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# Quality Management System and Practices

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## 1. Introduction

Quality is a perceptual, conditional and somewhat subjective attribute of a product or service. Its meaning in business has developed over time. It has been understood differently and interpreted differently by different people. A business will benefit most through focusing on the key processes that provide their customers with products and services. Producers may measure the conformance quality, or degree to which the product or service was made according to the required specification. Customers on the other hand, may focus on the quality specification of a product or service, or compared it with those that are available in the marketplace. In a modern global marketplace, quality is a key competency which companies derive competitive advantage. Achieving quality is fundamental to competition in business in propelling business into new heights.

Many quality management philosophies, methodologies, concepts and practices were created by quality gurus to manage quality of product and service in an organization. These practices have evolved over time to create sustainable sources of competitive advantage. New challenges faced by managers are addressed to improve organization's performance and future competition. In the total quality management form, it is a structured management system adopted at every management levels that focused on ongoing effort to provide product or service. Its integration with the business plan of the organization can exact positive influence on customer satisfaction and organizational performance.

This chapter dealt with what is quality and TQM, cost of quality, linking quality management system to organizational performance, its impact on organizations and approaches of implementing TQM and the quality journey.

## 2. What is quality and TQM?

The business meanings of quality have developed over time. Among the interpretations of quality stated by Wikipedia from the various sources is tabled as below:

	Author / Authority/Source	Definition
1.	ISO 9000:2008, International Organization for Standardization	Degree to which a set of inherent characteristics fulfills requirements
2.	Six Sigma (Motorola University)	Number of defects per million opportunities
3.	Subir Chowdhury (2005)	Quality combines people power and process power
4.	Philip B. Crosby (1979)	Conformance to requirements
5.	Joseph M. Juran (American Society for Quality)	Fitness for use
6.	Genichi Taguchi (1992)	Uniformity around a target value and the loss a product imposes on society after it is shipped
7.	Peter Drucker (1985)	Quality in a product or service is not what the supplier puts in. It is what the customer gets out and is willing to pay for
8.	Edwards Deming (1986) and Walton, Mary and Edwards Deming (1988)	The efficient production of the quality that the market expects, and costs go down and productivity goes up as improvement of quality is accomplished by better management of design, engineering, testing and by improvement of processes

Table 1. Interpretations of Quality

The development of TQM can be traced to several consultants including Crosby, Juran, Taguchi and Deming. They showed different ways in defining quality. Crosby stresses on zero defects programme through process improvement to pursuing conformance to customers requirements. Juran and Deming stress primarily on leadership qualities, management commitment and involvement to achieve quality goals. Juran emphasizes symptom cause while and Deming emphasizes on 14 quality points. Taguchi emphasizes on concept that any deviation from the required specification results in loss and that organization need to strive to determine and meet customer’s specification. In ISO 9000, it emphasizes on the need of good documentations, traceability and records keeping.

In managing quality, the focus is not only on quality of product and service itself. It is also on the means to achieve it. Thus, quality management uses management techniques and tools in quality assurance and control of processes to achieve consistent quality of products and services. Many definitions of quality can be found in the TQM literature (Kaynak, 2003, Shah and Ward 2003, Prajogo and Brown 2004, Prajogo and Sohal 2006, and Ahire, 1997). Feigenbaum (1991) defines TQM as an effective system for integrating the quality development, quality maintenance and quality improvement efforts of the various groups in an organization so as to enable production and service at the most economical levels, which allows for full customer satisfaction. It is an integrative philosophy of management practice in an organization for continuous improvement of their product, services and processes. It capitalizes on the involvement of management, employees, suppliers, and its customers to meet or exceed customer satisfactions and expectations. Review by Cua, McKone, and Schroeder (2001) found that there are nine areas of common TQM practices in organizations. These are cross-functional product design, process management, supplier quality management, customer involvement, information and feedback, committed leadership,

strategic planning, cross-functional training, and employee involvement. Saraph, Benson, and Schroeder (1989) identified eight areas of primary quality concerns which they called critical quality factors. These factors of quality management were compiled from an exhaustive review of articles, books and studies of eminent quality practitioners and academics. These are the role of management leadership and quality policy; training; process management; employee relations; product / service design; supplier quality management; the role of the quality department; and quality data and reporting. They also identified that managerial commitment to quality combines several functions as one of the vital imperatives for the success of any quality improvement programme.

### 3. Cost of quality

Good quality product or service enables an organization to attract and retain customers. Poor quality leads to dissatisfaction to customers. As such, the costs of poor quality are not just those of immediate waste or rework and rectification, it is also the loss of future sales and subsequently the organization performance. The concept of quality costs was first described by Feigenbaum (1956) as a mean to quantify the total cost of quality-related efforts and deficiencies. According to Feigenbaum, total quality costs come from prevention costs, appraisal costs and quality failure costs. The prevention and appraisal costs are the cost of conformance. Examples of prevention cost are activities in quality planning, statistical process control, investment in quality-related information systems, quality training and workforce development, product-design verification, and systems development and management. Examples that involve appraisal costs include activities in testing and inspection of purchased materials, acceptance testing, inspection, testing, checking labor, setup for test or inspection, test and inspection equipment, quality audits and field testing.

Prevention costs arise from efforts to keep defects from occurring at all, while appraisal costs arise from detecting defects via inspection, test, and audit. On the other hand, cost of non-conformance is the quality failure costs which are comprised of internal quality failure and external quality failure. Internal failure costs arise from defects caught internally and dealt with by discarding or repairing the defective items, while external failure costs arise from defects that actually reach customers. Prevention of poor quality will reduce quality failure costs. It can also lead to the reduction of cost due to the need for many non-value added inspection and appraisal activities costs. Thus, organization needs to evaluate the costs involved of operating an effective quality management system to ensure an effective cost effective. In other words, it is crucial for organization to determine the trade-off between prevention, appraisal and failure costs for a specified level of quality performance for cost effectiveness so that investments in quality is based on cost improvement and profit enhancement. Thus, quality costs can serve as a means to measure, analyze, budget, and predict (Feigenbaum, 1991).

According to Smith (1998), the emphasis on cost, quality and time has generated many management changes with significant accounting implications with implementation of strategic initiative such as the use of activity based costing (ABC) on TQM initiative. ABC is perfectly suited to TQM because it encourages management to analyze activities and determine their value to the customer (Steimer, 1990). Shepard (1995) suggested that an economics of quality approach can be integrated with ABC for strategic cost effectiveness. Many companies found that ABC aligned well with TQM processes (Anderson and

Sedatole, 1998). Evidence of the context-specific benefit of TQM and ABC was found in case studies performed by Cooper, Kaplan, Maisel and Oehm (1992) where all five manufacturing companies studied found ABC and TQM to be highly compatible and mutually supporting. ABC and other strategic business initiatives complement and enhance each other, rather than being individually necessary and sufficient conditions for improvement (Anderson, 1995).

#### **4. Linking quality management system to organizational performance**

Sila (2005) reviewed that research works have often link TQM practices with multidimensional measures organizational performance of both financial and non-financial measures. Kaynak (2003) reported that TQM practices can directly affect financial performance, it also affect indirectly on increasing market competitiveness (Chong and Rundus, 2004), innovation (Singh and Smith, 2004), and productivity (Rahman and Bullock, 2005).

Empirical evidence supports the argument that by focusing on quality, an organization can substantially improve its performance (Peters and Austin, 1985 and ; Yahya, Salleh and Keat, 2001). Literature reviews by Lewis, Pun and Lalla (2006) on studies conducted in different countries including Costa Rica, Thailand, Indonesia, Palestine, Singapore, Australia, China and Hong Kong indicated that there are 12 criteria for successful implementation of quality management system. These are quality data and reporting; customer satisfaction, human resource utilization; management and process quality; management commitment; continuous improvement; leadership; strategic quality planning; performance measurement; customers focus; and contact with suppliers and professional associates. Literature investigation of TQM studies published between 1989 and 2000 by Sila and Ebrahimpour (2002) found 25 critical quality factors most commonly extracted from 76 studies. Lau, Zhao and Xiao (2004) found that firms that practice TQM have superior performance in leadership; strategic planning; customer and market focus; measurement, analysis, and knowledge management; human resource focus, process management, and business results.

While a substantial body of literature has been developed linking TQM system to business performance, Kim-Soon and Jantan (2010) reported that there is a dearth of evidence of comparing the soft factors and hard factors and its impact on business performance between big firms and the SMEs. Thiagarajan and Zairi (1997) regarded that systems, tools, and techniques such as quality management systems, cost of quality and statistical process control and external effectiveness (e.g. benchmarking and customer satisfaction surveys) are examples of hard quality factors and the soft quality factors are intangible and are primarily related to leadership and employee involvement. Firms can achieve superior business performance if they spend their resources towards improving their quality management system towards enhancement of their soft as well as hard quality factors. SMES should enhance their quality management to achieve the level of business performance of large firms (Kim-Soon and Jantan 2010).

#### **5. Approaches of implementing TQM**

Implementing TQM can be a tedious journey in an organization. Empirical evidence supports the argument that by focusing on quality, a business can substantially improve its



performance (Peters and Austin, 1985; Yahya et al., 2001). Different approaches are practiced by organizations to initiate and implement TQM. TQM GOAL/QPC Research Committee, a nonprofit organization located in the United States of America has documented some of these approaches described as follow.

- The Guru Approach. This method takes the teachings and writings of one of the leading quality thinkers and uses them as a benchmark to determine where the organization has deficiencies and then to begin to make appropriate changes to remedy those deficiencies. For example, managers would attend Dr. W. Edwards Deming's courses and study his "Fourteen Points." They would then go to work on implementing them.
- The TQM Element Approach. This approach takes key systems, organizations, and tools of TQM and begins work on them. This method was widely used in the early 1980s by companies that tried to implement parts of TQM as they learned them. Examples of this approach included use of specific elements such as Quality Circles, Statistical Process Control, Taguchi Methods, and Quality Function Deployment.
- The Company Model Approach. In this approach individuals or organizational teams would visit U.S. companies that were taking a leadership role in TQM and determine what successes they had and how they had accomplished them. The individuals or teams would then integrate these ideas with their own and thus develop their own organizational model which would be adapted for their specific organization.
- The Japanese Total Quality Approach. Organizations utilizing this method take a look at the detailed implementation techniques and strategies employed by Deming Prize-winning companies and use this experience as a way to develop a five-year Master Plan for in-house use.
- The Prize Criteria Approach. Using this model, an organization uses the criteria of the Deming Prize or the Baldrige Award to identify areas for improvement. TQM implementation under this approach is focused on Prize criteria benchmarks.

There is no one best way to organize quality management system in an organization as it is necessary to fit to the needs of the organization concerned. It is like what Scott (1981) described the contingency approach, "The best way to organize depends on the nature of the environment to which the organization must relate". The business settings are unique, the nature of business itself, the organization cultures and people are different from one another. Thus, the notion of no one right approach of implementation.

## 6. The quality journey

The journey of quality management never ends. Quality management is evolving and tomorrow will present a different scenario through adding and discarding practices. Whether it is a big organization or a small one, producing products or services, it is quality that matters to the customers. Global market competitiveness and market dynamics are continuously changing the landscape of managing quality. Competitive advantage requires constant corporate attention to the latest definition of customer-driven value. Effective quality management systems are dynamic, adaptable to change in meeting customer's requirements and expectations. It can provide guidance for establishing an organization's processes for maintaining records, improving processes and systems, and meeting customer's requirements and expectations.

Some recent themes in quality management that have become more significant include quality culture, the importance of knowledge management, innovation and the role of leadership in promoting, Kaizen and achieving high quality. Systems thinking are bringing more holistic approaches to quality. A system approach enables an organization to gain and retain customers and to improve overall its efficiency and profitability. Many authors have stressed that operations quality programmes should be both strategic and comprehensive (Slack and Lewis, 2008). They have also prescribed on how TQM integrate into a business strategy (e.g. Lile and Lacob, 2008). TQM has been a popular business strategy in many manufacturing organizations in the past few years (Sohal & Terzivski, 2000). It thus provides evidence of the importance of TQM practices as an effective pillar of corporate strategy for achieving organizational excellence. Thus, for quality management to be strategic, organization needs to commit to an ongoing effort to improve the quality of products, services or processes to sustain market competitiveness of its product and service.

## 7. Concluding remarks

Total Quality Management is a management philosophy on how to approach the organization of quality improvement through the “holistic” approach. The TQM practices have evolved and improved continually over time to sustain organizational competitiveness. This chapter has dealt on what is quality and TQM, cost of quality, linking quality management system to organizational performance, its impact on organizations and approaches of implementing TQM and the quality journey. For quality management to be strategic, organization needs commit to a continuous improvement journey to sustain market competitiveness of its product and service.

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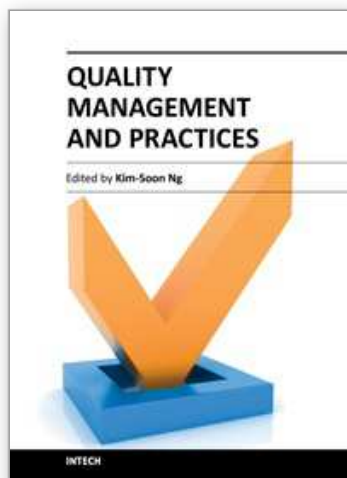
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This book is comprised of a collection of reviews and research works from international professionals from various parts of the world. A practical approach to quality management provides the reader with the understanding of basic to total quality practices in organizations, reflecting a systematic coverage of topics. Its main focus is on quality management practices in organization and dealing with specific total quality practices to quality management systems. It is intended for use as a reference at the universities, colleges, corporate organizations, and for individuals who want to know more about total quality practices. The works in this book will be a helpful and useful guide to practitioners seeking to understand and use the appropriate approaches to implement total quality.

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