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Research Article

Integrating ISO Standards Into Total Quality Management For Enhancing Organizational Excellence

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ABSTRACT

The purpose of this study is to look into the impact of integrating ISO 9000 and total quality management (TQM) on the operational performance of manufacturing organizations and their journey to enhancing organizational excellence.
Design/methodology/approach – This paper studies the commonness between ISO 9000 standards and total quality management (TQM). The article investigates the ISO 9000 standards' utility and capabilities as a starting point for TQM.
Findings – Integrating ISO 9000 with TQM improves plant performance, including quality management, inventory management, time-based performance, and competitiveness, leading to faster progress.
Research limitations/implications –Resent studies are barely available on this topic.
Practical implications – The study's findings have significant consequences for academics and practitioners. The results obtained suggest that ISO 9000 and TQM are complementary, rather than substitutes.
Social implications – Just as established Companies prioritize quality as a competitive advantage in global markets, SME's should do the same.
Originality/value – This article explores how ISO 9000 and TQM work together to improve operational performance.

Keywords- Competitiveness ,Operational performance, ISO 9000, Time-based performance, Small and Medium Enterprise's . Paper type- Research paper

Introduction

TQM was originated in Japan in the 1970s, then moved to the United States in the 1980s, and finally to Europe in the 1990s[1]. ISO certification, unlike TQM, originated in Europe, North America, Japan, and other global regions. ISO was founded in 1926 by the International Federation of National Standardizing Associations (ISA)[2]. The program focuses on mechanical engineering. ISO is a nonprofit association of recognized standard authority, each representing a country. The organization in question was abolished in 1942 due to World War II, but reformed as ISO in 1946. TQM and ISO 9000 have recently gained global attention for their impact on business performance [3]. By the end of 2006, there were 896.866 accredited companies worldwide. The number of ISO certified companies is rapidly increasing, outpacing economic development. The academic community took notice of this phenomena. Following it, research and investigations were conducted to investigate the problem [4].
When total quality management was first introduced in businesses as a technique of achieving organizational performance and excellence in the early 1980's, it received little immediate support or widespread adoption.[5] As the benefits of quality and quality management programs became more apparent, controversies diminished. Twenty years later, corporations face the same issue with ISO. This study serves two purposes. First, it argues that TQM and ISO have numerous parallels and examines how the latter might benefit from the former. Second, it looks at the parallels and differences between TQM and ISO goals and objectives. To this purpose, we address issues such as whether TQM and ISO are separate disciplines or Are they complementary.
Implementing a quality assurance system improves company operations by documenting processes, removing ambiguities, and establishing roles among personnel and departments[6]. The fundamental

advantage of this approach is that it prioritizes preventing errors above detecting and correcting them, unlike traditional "quality control" methods. All authors in the literature recognize the importance of protective work, as organizations face a new competitive challenge of combining high quality and cheap price, or quality and productivity. To overcome this issue, businesses should prioritize preventive quality management over reactive actions, as the latter can result in greater costs and lower productivity while adding little value to products. Implementing a quality assurance system provides an important opportunity for businesses to address the issue.

However, the issue of quality assurance standards remains a major concern for both theorists and practitioners. The question is whether implementing and certifying a quality assurance system based on ISO 9000 standards can truly improve quality for firms. Do quality assurance standards strengthen a company's commitment to quality?

Integrating TQM and ISO

Many studies support the notion that TQM and ISO should be combined to improve organizational performance. According to Youssef and Youssef (2018)[7], TQM and ISO are a unique combination that can offer value to a business. The study focused on manufacturing companies and how they may improve their world-class manufacturing status. The International Organization for Standardization 9000 and TQM were combined to produce the result. The findings demonstrated that ISO and TQM complement each other. Companies that integrate TQM and ISO experience increased quality, inventory, operational management, time-based performance, and competitiveness. Safdar & Yousufa (2018)[8],conducted research to assess whether ISO affects the project management system. The study concluded that project management is vital in the software sector. It was discovered that organizations that use project management had a higher success rate. In this study, the author investigated the impact of ISO 9001 on project management by comparing a company's performance with and without ISO in software houses. Abusa And Gibons (2013)[9] did a study to identify how organizational performance could enhance future opportunities.The authors conducted this study to analyze how TQM deployment enhanced the performance of a manufacturing company in Libya. The performance was assessed both with and without ISO. The results showed that export growth was high among enterprises who implemented ISO and TQM jointly. However, no other substantial variation in operational performance was observed after integrating TQM and ISO, Burli et al. (2012)[10] ,Examined how TQM dimensions affect results in ISO 9000 certified engineering institutes in India. A factor study of quality management statements revealed 10 elements, with leadership and top management being the most significant for developing a quality management system.

TQM is not a blueprint for producing high-quality output; rather, it is an organizational management philosophy that serves as a guide on a never-ending journey. How can we use ISO 9000 to support us in our journey to TQM, First, we must grasp ISO 9000's structure and how it relates to TQM concepts.

What is Total Quality Management

Total quality management is a cost-effective technique for preserving quality. "A process for managing quality; it must be a continuous way of life; a philosophy of perpetual improvement in everything we do" . (U Prakash)[11]. If we wish to assess TQM Eventually it will be an assortment of four terms: inspection, quality control, quality assurance, and total quality management. The major goal is to satisfy customers by enhancing the manufacturing processes through the incorporation of staff experiences. TQM asserts that quality is established by the customer, created by employees, and led and supported by top management. TQM centered heavily on multifunctional teams. (Waxer, Charles, 2007)[12].

Principles of TQM

The five key themes are management commitment, employee empowerment, fact-based decision making, continuous improvement, and customer focus. In management commitment, the first step is design and planning, followed by deployment. Following deployment, the product is critiqued, examined, and revised. It is sometimes referred to as Dr. Deming's PDCA cycle[13]. Employee empowerment entails training people and forming productive teams. It also includes acknowledgment. These teams are formed to make decisions that ensure quality, and for this purpose, SPC (statistical process control) and TOPSIS (team-oriented problem solving) are used. Because consumers must be satisfied, TQM encourages systematic improvements to processes and metrics. TQM additionally places emphasis on the customer interaction with producers and adheres to consumer-driven criteria. All of these features describe how TQM manages quality. (Waxer, Charles. 2007). TQM focuses on preventing errors rather than detecting them. It states that mistakes and flaws can be prevented by timely diagnosing them.

Concept of Continuous Improvement

It suggests three methods for constantly improving the product. The first step is to prevent mistakes while building a product. Inspection at each step can also be a vital step in avoiding errors so that they do not continue to the next phase and produce new faults. The solution to this step is to stop at the place where an

error is discovered, go back and make fixes, test that module, and then continue. This will result in an improved process cycle. [14]

W. Edward Deming Philosophy

Dr. Edward Deming (October 14, 1900–December 20, 1993) was an American statistician. He used statistical approaches such as ANOVA and hypothesis testing. He also provided a formula for quality: Quality = result of work efforts / total costs. He also provided a system of profound understanding, which is to examine the system from the outside and then approach for a quality product. According to him, this system includes manufacturers, customers, and suppliers. Deming also provided fourteen points to support his philosophy of quality. Some of the points include establishing consistency, adopting a new concept of cooperation, instituting training, eliminating fear, and developing company quality standards. (Quality-Based Problem Solving)[15].

Deming's PDCA cycle provides a series of steps for solving quality concerns. This cycle includes a plan for gathering data, analyzing the problem, and planning a solution. 'D' stands for 'do it', 'C' for 'check for problems', and 'A' for' modify as needed'. Finally, return to the first phase of the strategy and so on. This cycle is similar to the Carnegie plan, however it lacks one additional element: defining the problem, which is the first part of the Carnegie plan. (Quality Based Problem Solving)

The Impact of National & International Quality Awards on Total Quality Management

There could be an interrogation at this time. Why is there a need for an award for terms like TQM, ISO 9000, Six Sigma, and so on, and how does this impact product quality? The goal of awards is to examine and understand an organization's performance in comparison to others. This enables you to compare your organization's current performance to a set of criteria that others have followed to achieve a quality product. Donald Peterson, chairman of Ford Motor Company, remarked that the best companies in their field should be found and compared to the most efficient methods. There are awards such as the Malcolm Baldrige European Quality Award, which is given to small enterprises and corporations, and the Deming Award for the company and individuals for their outstanding Performance[15].

Quality Control Process

While looking for continual quality improvement checking product at every exit point seems essential, adequate quality control measures must also be established to ensure the product quality. It is not impossible to thoroughly define and test all possible situations and outcomes for a product during the production process a creation of proper software program may meet the need, but the process must finish when it confirms to the requirements and meets almost all of the possible expectations and results of the quality check points.

What is ISO 9000?

What exactly is a standard? "A standard is basically a definition of how something should function." (Seaver, Matthew, 2001). ISO is a set of internationally recognized and acknowledged standards developed for company quality systems. (Quality-Based Problem Solving). ISO 9000 is the most well-known of ISO's standards, and it provides criteria for project selection. To comply with this requirement, businesses must provide quality and pass audits. There have been previous standards produced, but they were insufficiently consistent for broad usage. (Juran, Joseph M. 2002, ISO 9000)[16,17].

ISO 9000 is conventional and applies to all general product categories, including hardware and software. These standards are widely accepted worldwide and have an impact on both domestic and international trade. These standards are used by management systems within a business to design, manufacture, and maintain its goods. (Juran, Joseph M. 2002, ISO 9000)[17].

VISION 2000

The inaugural conference of ISO/TC 176 was held in 1980, and the ISO series was first published in 1987. It consists of ISO 9000 guidelines, three quality assurance standards (ISO 9001, ISO 9002, ISO 9003), and quality management guidelines (ISO 9004. In 2000, the standards were amended and renamed ISO 9000:2000, ISO 90001:2000, and ISO 9004:2000. This paper mostly concerns ISO 9000, ISO 9001, and ISO 9004. (Seaver, Matthew, 2001)[16]

ISO 9000:2000

The ISO 9000 series provides criteria for selecting a product. ISO 9000 series standards are used in government and other organizations to facilitate and accelerate product development and maintenance. It also fosters leadership and effective customer-supplier relationships. Giving guidelines has the advantage of informing the customer ahead of time and ensuring quality in terms of product performance and efficiency. If a system adheres to standards, it means it will function properly and meet the needs of its customers. (International Organization for Standardization)[17].

Common elements of ISO and TQM

ISO 9000 and TQM has similar practices but different principals. The ISO 9000 family of standards formalized procedures for assessing organizations' capacity to consistently design, manufacture, and deliver quality products and services. Total quality management (TQM) is seen as a relatively new concept and a means for businesses to improve the quality of their products and services, but it could be the key to survival and competitive advantage in today's volatile business environment[18].

Management responsibility

Top management plays a significant role in the development of small and medium firms, whether or without ISO 9000 certification. Top management is already convinced of the importance of paperwork, customers, suppliers, and the flow of work between divisions. This enables top management to be committed to the mission statement in order to improve the aims and objectives of organizational performance[19].

Quality system

ISO 9000 involves control of documents like working document, internal document, and internal audit document, nonconformance of product or service report and corrective action report. These different reports help in working of rework cost, reprocessing cost, appraisal cost, prevention cost and hidden cost as part of TQM. Management can acknowledge the role of different factors and can help in commitment towards other elements of TQM[20].

Design management

ISO 9000 design and development planning is based on input and output requirements, with validation as needed. Motivated participants to document designs created using high-powered software and design of experiments (DOE)[21].

Supplier quality management

In the ISO 9000 system, suppliers are evaluated through records and on-site visits. The selection of such suppliers with good quality processes is required for the implementation of TQM in SMEs. These facilitates the development of cooperation and partnerships with suppliers[22].

Customer focus

In ISO 9000, customers are cared for through grievances about customer-supplied products, and preventive and remedial measures conducted with appropriate documents.
Appended to this is an internal customer requirement for TQM implementation in SMEs, in addition to top management or CEO expectations from both internal and external customers requirement up to the final product[23].

Training

As part of the ISO 9000 requirement, appropriate record-keeping and other work trainings are in place. In SMEs, top managers and managers must receive additional training on TQM awareness, quality principles, quality control instruments, statistical tools, and project selection for improvements[20].

Process progress management

In ISO 9000 the interrelated processes are monitored and controlled at each of the process input and output for standard process of final product.In TQM processes are reviewed for out of control variations, operational performance, to identify critical processes[21,22].

Statistical process management

The data available from various processes are analyzed with bar charts, histograms, pie charts etc.The trained employees can use seven statistical tools for quality improvement. Statistical tools – Check sheet, Histogram, Pareto chart, Cause and effect diagram, Scatter diagram, Control chart and Graph.

Transition from ISO 9000 towards TQM

There were several frameworks available, including those provided by quality awards. The maturity frameworks of Jablonski (1991) and Crosby (1979) [23,24] were also considered. A model that incorporates all important criteria for the transition from ISO 9000 to TQM is preferred. This model highlights the synergy between the two concepts and takes into account the infrastructure established during the registration process.
Kanji (1998) [25] proposes a paradigm for process innovation that emphasizes TQM concepts and the transition process from ISO 9000 to TQM. The article largely references Kanji and Asher's (1995) [26] work on TQM concept and principles, as well as Kanji's (1996) [27] modified TQM model. According to these research, TQM is built on four principles: customer happiness, management by facts, people-centered management,

and continuous improvement. Kanji (1998) [25] proposes a unique way to improve the ISO 9000 standard, focusing on process definition, improvement, and management. Kanji describes ISO 9001-compliant process innovation steps.

He believes that ISO 9000 registration, which includes these three criteria, is a first step towards TQM. According to Kanji (1998) [25], an integrated self-assessment framework that combines TQM principles and ISO 9001 standards can be built. The report proposes ISO 9000 as a foundation for TQM. Empirical information on the transition from ISO 9000 to TQM is generally limited. Writers often claim that ISO 9000 has limits when applied to TQM. In this case, it may be more acceptable to focus on the standard's intended strengths. While the discussion over whether ISO 9000 or TQM should be the first step in quality management, it's also important to consider why a business chooses to start at all [28]. Bradley (1994) [29] highlights ISO 9000's standards as a starting point for TQM implementation. The company has already achieved compliance with ISO 9000 standards.

- A standardized system and proper documentation;
- Check point at each step of manufacturing, standardization of the processes;
- Begin measuring process performance to find areas for successful change.;
- Regular management evaluations can optimize system performance.
- Begin corrective actions

Van der Wiele and Brown (1996)[30] established a step-by-step process for organizations to transition from ISO 9000 series registration to incorporating TQM principles into company management (Figure 1). Organizations can begin with ISO 9000 series certification or a similar level of process control and quality system development, as many are already familiar with it. To effectively implement continuous improvement, organizations must first understand the underlying processes that need to be changed. The ISO 9000 series requires an organization to describe its essential processes.

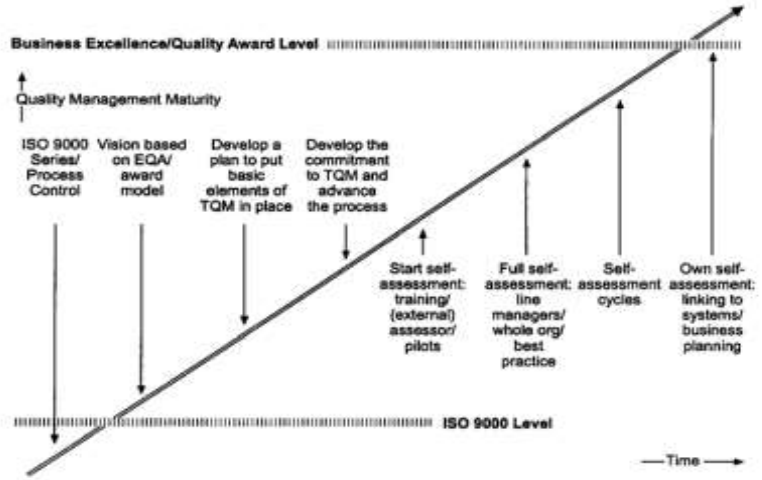

Figure 1. From ISO 9000 series registration to quality award prize winner [4,12]

Benefit of ISO9000 towards TQM

- ISO 9000 certification leads to enhanced staff motivation and improved organizational efficiency.
- Companies with simple hierarchical structure involves fast decision making process.
- The resultant change in attitude enhances TQM practices and organizational competitiveness.
- Implementation of ISO 9000 develops culture of openness, trust, confrontation for problem solution, experimentation, authenticity, proactivity, autonomy and collaboration.
- An important attribute of ready to change in SMEs help to promote TQM as ISO 9000 regulate or control process quality.
- The motivated employees with ISO 9000 prompt in learning through training.

Conclusion

- ISO 9000 in Companies still needs the culture of readiness for the change in quality improvement system like TQM.
- ISO 9000 inculcates among employees values of process orientation.
- ISO 9000 develops negligible resistance to change for TQM.

ISO 9000 certification adds to the fact that it is a management tool, a source of competitive advantage, and has the potential to promote industry's advancement toward TQM. ISO 9000 has become one of the most

widely used quality management systems, to the point that it has surpassed the quality system that underpins this certification [18]. Certification is a management tool that can provide cost and differentiation advantages, as well as encourage companies to use TQM [21,22,23,24].

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