systems approach to management and mutually beneficial supplier relations were significant at the 99% confidence level.

Despite the results of the hypothesis testing in each category, RDA's did not feel that the areas of leadership, customer focus and taking a factual approach to decision making were strongly influenced by the adoption of ISO 9001:2000. RDA's, on the whole, felt that they had strong leadership prior to ISO 9001:2000, with clear organizational directions and solid individuals in the role of Executive Director. They also felt that through their business and strategic planning processes, that a solid emphasis on customer focus had been present prior to ISO 9001:2000. Furthermore, based on the feedback provided through the business and strategic planning processes, many RDA's felt that they have always been able to practice factual decision making. Although the data demonstrates that improvements have been made in all three of these areas between the pre and post ISO environments, RDA's felt that this could not be solely attributed to ISO 9001:2000.

One of the key observations, then, is that RDA's were already fairly sophisticated entities prior to the adoption of ISO 9001:2000. All were using the Treasury Board Logic Model to govern their activities and all were utilizing an inclusive process of stakeholder engagement to develop the strategic direction of their organizations. As such, from the perspective of RDA's, ISO 9001:2000 did not provide improvement in the areas of leadership, customer focus and a factual approach to decision making. These findings suggest that further research conducted in public sector entities with less formalized sophisticated processes prior to ISO 9001:2000 is needed to fully explore the potential benefits that adopting the quality management systems can bring.

Customer Focus

Overall, all four funding partners indicated that they felt that the customer focus of RDA's has improved since ISO was implemented. It was felt that RDA's are now better evaluating their events and service delivery based on customer needs and focus. It was also felt that performance monitoring information has been enhanced to better provide RDA's with information on customer requirements and satisfaction.

Leadership

In terms of leadership-related results, 73% of RDA's felt that ISO 9001:2000 united their organization around quality management principles. These RDA's indicated that ISO 9001:2000 provided the framework for improved teamwork within their organizations and ensured shared accountability for the success of the organization.

All four funding partners indicated that they felt that leadership within RDA's has improved since ISO was implemented. It was felt that ISO has been a tool to facilitate improved decision making and ensures that leaders within the RDA's involve their staff in organizational decision making through quarterly management review meetings. ISO 9001:2000 has allowed RDA's to gather better data and to use this data to make more informed decisions regarding their operations and how actions of team members will lead to desired results.

Involvement of People

Prior to ISO 9001:2000, many RDA's indicated that work was often done in silos, with decisions being made by top management. ISO 9001:2000 has fostered a team approach within these RDA's and through the quarterly review meetings, have forced all staff members to become involved in setting goals, contributing to success and in brainstorming ways to overcome weaknesses. Without this formalized mechanism, many RDA's felt that they would not have been able to develop a cohesive environment where all staff members actively felt they were involved. On the other hand, RDA's collectively indicated that they valued their workforce prior to ISO 9001:2000 registration, investing heavily in professional development and employee development. To this end specifically, ISO 9001:2000 was not seen as having a great impact.

Ninety-one percent of RDA's felt that staff members are fully recognized as essential components of the organization's success, however only 20% felt that this would not have happened without undertaking the ISO 9001:2000 registration process. Furthermore, 73% of RDA's feel that they are able to maximize the talents and abilities of all staff members to achieve their organization's goals, however only 37% of these respondents indicated that it would not have been the case without ISO 9001:2000 registration.

With respect to the funding partners, 100% felt that ISO 9001:2000 improved the RDAs' abilities to utilize and maximize human resources talent for the betterment of their organizations. Funding partners indicated that RDA's are now building better internal

capacity for the betterment of both individuals on their team and for the organization itself. The use of the skills matrix tool has also allowed RDA's to match projects and initiatives with the staff members best able to succeed.

Process Approach

Seventy-three percent of RDA's indicated that their organizations have been able to achieve better results as a result of processes developed through ISO 9001:2000. Many RDA's cited the example of event processes and enabling them to achieve better results. Event checklists and comment cards ensure that events are now well planned out in advance and can be analyzed to measure success and improvements for subsequent functions. These tools were not in place prior to the advent of ISO 9001:2000.

With respect to the funding partner stakeholder group, 100% of respondents indicated that RDA's have been able to improve their internal processes as a result of ISO 9001:2000. Funding partners felt that standards are now set and well laid out and that tracking results are no longer ad hoc. It was noted by one funding partner, however, that success in this area is linked to resistance to change and the leadership within each RDA, and stated that these factors should be considered when examining the effectiveness of newly implemented ISO 9001:2000 procedures.

Systems Approach to Management

In the pre-ISO environment, with few exceptions, RDA's felt that they did not have formalized processes and that procedures varied on a daily basis and between different staff members. ISO 9001:2000 forced RDA's to formalize these processes and be held accountable for their implementation. RDA's as a whole have found the implementation of processes to have been beneficial in improving their operations. When asked to rank how applying an inter-related systems approach to management through the use of formalized processes, RDA's collectively indicated that they have seen improvements in both effectiveness and efficiency as a result of ISO 9001:2000.

With respect to the funding partner stakeholder group, 100% of respondents felt that RDA's had achieved improved efficiencies and effectiveness as a result of ISO 9001:2000 registration. Funding partners felt that ISO has helped RDA's to clearly establish and follow outcomes. They also felt that ISO has provided a tool for maintaining focus. Some of the funders did note that they were not convinced that ISO 9001:2000 registration has been the sole source of these improvements as the RDA's have also adopted the logic model and have undergone a performance based funding model system over the same time period, which may also have contributed to improvements in efficiency and effectiveness.

Continual Improvement

In the pre-ISO 9001:2000 environment, although many RDA's felt that they were always striving to improve, many did not have the tools to identify how to improve and to track

their results. ISO 9001:2000 provided a mechanism to ensure that the concept of continuous improvement became engrained within the organization and provided tools to document areas in need of improvement. Quarterly management review meetings, which engage all staff members, facilitated this process by allowing staff to collectively brainstorm solutions as to how to achieve improvements. Overall, this has provided great benefit to the RDA's.

Since the implementation of ISO 9001:2000, fifty-four percent of respondents felt that their RDA now has continuous improvement as an objective of their organization as a result of ISO and 54% also felt that enhancements to continuous improvement that have been developed would not have occurred without ISO registration. As noted by one RDA "ISO 9001:2000 has allowed us to recognize continual improvement as a formal goal of the organization. Auditing and reporting have kept us on track and accountable".

With respect to the funding partner stakeholder group, 50% of respondents felt that RDA's have been able to continuously improve as a result of ISO 9001:2000. One of the funders was unable to comment and the other felt that ISO has improved the ability for continuous improvement in some RDA's but not for all.

Factual Approach to Decision Making

Seventy-five percent of funding partner respondents felt that RDA's are able to make more factual decisions as a result of ISO 9001:2000 registrations, with 25% not able to provide examples of where this has been the case. Funders felt that due to ISO 9001:2000, RDA's were more aware of their core competencies, service delivery model and strategic planning elements and were better able to use this awareness to base their decisions on fact.

Mutually Beneficial Supplier Relationships

Despite an improvement in the mean rankings that demonstrated otherwise, the quality management principle of ISO 9001:2000 that RDA's felt they saw the least amount of benefit from was in the area of Mutually Beneficial Supplier Relationships. Many RDA's felt that because of their mandates and rural physical locations across the province that they have always had good relationships with the few suppliers that they have. Most RDA's noted that the private sector, and in particular those located in large cities with multiple suppliers, would derive more benefit from this area of ISO 9001:2000. It was noted, however, that ISO 9001:2000 did provide RDA's with formalized tools for evaluating suppliers and for providing two-way feedback.

With respect to the funding partner stakeholder group, 50% felt that ISO has had a positive effect on mutually beneficial relationships between the RDA's and their suppliers, with the remaining 50% stating that they were unable to provide a ranking or examples as to whether or not this has been the case.

Additional Observations

Initial Rationale

When the pilot project was initially undertaken in 2003, all RDA's from across the province made the decision to actively participate, signifying on the surface that there was a great deal of support and buy-in as to what an ISO 9001:2000 registration could bring. What is most interesting from the results of the RDA stakeholder interviews is the initial rationale from the RDA perspective as to why participation in the initiative was important. While funding partners described the rationale as primarily pertaining to the benefits ISO would bring to the RDA's, the majority of RDA's themselves, at 73%, decided to undertake the registration process because they were convinced by either NSARDA or the South West Shore Regional Development Authority and felt that they had to undertake the process as a requirement. Only 27% of RDA's cited a rationale that included the anticipation of the key benefits that ISO 9001:2000 can bring to organizations. It is interesting to note that at a level of effort of \$41,997 incurred in staff time contributions since the commencement of the project, and \$6,629 in direct costs since the inception of the project for each RDA, that RDA's did not have more solid expectations of ISO 9001:2000 from the onset. This undertaking has significant financial and resource implications for something that many did not clearly see the benefit of in the beginning. It is clear from this finding that RDA's did not have common clarity around why they should be adopting a quality management system such as ISO 9001:2000.

As previously noted, the funding partners, however, did seem to have a clear idea of what advantages ISO 9001:2000 could bring to Regional Development Authorities. When the initial funding application was submitted to each funding partner through NSRADA, the eight quality management principles, and how they could benefit RDA's when applied, were highlighted. This rationale is depicted in Figure 16.

As evidenced above, from the perspective of the main applicant for funding, NSARDA, there were great expectations as to what ISO 9001:2000 could achieve, despite the fact that the majority of RDA's did not fully understand what benefits or achievements ISO 9001:2000 could provide.

The key reason examining the discrepancies with respect to rationale is important is that it becomes somewhat challenging evaluating the eight strategic areas of ISO 9001:2000 when the organizations being interviewed do not have a common understanding as to how ISO could benefit them in each area. In fact, for many of the RDA's surveyed, it was the first time they had reflected on how ISO had helped or not helped them in any given area and there was some surprise that ISO had been intended to benefit them in some of the categories listed in Figure 1.

Delivery of Pilot Project

All RDA's that were surveyed, regardless of rationale, participated in the NSARDA pilot project to become ISO 9001:2000 certified, with the exception of one, which was already registered. This participation occurred in spite of an apparent lack of understanding for what the direct benefit would be, and also in spite of a significant portion of RDA staff members not fully supporting the concept initially.

Several RDA's commented that the delivery of the initial pilot project could have been improved in two major ways. The first, as already discussed in previous sections, is that additional care could have been taken to ensure that the procedures being developed by RDA's were more applicable within the context of a public sector environment. The second is that NSARDA could have played a stronger role in assisting RDA's in sharing and adopting common procedures throughout the project. One observation provided by one of the interviewed RDA's was that in eleven different RDA's there are eleven different purchasing policies. A consistent template, with the flexibility to make minor changes to meet the needs of each individual RDA, would have been useful as the quality manuals were initially developed. Utilizing consistent templates would also serve to meet the needs of the initial funding partners, who indicated that consistency in reporting and service delivery standards across RDA's was a critical rationale for undertaking ISO 9001:2000 in the first place.

ISO 9001:2000 as a Marketing Tool

Although cautioned as a negative consequence of ISO 9001:2000 in the academic literature that organizations could become registered as merely a marketing tool, this is a derived benefit that is not covered by an evaluation of the eight quality management principles of ISO 9001:2000.

One of the common themes discussed by the majority of RDA's, and funding partners, was that the adoption of ISO 9001:2000 would serve as an effective marketing tool for RDA's on the international stage. With an increasing number of RDA's conducting work beyond the provincial and national borders, ISO 9001:2000 is a recognized standard that provides credibility and allows clients to have assurance that the organization is committed to quality and to addressing their needs. Many RDA's indicated that this can be a powerful benefit of ISO 9001:2000 and was indeed one of the contributing factors for undertaking the process initially.

Other Contributing Factors

When discussing how ISO 9001:2000 has benefited RDA's since their initial registration, many responding RDA's indicated that there were other contributing factors that were also related to their improved success. The main factors that were identified were leadership style of the Executive Director, adoption of the logic model in internal and external reporting, and the movement toward a performance based funding model. Therefore, many RDA's noted that it was difficult to isolate what improvements have

been made by ISO 9001:2000, what improvements have been made by these other contributing factors, or what combination was present. These factors may also influence the results of improvements of the mean rankings within each of the eight categories of quality management principles that were researched, offering a possible explanation as to why improvements were shown to be at a level of statistical significance in some categories despite RDA's indicating that ISO 9001:2000 did not provide much benefit.

Based on the discussions with each RDA, and what was reinforced in the interviews with the funding partners, is that leadership of each Executive Director is an essential factor in the successful implementation of ISO 9001:2000. Without strong leadership, and the ability to rally the team around ISO, RDA's would not be able to successfully derive benefit from their quality management systems. In this regard, perhaps leadership and the adoption of ISO 9001:2000 are more closely linked than first thought.

With respect to the other contributing factors, it has already been noted that RDA's were fairly sophisticated in their practices prior to the adoption of ISO 9001:2000. All RDA's were actively using the logic model prior to ISO registration and have continued to improve on their reporting and prioritizing as a result of moving toward a performance based funding model over the past few years. So while this research was able to specifically demonstrate where RDA's have witnessed benefits from ISO 9001:2000, further study in organizations with less formalized structures in place prior to undertaking the registration process should be conducted before being able to make broad conclusions surrounding the effectiveness of ISO 9001:2000 in each of the eight quality management principle categories.

The next section will highlight the specific recommendations that have arisen throughout this discussion of the results of this research study. Recommendations for further academic study, along with next steps for NSARDA to take with respect to maximizing the benefits and effectiveness of ISO 9001:2000 within their member RDA's, will be proposed.

RECOMMENDATIONS

Based on the analysis and discussion of the results of the interviews conducted with Regional Development Authorities on the effectiveness of ISO 9001:2000 registration within their organizations, as well as on the context of ISO 9001:2000 as a quality management system within the academic literature, there are several key recommendations that can be made.

Recommendation #1: Share Results of this Research with the NSARDA Board

There are several key recommendations that NSARDA, on behalf of the network of Regional Development Authorities, can undertake to ensure that the benefits of ISO 9001:2000 are maximized within RDA's. The first recommendation is to share the results of this research paper with the NSARDA Board of Directors, of which all Regional Development Authorities sit as voting members. An emphasis should not only be on the specific results and findings, but should also include a review of the eight quality management principles of ISO 9001:2000. This will allow RDA's to become more familiar with the different areas that ISO 9001:2000 and how they can have a positive impact on their operations. This recommendation stems from the observation that many RDA's were not familiar with the eight areas of quality management of ISO 9001:2000, and had not given much thought prior to the interviews associated with this research that ISO could have benefit outside of some of the more obvious areas such as implementing a process approach and continuous improvement. By ensuring that RDA's fully understand what ISO 9001:2000 can, and should do, NSARDA can enable RDA's to utilize their quality management systems more effectively.

Recommendation #2: Establish a Process for Sharing Best Practices

Many best practices and examples were shared by the RDA's throughout the course of the interview process. Some RDA's have developed tools to manage customer expectations, and others have successfully developed tools for recording, tracking and sharing data. These best practices should be shared among all RDA's, and where possible, used as templates to promote enhanced consistency across the RDA network. The rationale for this recommendation is that this consistency would ultimately streamline reporting to funding partners, which was one of the initial reasons funding partners initially supported the ISO 9001:2000 certification initiative; would allow for a reduction in the time spent by RDA's reinventing the wheel on tools that have already been developed by their counterparts; and would spark engaging discussion around the various elements of ISO 9001:2000. By seeing how best practices have been incorporated into the daily activities of those RDA's using them, other RDA's may also become more encouraged by the potential of ISO 9001:2000 and become rejuvenated about how it can work to benefit them.

Recommendation #3: Provide Education and Training to RDA's on Improving Integration of ISO 9001:2000 into Existing Systems

An additional recommendation would be for NSARDA to provide education and training to RDA's on how ISO 9001:2000 should be treated as an integrated approach to how RDA's conduct business, as opposed to a separate program in and of itself. Some RDA's expressed concern that they have "outgrown" ISO 9001:2000 and have had to develop other procedures to meet their needs. The rationale for this recommendation is that it appears that among some of the RDA's, there is a lack of understanding as to how ISO as a quality management system should be incorporated into their daily activities. If ISO is viewed as a separate, or cumbersome, process, it will not be as effective as it could be. NSARDA has the benefit of strong knowledge of the history of ISO 9001:2000 within RDA's and has the ability to serve as the vehicle for providing leadership in this aspect of training. This coordinating role also ties in well with NSARDA's current mandate, which is to provide "the link between the Nova Scotia RDAs, providing support and collective strength" (NSARDA, 2008).

Throughout the interview process, several RDA's mentioned that they were in the process of contracting out support to assist in the revamping of their ISO 9001:2000 quality manuals. The response from these RDA's was overwhelmingly positive, as it is felt that this fresh approach has provided much needed clarity on how ISO should be integrated into their operations. For those RDA's that have not sought out this support, NSARDA could play a role in determining whether or not this would be a reasonable step and to assist in securing options for funding if applicable.

Recommendation #4: Re-conduct this Research in Three to Five Years

As the majority of RDA's have only had their ISO 9001:2000 certifications for three years, and two are currently just undergoing the initial process, it is recommended that this study be repeated in the next three to five years to monitor the level of effectiveness ISO 9001:2000 has brought to RDA's over a longer time frame. Several RDA's are currently rewriting their quality manuals and the comment was made by some RDA's that ISO has not been as effective as it could have been due to the perceived flaws in the initial implementation. Reassessing after three to five years will provide a more accurate picture on how effective ISO 9001:2000 has been.

Recommendation #5: Conduct Further Empirical Study to Contribute to the Existing Academic Literature on Quality Management

As previously discussed, there has been little empirical evidence within the academic literature that has demonstrated the effectiveness of the Deming's principles of quality management as applied within organizations that have implemented quality management principles. There are many parallels between the Deming's principles of quality management and the eight quality management principles of ISO 9001:2000. Both cover similar elements and both strive to transform and improve the practice of quality management within organizations. As such, examining the effectiveness of ISO

9001:2000 across the case study of Regional Development Authorities provides an opportunity to reflect on Deming's theories of quality management and how they can successfully be applied to organizations.

To provide ease of comparison, Anderson et al. (1994) proposed seven concepts that underlie the Deming's principles of quality management and also closely align with the quality management principles of ISO 9001:2000. By examining the effectiveness of ISO 9001:2000 in each of these areas, several conclusions can be made regarding the effectiveness of Deming's Management Model in an empirical context. It would appear, based on an analysis of the effectiveness of ISO 9001:2000 on RDA's, that implementing a process approach, fostering an environment of continuous improvement, and striving to exceed customer expectations are areas within the RDA's that witnessed benefit. These areas are all based on the Deming's principles of quality management. Other areas, such as visionary leadership, internal and external cooperation and learning have witnessed some benefit, however to a smaller extent. One area, employee fulfillment, although implied throughout the intended results of ISO 9001:2000 certification, was not clearly evaluated within the context of the eight ISO quality management principles. Therefore a valid conclusion in this area cannot be made

To address the gaps not addressed in this current research, it is recommended that the same case study group of Regional Development Authorities be re-interviewed to determine the effectiveness of ISO 9001:2000 with specific reference to the seven context areas of the Deming's principles of quality management as proposed by Anderson et al. (1994). Enough preliminary evidence exists to demonstrate that at least some effectiveness has been derived through the implementation of these principles, but further work is needed to determine the actual extent. Organizations outside of the RDA case study that have a greater amount of suppliers should also be studied to allow for a more comprehensive analysis of the principle of external cooperation.

Additionally, the area of employee fulfillment was not fully explored through the analysis of the effectiveness of ISO 9001:2000 based on their eight quality management principles. As such, a follow up study of the RDA's that poses questions specifically around employee fulfillment, such as measurement of job satisfaction, job commitment and pride of workmanship, should be conducted to better gauge the impact the ISO 9001:2000 quality management system has had in this regard. By conducting these supplementary studies, further data will be available to support the preliminary findings that have been demonstrated through the case study of the Regional Development Authorities.

CONCLUSION

This study has provided an analysis of the effectiveness of ISO 9001:2000 within each of the eight categories of ISO 9001:2000 quality management principles. As these eight principles were highlighted in the initial funding applications in support of the rationale for RDA's becoming ISO 9001:2000 certified, it was timely to conduct a review of how successful ISO 9001:2000 certifications have been in each area. Overall, RDA's feel that they have seen the most improvements in the categories of implementation of processes, involvement of people and continual improvement, with the least amount of benefit in the area of mutually beneficial supplier relationships. All eight categories of quality management have witnessed improvements at a statistically significant confidence level of 95%, with five of the eight areas witnessing a level of statistical significance at the 99% confidence level. It has been identified by the research participants, however, that while a major contributing factor, the implementation of ISO 9001:2000 is not the sole factor in these improvements, with leadership and sophistication of planning systems also cited as potential variables.

Overwhelmingly, RDA's and their funding partners feel that ISO 9001:2000 has met their initial expectations and that the benefits have outweighed the costs. The vast majority would also recommend that similar entities pursue ISO 9001:2000 within their organizations. These findings provide strong evidence for the academic literature that quality management systems can be effective in a public sector environment.

Further study is still needed to address the gaps in the literature. RDA's should be re-interviewed to more effectively determine the impact of ISO 9001:2000 in the area of employee fulfillment to provide a more comprehensive assessment of Deming's Management Model in an empirical sense. Furthermore, as RDA's do not have strong supplier bases, an additional case study of ISO 9001:2000 certified entities should be conducted to more accurately determine the level of benefit in this area.

The Nova Scotia Association of Regional Development Authorities has an active role to play in ensuring that RDA's continue to maximize the effectiveness of their ISO certifications. The primary function of NSARDA needs to be facilitating the coordination of best practice sharing and conducting further education. Furthermore, through NSARDA, a re-evaluation of the effectiveness of ISO 9001:2000 should be conducted in three years time to track progress and ensure that the quality management system is still serving the purpose it was intended to provide.

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APPENDIX 1: FUNDING/ADMINISTRATIVE PARTNER STAKEHOLDER GROUP QUESTIONNAIRE

The Effectiveness of ISO 9001:2000 in the Public Sector: A Case Study of Nova Scotia

Interview Questions for Stakeholder/Funder Group

Name of Interviewee: _____

Name of Organization Represented: _____

General Overview (first two questions to be completed prior to interview)

1. How much did you contribute financially to the ISO 9001:2000 registration processes for RDA's?
2. How many resource hours did you and your staff members contribute to the ISO 9001:2000 registration processes for RDA's on an annual basis since the initial registration?
3. What were your initial expectations for the ISO 9001:2000 registration process?
4. Have these expectations been met? Yes or No.
 - a. Why or why not?
5. Have your expectations for the ISO 9001:2000 registration processes changed since your initial expectations? Yes or No.
 - a. Why or why not?

Effectiveness Measure: Customer Focus

6. Do you feel that the customer focus of RDA's has improved as a result of ISO 9001:2000 registrations? Yes or No?
 - a. Why or why not?
 - b. Can you provide an example?
7. Do you feel that RDA's are better able to exceed the expectations of their customers as a result of ISO 9001:2000? Yes or No?
 - a. Why or why not?

- b. Can you provide an example?

Effectiveness Measure: Leadership

8. Do you feel that leadership within RDA's has improved as a result of ISO 9001:2000 registrations? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

9. Do you feel RDA's are better able to involve all human resources in implementing their objectives as a result of ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

Effectiveness Measure: Involvement of People

10. Do you feel RDA's are able to better maximize the human resources talent within the organization as a result of the ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

Effectiveness Measure: Process Approach

11. Have RDA's been able to refine and improve their internal processes as a result of ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

Effectiveness Measure: System Approach to Management

12. Have RDA's become more efficient in achieving their objectives as a result of ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

13. Have RDA's become more effective in achieving their objectives as a result of ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

Effectiveness Measure: Continual Improvement

14. Have RDA's been able to continuously improve as a result of ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

Effectiveness Measure: Factual Approach to Decision-Making

15. Have the RDA's been able to make better informed decisions based on an analysis of data and information derived from their Quality Management Systems as a result of ISO 9001:2000 registration? Yes or No?

- a. Why or why not?
- b. Can you provide an example?

Effectiveness Measure: Mutually Beneficial Supplier Relationships

16. Are RDA's and their suppliers better able to enjoy a mutually beneficial relationship as a result of ISO 9001:2000 registration? Can you provide an example?

- a. Why or why not?
- b. Can you provide an example?

Concluding Questions

17. Do you feel that overall that the ISO 9001:2000 registrations have improved the effectiveness of RDA operations?

- a. Why or why not?

18. Would you invest/become involved in the ISO 9001:2000 program again if you had to do it all over again?

- a. Why or why not?

APPENDIX 2: REGIONAL DEVELOPMENT AUTHORITY STAKEHOLDER GROUP QUESTIONNAIRE

The Effectiveness of ISO 9001:2000 in the Public Sector: A Case Study of Nova Scotia

Pre-Interview Questionnaire

Name of RDA: _____

General Overview

1. What is your annual operating budget?
2. How many full time core staff do you employ?
3. On what date did you initially receive your ISO 9001:2000 Registration?
4. On what date did you receive your three-year ISO 9001:2000 re-Registration?
5. Who within your organization have been the most involved with ISO 9001:2000?
6. Why did you decide to undertake ISO 9001:2000 within your organization?
7. Did you have the full support of your Board of Directors when you initially decided to become ISO 9001:2000 certified? Yes or No (circle one).
 - a. If no, what percentage of your Board of Directors supported the decision to become ISO 9001:2000 certified?
8. Do you now have the full support of your Board of Directors now with respect to ISO 9001:2000 registration? Yes or No (circle one).
 - a. If no, what percentage of your Board of Directors supports maintaining the ISO 9001:2000 registration?
9. Did you have the full support of your staff when you initially decided to become ISO 9001:2000 certified? Yes or No (circle one).
 - a. If no, what percentage of staff supported the decision to become ISO 9001:2000 certified?
10. Do you have the full support of your staff now with respect to ISO 9001:2000 registration?

a. If no, what percentage of your staff supports maintaining the ISO 9001:2000 registration? Yes or No (circle one)

Cost-Related

1. What were the direct financial costs associated with obtaining ISO 9001:2000 registration initially?

2. What have been the annual direct financial costs associated with maintaining the ISO 9001:2000 registration since you have been registered?

3. What were the indirect financial costs associated with obtaining ISO 9001:2000 registration initially with respect to:

- a. Staff time
- b. Other (please specify)

4. What have been the annual indirect financial costs associated with maintaining the ISO 9001:2000 registration since you have been registered with respect to:

- a. Staff time
- b. Other (please specify)

5. What percentage of the Executive Director's time was spent on obtaining the ISO 9001:2000 certification?

6. What percentage of the ISO Coordinator's time was spent on obtaining the ISO 9001:2000 certification?

7. What percentage of the Executive Director's time is spent on maintaining the ISO 9001:2000 certification?

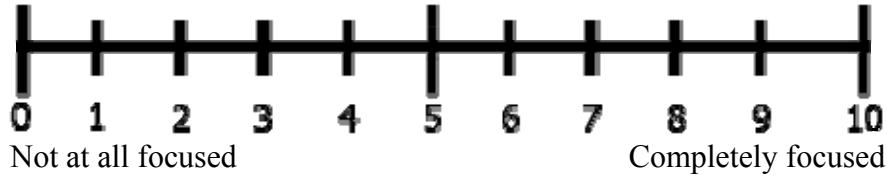
8. What percentage of the ISO Coordinator's time is spent on maintaining the ISO 9001:2000 certification?

9. What cost-savings have been identified as a result of ISO 9001:2000? Please explain and identify specific examples.

Effectiveness-Related Questions

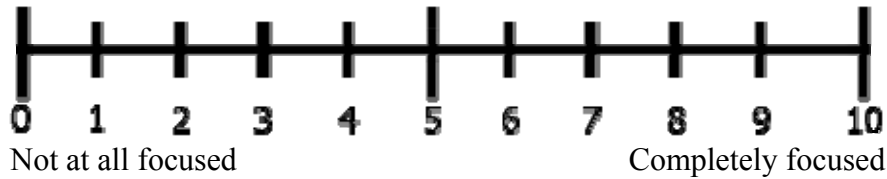
Effectiveness Measure: Customer Focus

1. Please rate, on a scale of one to ten, with one being not at all focused and ten being completely focused, how well your organization focused on your customer's needs pre ISO 9001:2000 designation?



a. Why did you give the ranking that you did?

2. Please rate, on a scale of one to ten, with one being not at all focused and ten being completely focused, how well your organization has focused on your customer's needs since ISO 9001:2000 designation?

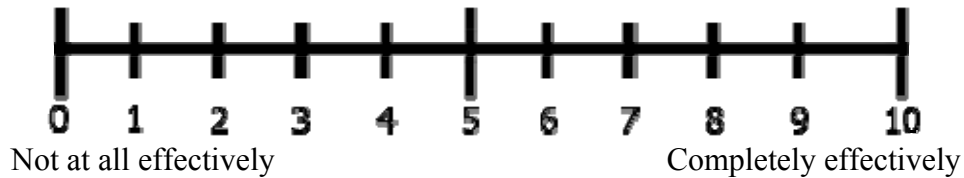


a. Can you please provide a few examples which illustrate your ability to assess the needs of your clients?

b. How has the ISO 9001:2000 designation helped/or not helped?

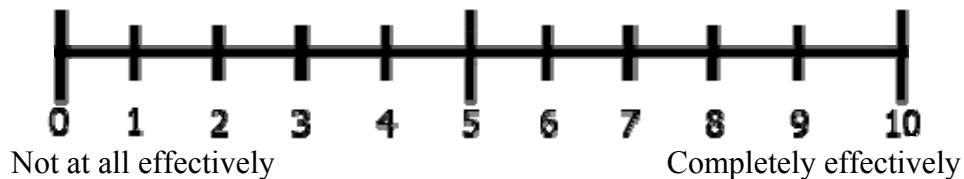
c. How might this be improved?

3. Please rate, on a scale of one to ten, with one being not at all effectively and ten being completely effectively, how effective your organization exceeded customer' requirements pre ISO 9001:2000 designation?



a. Why did you give the ranking that you did?

4. Please rate, on a scale of one to ten, with one being not at all effectively and ten being completely effectively, how effective your organization has exceeded customer' requirements since ISO 9001:2000 designation?

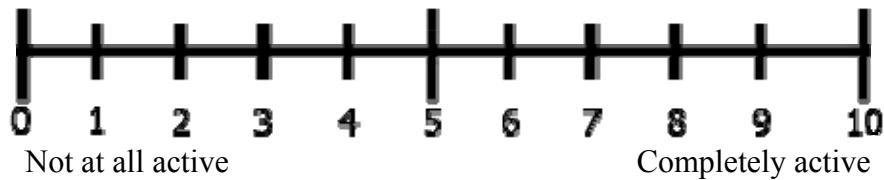


a. Can you please provide a few examples which illustrate your ability to exceed customer requirements?

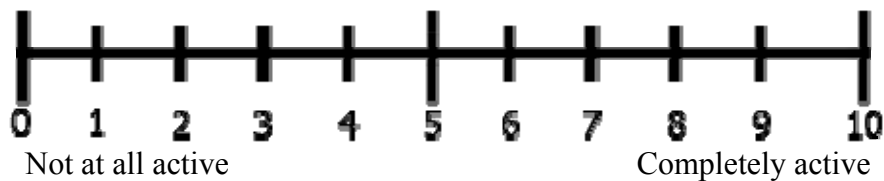
- b. How has the ISO 9001:2000 designation helped/not helped?
 - c. How might this be improved?
5. How do you measure what the needs of your customers are?
 6. How do you measure if you are exceeding the expectations of your customers?

Effectiveness Measure: Leadership

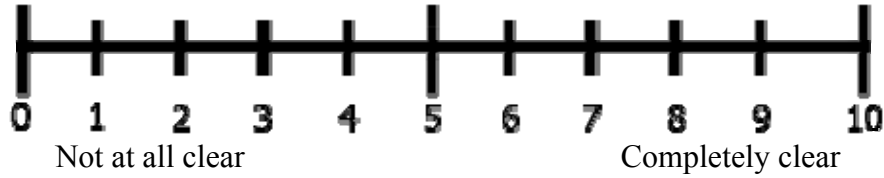
7. Has ISO 9001:2000 united the organization around quality management principles?
 - a. If yes, please give an example of this unity.
 - b. If yes, would this unity have occurred without registration?
 - c. If no, why?
8. Please rate, on a scale of one to ten, with one being not at all active and ten being completely active, how active staff members of your organization were in achieving the organization's objectives prior to achieving the ISO 9001:2000 designation?



- a. Why did you give the ranking that you did?
9. Please rate, on a scale of one to ten, with one being not at all active and ten being completely active, how active staff members of your organization are in achieving the organization's objectives since achieving the ISO 9001:2000 designation?

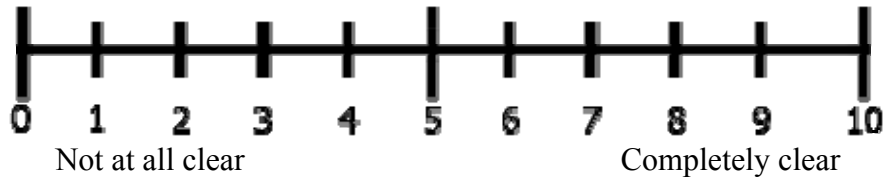


- a. Please give an example of how staff members are actively involved in achieving the organization's objectives.
 - b. How has the ISO 9001:2000 designation helped/not helped?
 - c. How might this be improved?
10. Please rate, on a scale of one to ten, with one being not at all clear and ten being completely clear, how clear the direction of your organization was prior to achieving the ISO 9001:2000 designation?



a. Why did you give the ranking that you did?

11. Please rate, on a scale of one to ten, with one being not at all clear and ten being completely clear, how clear the direction of your organization is since achieving the ISO 9001:2000 designation?



- a. How has the ISO 9001:2000 designation helped/not helped?
- b. How might this be improved?

Effectiveness Measure: Involvement of People

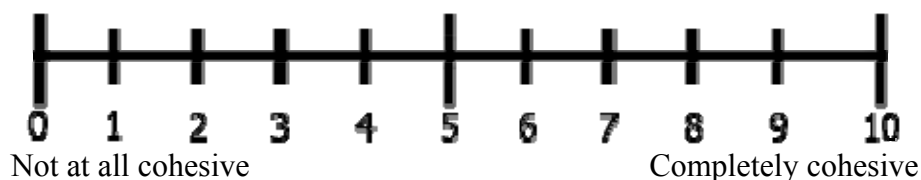
12. Do you feel that all staff members are fully recognized as essential components of the organization's success?

- a. If yes, please provide an example of how they are recognized.
- b. If yes, would this be the case without registration?
- c. If not, why not?

13. Do you feel you are able to maximize the talents and abilities of all staff members to achieve the organization's goals?

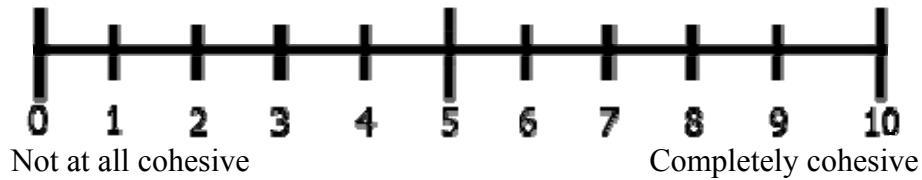
- a. If yes, please provide an example of how the organization has been able to maximize the talents and abilities of their staff members.
- b. If yes, would this have been the case without registration?
- c. If no, why not?

14. On a scale of one to ten, one being not at all cohesive and ten being extremely cohesive, how would you rate the cohesiveness of your staff prior to ISO 9001:2000 designation?



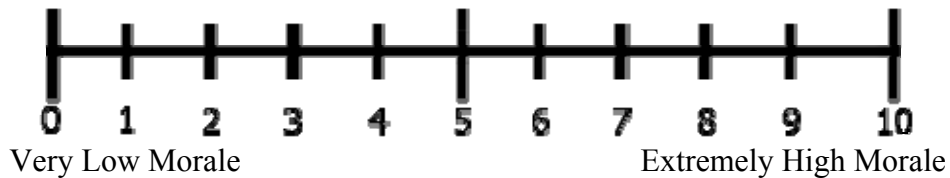
a. Why did you give the ranking you did?

15. On a scale of one to ten, one being not at all cohesive and ten being extremely cohesive, how would you rate the cohesiveness of your staff since ISO 9001:2000 designation?



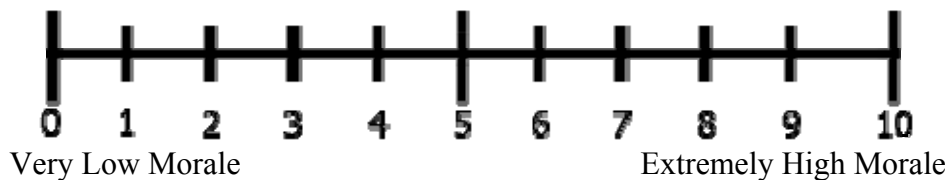
a. How has the ISO 9001:2000 designation helped/not helped?
b. How might this be improved?

16. On a scale of one to ten, one being very low morale and ten being extremely high morale, how would you rate the morale of your staff prior to ISO 9001:2000 designation?



a. Why did you give the ranking that you did?

17. On a scale of one to ten, one being very low morale and ten being extremely high morale, how would you rate the morale of your staff since ISO 9001:2000 designation?



a. How has the ISO 9001:2000 designation helped/not helped?
b. How might this be improved?

Effectiveness Measure: Process Approach

18. Please rate, on a scale of one to ten, with one being not at all effective and ten being completely effective, how effective your processes were prior to ISO 9001:2000 registration.



a. Why did you give the ranking that you did?

19. Please rate, on a scale of one to ten, with one being not at all effective and ten being completely effective, how effective your processes are since ISO 9001:2000 registration.



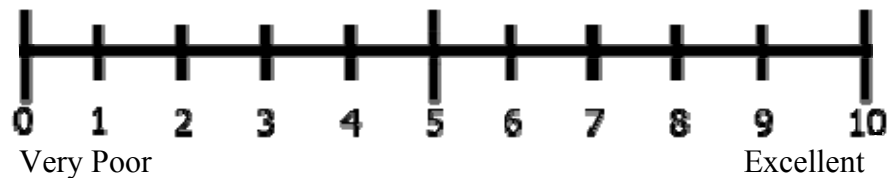
- a. Please provide an example of how your processes are not effective/not effective
- b. How has the ISO 9001:2000 designation helped/not helped?
- c. How might this be improved?
- d. If no, why not?

20. Has your organization been able to better achieve results as a result of processes developed through ISO 9001:2000?

- a. If yes, please provide an example.
- b. If no, why not?

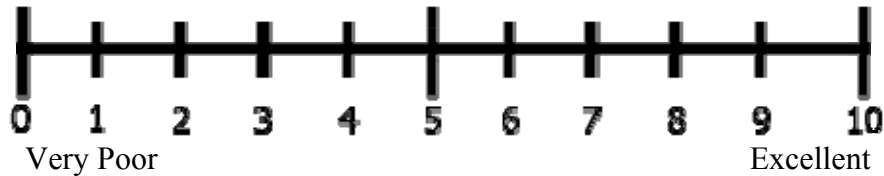
Effectiveness Measure: System Approach to Management

21. Please rate, on a scale of one to ten, with one being very poor and ten being excellent, the effectiveness of your agency to achieve its mandate and objectives prior to ISO 9001:2000 registration due to the understanding and implementation of inter-related processes.



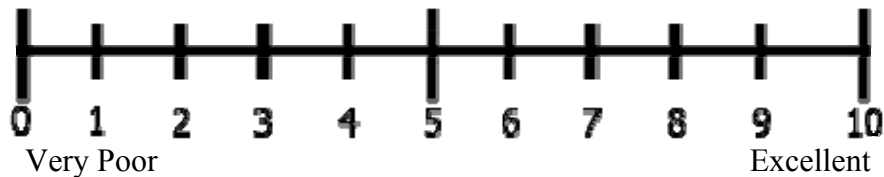
a. Why did you give the ranking that you did?

22. Please rate, on a scale of one to ten, with one being very poor and ten being excellent, the efficiency of your agency to achieve its mandate and objectives prior to ISO 9001:2000 registration due to the understanding and implementation of inter-related processes.



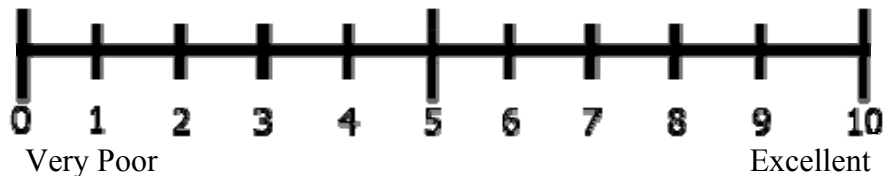
a. Why did you give the ranking that you did?

23. Please rate, on a scale of one to ten, with one being very poor and ten being excellent, the effectiveness of your agency to achieve its mandate and objectives after the ISO 9001:2000 registration due to the understanding and implementation of inter-related processes.



- a. How has the ISO 9001:2000 designation helped/not helped?
- b. How might this be improved?

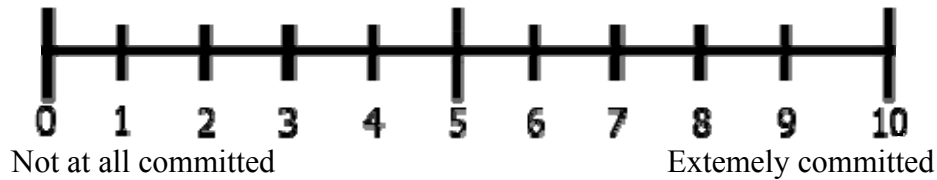
24. Please rate, on a scale of one to ten, with one being very poor and ten being excellent, the efficiency of your agency to achieve its mandate and objectives after the ISO 9001:2000 registration due to the understanding and implementation of inter-related processes.



- a. How has the ISO 9001:2000 designation helped/not helped?
- b. How might this be improved?

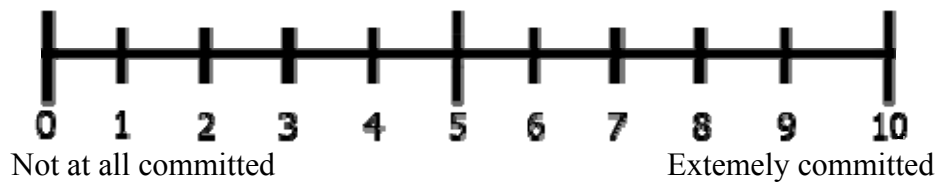
Effectiveness Measure: Continual Improvement

25. On a scale of one to ten, with one being not at all committed and ten being extremely committed, please rate how committed to continuous improvement your organization was prior to ISO 9001:2000 registration?



a. Why did you give the ranking that you did?

26. On a scale of one to ten, with one being not at all committed and ten being extremely committed, please rate how committed to continuous improvement your organization is since ISO 9001:2000 registration?

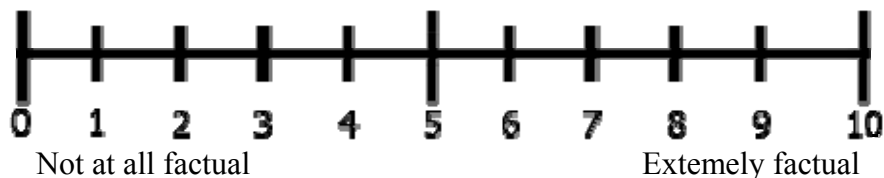


- a. How has the ISO designation helped/not helped?
- b. Would this commitment have been created without ISO 9001:2000?
- c. How might this be improved?

27. Do you feel that continual improvement is now a permanent objective of your organization as a result of ISO 9001:2000 designation?

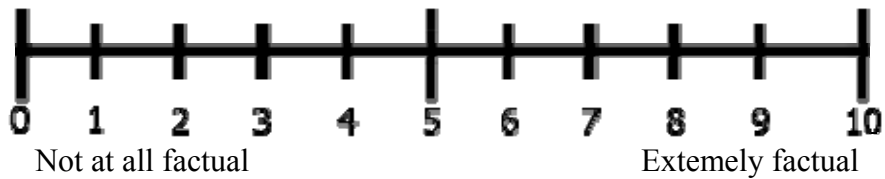
Effectiveness Measure: Factual Approach to Decision Making

28. On a scale of one to ten, with one being not at all factual and ten being extremely factual, please rate how factual the decisions your organization made were prior to ISO 9001:2000 registration?



a. Why did you give the ranking you did?

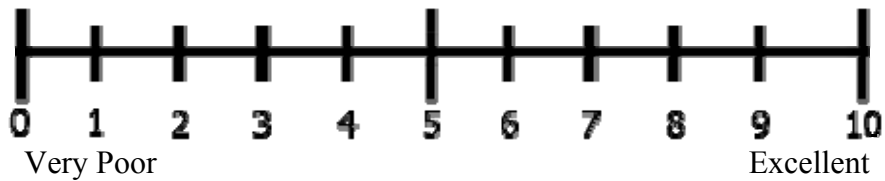
29. On a scale of one to ten, with one being not at all factual and ten being extremely factual, please rate how factual the decisions your organization have been since ISO 9001:2000 registration?



- a. If yes, please provide an example of how your organization makes factual decisions.
- b. How has the ISO designation helped/not helped?
- c. How might this be improved?

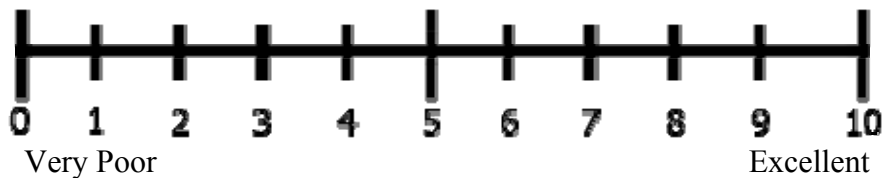
Effectiveness Measure: Mutually Beneficial Supplier Relationships

30. Please rate your relationship, on a scale of one to ten, with one being very poor and ten being excellent, with your suppliers prior to ISO 9001:2000 registration?



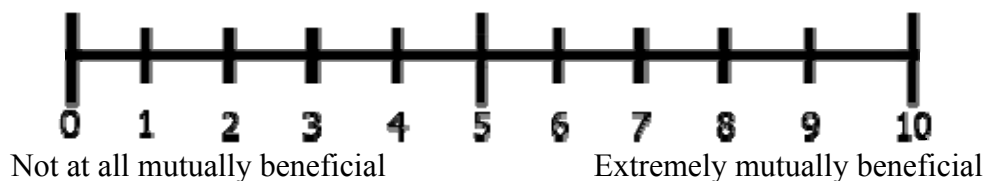
- a. Why did you give the ranking that you did?

31. Please rate your relationship, on a scale of one to ten, with one being very poor and ten being excellent, with your suppliers after the ISO 9001:2000 registration?



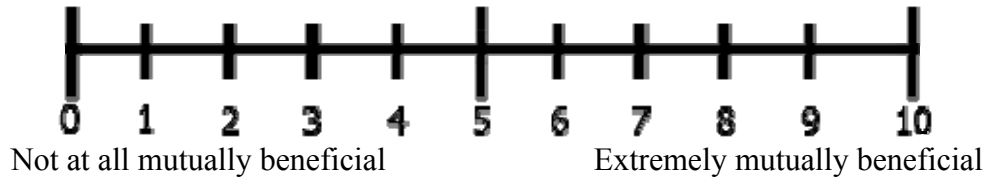
- a. How has the ISO 9001:2000 designation helped/not helped?
- b. How might this be improved?

32. On a scale of one to ten, with one being not at all mutually beneficial and ten being extremely mutually beneficial, how mutually beneficial were the relationships you had with your suppliers prior to ISO 9001:2000 designation?



- a. Why did you give the ranking that you did?

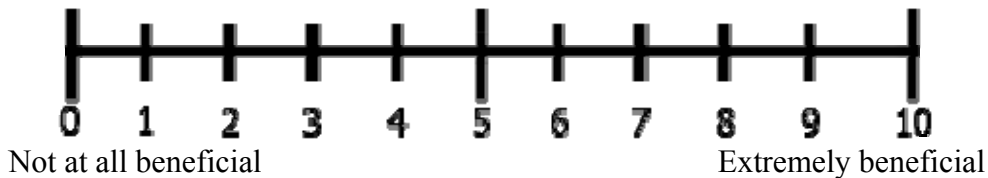
33. On a scale of one to ten, with one being not at all mutually beneficial and ten being extremely mutually beneficial, how mutually beneficial are the relationships you have with your suppliers since ISO 9001:2000 designation?



- a. How has the ISO 9001:2000 designation helped/not helped?
- b. How might this be improved?

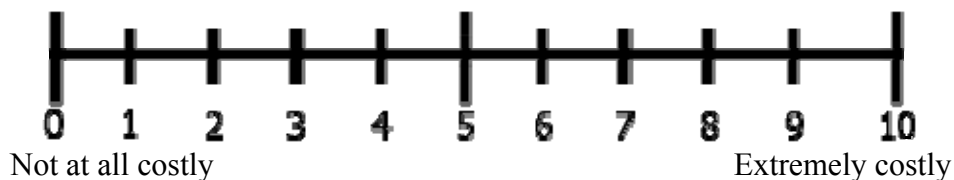
Overall

1. Please rank how beneficial ISO 9001:2000 has been to your organization on a scale of one to ten (one being not at all beneficial and ten being extremely beneficial) in the following areas.



- a. Customer Focus
- b. Leadership
- c. Involvement of People
- d. Implementation of Processes
- e. Inter-related Systems Approach to Management
- f. Continual Improvement
- g. Factual Approach to Decision Making
- h. Mutually Beneficial Supplier Relationships

2. Please rank how costly (one being not at all costly and ten being extremely costly) ISO 9001:2000 has been to your organization in terms of:



- a. Financial resources
- b. Human resources

3. Would you conclude that the benefits of ISO 9001:2000 registration outweigh the costs?

a. Why or why not?

4. Would you recommend similar entities to RDA's to become ISO 9001:2000 registered?

a. Why or why not?

5. Do you have any other comments?

APPENDIX 3: SUMMARY OF RDA AND STAKEHOLDER CONTRIBUTIONS TO THE ISO 9001:2000 PROCESS

Context

All Regional Development Authorities that are currently ISO 9001:2000 registered chose to participate in the research project, resulting in a sample size of eleven, representing the complete population. Of these RDA's, annual operating budgets ranged from \$375,000 to \$3,316,000, with a mean operating budget of \$858,482 and a median average operating budget of \$550,000. The median annual operating budget figure is more representative of the reality of RDA's, as two RDA's have significantly higher annual operating budgets than the rest, which skews the average for all RDA's.

Each RDA also indicated that they employ core staff to implement their objectives. The number of core staff employed by RDA's ranged from five to eleven, with an average of 7 core staff members and a standard deviation of 1.98. One of the RDA's received their initial registration in July 2003 and was re-registered in July 2006. The remaining ten RDA's received their initial ISO 9001:2000 registrations between June and September 2005, and were re-registered between June and September 2008.

All funding and administrative partners of the initial ISO 9001:2000 initiative also participated in the research project, resulting in a sample size of four. This sample also ensured that the entire population of funding and administrative partners was represented in the data.

Initial Support

Funding partners, excluding the RDA's themselves, initially contributed \$186,000 to the ISO 9001:2000 registration process for RDA's. Additionally, \$52,250 in in-kind resource hours was given to administering and overseeing the project's implementation. The majority of this resource support was provided through the Nova Scotia Association of Regional Development Authorities, who provided \$50,000 in resource hours to get the project started.

RDA's initially contributed \$2,000 each to the project, for a total of \$24,000 in direct financial support to the initiative. Furthermore, on average, each RDA contributed \$12,045 in staff time, for a total of \$132,500 in in-kind staff resource hours that went into the initial implementation of the ISO 9001:2000 standard. As well, each RDA also contributed an additional \$327 each, for a total of \$3,600, in support for items such as printing and meeting related costs. On average, each RDA ISO Coordinator spent 27% of their time and resources on getting their organization ISO 9001:2000 registered, while each Executive Director spent an average of 10% of their time and effort. Figure 5 depicts the total level of initial support provided collectively from all partners and the Regional Development Authorities.

Figure 1: Initial Financial and In-Kind Contributions

Organization	Financial Contributions	In-Kind Contributions	Total Contributions
Regional Development Authorities	\$24,000	\$136,100	\$160,100
Federal Government	\$156,000	\$1,125	\$157,125
Provincial Government	\$30,000	\$1,125	\$31,125
NSARDA	\$0	\$50,000	\$50,000
Total Contributions	\$210,000	\$188,350	\$398,350

While all funding partners fully supported the ISO 9001:2000 initiative from the onset, there was some skepticism present at the RDA level, with 18% of RDA's not having the full support of their Board of Directors at the beginning of the process and 45% not having the full support of their staff. In RDA's where full Board support had not been achieved, the average percentage of Board within those two RDA's that supported ISO was 29%. In RDA's where full staff support had not been achieved, the average percentage of staff within those six RDA's that supported ISO was 43%. Lack of Board support was attributed to a lack of knowledge and understanding of how ISO applied to public sector entities. Lack of staff support had been mostly attributed to staff members being uncomfortable with ISO, fearing that the processes would be cumbersome, and not understanding the benefit or rationale for undertaking the registration process.

Current Support

Since achieving the initial ISO 9001:2000 registrations, RDA's and their funding partners have continued to contribute internal and financial resources to maintaining the registrations and ensuring that their ISO systems are adhered to and continuously improved.

With respect to the funding partner stakeholder group, no direct financial contributions beyond their initial support have been required. In-kind resource support has also declined to \$7,000 annually, all of which has been contributed by NSARDA.

RDA's have also witnessed a decline in financial and resource support from the levels needed to obtain the ISO registration initially. Annual direct financial costs to RDA's have averaged at \$840, which primarily have included costs associated with staff training and consultant fees. It has been noted, however, that these costs will be increasing starting in 2009, as RDA's will now be responsible for their own annual \$1,100 auditing fee, which to date has been covered by the project. On average, each RDA also contributed \$9,984 annually in staff resource contributions to maintaining ISO 9001:2000, for a total RDA contribution of \$109,833. Other indirect annual costs are estimated at \$594 per RDA, for a total RDA contribution of \$6,540 annually, and can be attributed primarily to supply and meeting related costs. Figure 6 depicts the total level of

contributions that support maintaining the ISO 9001:2000 certification on an annual basis.

Figure 2: Annual Financial and In-Kind Contributions

Organization	Financial Contributions	In-Kind Contributions	Total Contributions
Regional Development Authorities	\$9,240*	\$116,373	\$125,613
Federal Government	\$0	\$0	\$0
Provincial Government	\$0	\$0	\$0
NSARDA	\$0	\$7,000	\$7,000
Total Contributions	\$9,240	\$123,373	\$132,613

* This amount will increase to \$21,340 in 2009 when RDA's become responsible for their own auditing fees.

Since the initial registration, support for the ISO 9001:2000 has also increased at the RDA level, with 91% of RDA Boards and 64% of RDA staffs now fully supporting ISO. In the one RDA where full Board support had not been achieved, the percentage of the Board that now supports ISO was 89%. In RDA's where full staff support had not yet been achieved, the average percentage of staff within those four RDA's that now supports ISO was 68%.