

Quality Management: Implementation of Quality Systems a Perspective of Developing Countries-India

**vorgelegt von
Dipl.-Ing. Venugopal Reddy Bireddy
aus Berlin**

von der Fakultät V – Verkehrs und Maschinensysteme
der Technischen Universität Berlin
zur Erlangung des akademischen Grades

Doktor der Ingenieurwissenschaften

-Dr.-Ing.-

genehmigte Dissertation

Promotionsausschuss:

Vorsitzender: Prof. Dr. med. habil. W. Friesdorf

Berichter: Prof. Dr.-Ing. Joachim Herrmann

Berichter: Prof. Dr.-Ing. Kai Mertins

Tag der wissenschaftlichen Aussprache: 24.10.2007

Berlin 2008

D 83

Preface

This dissertation is an attempt to further our understanding of quality management practices in developing countries focusing on India. The current business environment is in a process of constant change due to competitive environment created by the globalization; this scenario is more relevant to India compared to other developing countries. To be competitive in this competitive environment ISO standard is the most widely used framework in introducing quality management systems and winning new customers. In this scenario, understanding the purpose, acceptance and benefits of implementing standards is critical. However, this difficulty is more common to developing countries and makes it more important to understand knowledge and awareness concerning quality management practices.

One can see the teachings of quality gurus being practiced all over the world mainly in the form of TQM based awards. Regarding ISO it is clear that eight quality management principles address large portion of the enabler criteria of these TQM based quality awards. In practice, implementation and verification of these principles is largely ignored while auditing for certification. On the other side, literature on quality management practices in developing countries reveal developing economies often have unique characteristics such as lack of democracy, instability, corruption, unskilled labor force and others. While not all developing countries suffer from these ills more are less this is valid. In developing our understanding author presents results from studies focused on India. The first study was carried on a group of companies supposed to have established quality management system. Results from this study showed continuous improvements were not pursued as required even though the policies are committed. Observations basing on this study could not find significant differences in practices with German organizations except cultural and sustainability differences. In addition the study carried in SSIs indicates factors such as lack of training, low product range of these companies, market acquisition, and investment in the technology and relationships with workers is affecting the companies' negatively. These findings insist the development of organizational competence in supporting important elements, (Management Activities (SQM), Communication Process, and Employee Management) to realize the benefits of changes such as ISO certification. In supporting organizations these three characteristics of organization are formed as structural elements for the successful implementation and are surfaced in the proposed implementation model for introducing quality management concepts.

*Dedicated to my brother
Kishore Reddy Bireddy*

Acknowledgement

A journey will always be easier when you travel together. Interdependence is certainly more valuable than independence. This thesis is the result of three years of work whereby I have been accompanied and supported by many people. It is my pleasure that I have now the opportunity to express my gratitude for all of them.

The first person I would like to thank is my supervisor **Prof. Dr.-Ing. Joachim Herrmann**, whom I know since 1999 from my first semester at TU-Berlin when I started my Master Studies. During these years, I have known Prof. Herrmann as a sympathetic and principle-centred person. Sir, I owe you lots of gratitude for having shown me this way of research. You are the only reason for me taking up the subject quality management. As a professor, you introduced me to the subject and as a promoter, you provided me with the freedom to explore research directions and choose the routes that I wanted to investigate. Your encouragement, guidance, suggestions, and critical comments have greatly contributed to this thesis. I enjoyed our discussions and have learned a great deal from you. I strongly believe that what I have learned during the PhD study period will be infinitely profitable for the rest of my life. For this I am eternally grateful. Thank you, from deep in my heart!

I cannot stop thanking **Fruke Sveceny** from my heart for being so patient in arranging numerous meetings with professor and helping me through registration, writing and completion of thesis. I would like to say special thanks to Dipl.-Ing. Michael Gropp for providing valuable information regarding quality management practices of German organisations and like to say thanks to Dipl.-Ing. Jasmin Majetic for his willingness to help me during thesis. It is inappropriate if I don't remember Henrik Herklotz, thank you very much for always being there to help when ever there is a problem. Thank you each and everyone from the department of Quality Science, for being cooperative throughout my work for helping me directly and indirectly.

I am grateful for O. Vasudeva Reddy and Chitaranjan Reddy my family friends, who helped me in contacting the companies during studies. With out their help it would have not been possible to get survey and get interview study as it was done.

In my opinion, doing a PhD is a task of testing to deal with uncertainties; it was definitely one of the best experiences of my life. Additional energy and vitality for this research was provided externally through my involvement in several social activities. I am very grateful to all my mates, since past three years they helped me overcome some hard times. Especially I have found very good friends during this period, **Mateja** and **Tina** from Slovenia the six months I stayed with them in Eichkamp, was one of the best times in Berlin. The visit I made to their country was one of the best holidays I had in my life. There are many other good mates I found during this period Peter, Iris, Ray, Wolfgang, Clarissa during my stay at Studentendörf Schlatensee, I'm thankful to you all for the pleasant time we had. I am also thankful to all the Indian friends in Germany. They provided moral support, emotional support. Especially I would like to thank my first friend in Berlin **Srikanth Karnati** who is always there to help me during all times from last seven years even though he left Berlin. Special thanks to **Rajashaker Reddy Vuyyuru**, he is the backbone of literature review in this thesis, when ever I'm in need of research papers he is the one who made sure those papers are available to me. I would also like to thank Shivaram, Raveendra, Bhaskar, Rajendher Reddy Nandigama, Praveen Yalamanchali, Ravi Pandranki, Jeevan Reddy, Srikanth Vobbilishetti, Chenna Reddy, Rajkumar, Mishra and my old friend Ramakrishna for having shared many experiences and thoughts with me throughout the last years. A special thanks goes to **Subhash** from Benares, whom I have known only from last year. He is kind, helpful and trustful.

I feel a deep sense of gratitude for my late mother who formed part of my vision and taught me the good things that really matter in life. My father provides me inspiration for my work. He has shown abundant patience in bringing me up, provided what I asked for and what I needed at all times. I am also grateful for my brothers Srinivas reddy Bireddy, Jaganmohan Reddy for helping me during this research.

The chain of my gratitude would be definitely incomplete if I would forget to thank the first cause of this chain Swami Vivekananda. His book is the prime motivating factor for my journey from India to Germany. My deepest and sincere gratitude for inspiring and guiding millions of Indians such as me.

Venugopal Reddy Bireddy

Table of Contents

Chapter 1	Introduction.....	1
1.1	Quality Management, Performance Development, and Developing countries	1
1.2	Research Objectives	3
1.3	Delimitation	3
1.4	Research Questions	4
1.5	Structure of the Thesis	4
Chapter 2	Introduction to Quality Management Concepts	6
2.1	Introduction.....	6
2.2	Major Contributors to Our Understanding of Quality	8
2.3	Quality Awards and ISO Standards	11
2.4	Discussion	27
2.5	Conclusion	37
Chapter 3	Review of Quality Management Practices	38
3.1	Quality Management in India.....	38
3.2	Quality Management in India, Deming Prize.....	54
3.3	Quality Management in Developing Countries	65
3.4	Quality Management in German Organizations.....	74
Chapter 4	Research Methodology.....	80
Chapter 5	Summary of Studies	92
5.1	Summary of Survey	92
5.2	Summary of Interviews in SSIs.....	96
Chapter 6	Discussion.....	98
6.1	How ISO Certified Indian Organisations are Managed	99
6.2	Classification of Indian Organisations.....	106
6.3	Quality Management in Germany and India	113
6.4	How can organisations successfully implement ISO Certification	118
Chapter 7	Summary and Conclusions	139
7.1	Summary.....	139
7.2	Conclusion	143
7.3	Research Evaluation	145
References.....	147
Appendix.....	158

List of Figures

Figure 2.1 Baldrige Criteria for Performance Excellence Framework	13
Figure 2.2 The EFQM Excellence Model Framework.....	17
Figure 2.3 Relationship between basic categories source: The Deming Prize Guide 2005	21
Figure 2.4 ISO 9001:2000 Process Model.....	25
Figure 2.5 Process Approach	25
Figure 3.1 Rane Brake Linings TQM Model	57
Figure 3.2 Sona-Koyo's Model of Excellence	60
Figure 3.3 SRF TQM action Model.....	61
Figure 3.4 Mahindra and Mahindra Limited and Hi-Tech Carbon Gmpd.....	63
Figure 5.1 Survey Results Management Commitment.....	92
Figure 5.2 Survey Results Quality Planning	93
Figure 5.3 Resource Management	93
Figure 5.4 Measurement Analysis and Improvement	94
Figure 5.5 Organisations Quality Results.....	95
Figure 5.6 Satisfaction with Quality Improvement Efforts.....	95
Figure 6.1 General trend in ISO Certified Organisations	119
Figure 6.2 Structure for Implementing Frameworks.....	124
Figure 6.4 Strategic Quality Model.....	129
Figure 6.5 Model for organisational communication.....	133
Figure 6.6 Flow Chart for Effective Communication	135
Figure 6.7 Model for Employee Management Practices	137

List of Tables

Table 2.1 Quality Awards Criteria.....	29
Table 2.2 Customer enablers and results weights of MBNQA, EFQM awards	30
Table 2.3 Human resource focus / result weights of MBNQA, EFQM awards	31
Table 2.4 Leadership, policy and strategy/results weights of MBNQA, EFQM awards	32
Table 2.5 Process management / process improvement weights of MBNQA, EFQM awards	34
Table 3.1 List of Deming Award Winning Companies From India	54
Table 3.2 Mahindra and Mahindra Limited and Hi-Tech Carbon Gmpd	63
Table 3.3 Total number of ISO 9001:2000 Certifications	67

Abbreviations

MBNQA	Malcolm Baldrige National Quality Award
EFQM	European Foundation for Quality Management
ISO	International Organization for Standardization
SSI	Small Scale Industries
TQM	Total Quality Management
ISB	Industrial Synthetics Business
WTO	World Trade Organisation
DC	Developing Countries
QM	Quality Management
DTI	Department of Trade and Industry -UK
SPC	Statistical Process Control
BIS	Bureau of Indian Standards
QCFI	Quality Circle Forum of India
BEL	Bharat Electronics Limited
CII	Confederation of Indian Industries
WEWE	Work Environment and Waste Elimination
ISB	Industrial Synthetics Business
SKSSL	Sona Koyo Steering Systems Limited
QMS	Quality Management System
RBL	Rane Brake Linings Ltd
SCL	Sundaram-Clayton Ltd
JIPM	Japan Institute of Plant Maintenance
QCI	Quality Council of India
VDA	Verband des Automobilindustrie (Association of German Automobile Industry)
CQI	Continuous Quality Improvement

Chapter 1 Introduction

In this chapter the background to the research area and the problem discussion are presented. The research questions, purpose, delimitations, and the structure of the thesis are also described.

1.1 Quality Management, Performance Development, and Developing countries

The use of quality management has become widespread among organisations during the last decades. The aims of the businesses may differ, but the importance of customers is a matter of common interest, and the ability of organisations to adapt to new customer requirements on a global market is of vital importance for long-term success. During the past decade, quality management has been recognised as a major edge for competitiveness and long-term profitability. In the process systems such as ISO 9000 are developed for controlling and managing quality and are being adapted all over the world. The importance of such systems can be conformed by ever increasing system certifications, which crossed 700,000 by the end of 2005 [1]. Along with ISO standards, TQM and other concepts such as Six Sigma are gaining much needed importance.

The adoptability of such generic systems and practices are not uniform all over the world. There is strong difference between developed and developing world in this regard [1], [2], [3]. The reasons such as, low technology, closed markets, low education, and access to other markets caused these differences in adaptability [3], [4], [5]. As one knows globalisation that works for universal markets where only competitive organisations can survive, will be a hard pill to swallow if organisations do not adopt these practices. These practices are also demanded by world trade organisation (WTO) to promote exports from developing countries [6]. Successful organisations are those, which are able to adapt as the situation demands and practice management techniques with purpose of continuous improvement in its ability to deliver quality goods and services. Such organisations are very few in developing countries [2]. The spread of management concepts is aided by the collaborations, transfer of technologies from developing world, which demands organisations in DC's adopt changes to practice standards such as ISO. Now and then, there is an argument that these systems do not deliver performance other than installing a formal structure for managing quality [7]. This situation is some way leading organisations to go for standards

only on the demand of the customers. However, many studies found how organisations are benefiting from adopting standards along with other useful tools [8]. This conflicting situation is determinant for spreading quality values in the world especially in developing countries as performance of these organisations needed to be raised in order to make them able to compete.

There arises the situation to know better how organisations are implementing these systems; about commonalities of situation in whether these practices are particular to type of countries. It is almost two decades since the first ISO standards are published with which systematic practices of quality management came into existence especially in to developing countries. The existing literature has shown that no large-scale research has been systematically conducted dealing with QM practices in this direction, particularly in developing countries in identifying and addressing failures in ISO implementation, especially in India [Chapter 3]. In order to bridge this gap, an investigation into true practices of QM implementation in developing countries is truly needed. Such a study can explore the degree of quality management practices, understand their motivations, deficiencies and help in identifying problem areas and possible remedies in order to realise true benefits of these practices.

1.2 Research Objectives

Based on the current QM practices of Indian manufacturing firms, this research aims at achieving the following research objectives:

- To generate knowledge and awareness concerning quality management practices in developing countries (focusing on Indian manufacturing firms)
- Develop model that can be used by organisations for introducing quality management concepts.

Thus, new knowledge related to quality management practices in developing countries especially Indian organisations can be derived. In this research, new knowledge is generated from existing knowledge integrated with specific characteristics of Indian organisations. After reviewing the existing literature, it has become very clear that this research project is the only one that systematically examines the quality management practices in Indian organisations. In addition, this research attempts to develop an implementation model that can be used by organisations for introducing quality management concepts.

1.3 Delimitation

Based upon the two overall aims, the author has made the following delimitations of the research accounted for thesis:

- The quantitative study, with the objective of estimating the QMS implementation is restricted to Indian organisations with export orientation due to resource, geographical and practice considerations
- The qualitative study on small scale industries (SSI) in this thesis comprises Indian organisations based in Hyderabad due to geographical and cultural considerations.

1.4 Research Questions

Based on the research objectives, the extensive literature review, brainstorming sessions with the author's promoter and industry friends, and informal talks with quality practitioners in India, four research questions have been proposed. They are listed as follows:

***Question 1:** Development of different quality management concepts, how they complement each other?*

***Question 2:** How quality management work is organised in India and other developing countries?*

***Question 3:** How export oriented organisations are practicing quality management?*

***Question 4:** What lessons can be learned from these practices of these organisations and how can these practises better implemented?*

1.5 Structure of the Thesis

Chapter 1 gives a brief description of the research.

Chapter 2 describes the development of quality management, from the quality gurus (Deming, Juran, Crosby), the three quality award models (the Deming Prize, the European Quality Award, and the Baldrige Quality Award), and ISO Standard and present how they address quality management concepts their purposes and how they can be related to each other. Here ***Question 1:** Development of different quality management concepts, how they complement each other? Will be addressed.*

Chapter 3: Deals with Quality management practices with extensive review of literature available. Describes how quality management work is organised in India and identifies the gaps in existing literature, provides view of QM practices developing countries and practices in Germany. Here ***Question 2:** How quality management work is organised in India and other developing countries? Will be partially addressed.*

Chapter 4 Presents the methodological perspectives of this research. The strategies adopted in this research are discussed in greater detail. The issues of how to develop the research questionnaire and structured interviews, how to conduct the questionnaire survey and structured interviews, and how to conduct the case study are described in this chapter.

Chapter 5 Presents the summary of studies conducted. The questionnaire survey is conducted in two parts, one based on organisations which are collaborating with German organisations

and second study organisations in and around Hyderabad, and interviews conducted in small organisations.

Here *Question 2: How quality management work is organised in India and other developing countries? Will be partially addressed.*

Question 3: How export oriented organisations are practicing quality management? Will be addressed

Chapter 6 Discussion based on results from the studies and literature with different perspectives is presented. In addition the development of an implementation model for introducing quality management concepts is discussed.

This model is developed based on existing knowledge, the results of the questionnaire survey and the structured interviews and the specific characteristics of Indian organisations.

Here: *Question 4: What lessons can be learned from these practices of these organisations and how can these practises better implemented? Will be addressed.*

Chapter 7 Presents a summary of the research and the main conclusions with respect to the new knowledge derived from this research. The limitations of the research and issues requiring further study are also addressed.

Chapter 2 Introduction to Quality Management Concepts

This chapter will focus on evolution of quality management. In first part of the chapter author will present the influencing personalities on quality management and brief view of their teachings and in the later part of the chapter author will present modern day quality management models (Quality Awards & ISO Standards) and discuss about their criteria.

2.1 Introduction

“A set of coordinated activities to direct and control an organization in order to continually improve the effectiveness and efficiency of its performance.”

-QMS as defined by DTI¹

The concept of quality is evolved from inspection, measurement, and testing, which had been in practice for many years in 19th century and early 20th century. With the start of production in large quantities, “The Taylor System” inspection of goods came in to practice. The Taylor System led to the creation of separate inspection department, with the responsibilities to keep defective products from reaching customers [1], [3].

In the 1920’s statistical theory began to be applied to quality control by Walter A. Shewhart who began to focus on controlling processes, making quality relevant not only for the finished product but also for the processes that created it [1]. In 1924, Shewhart made the first use of a control chart. Later Deming developed use of statistics as theory of “statistical process control (SPC)”. Application of statistical control became popular in manufacturing companies after World War II through teachings of Deming [2].

After the destruction in World War II, the reputation for inferior quality led Japanese organizations to explore new ways of thinking about quality. Japanese recognized the problems and took the help quality gurus – Deming, Juran, and Feigenbaum to solve their problems and make their industries competitive. Due to the influence of these gurus’ in 1950’s, quality management practices developed in Japanese companies became popular as Japanese management philosophy. As a result, all companies in Japan started practicing quality control and management by 1960. The practice of quality concepts helped Japan’s imports into the USA and Europe increase significantly by early 70’s [2].

¹ Department for Trade and Industry Government of United Kingdom

In 1969, the first international conference on quality control took place with the help of JUSE [43]. Feigenbaum used the term “total quality” for the first time, and referred to wider issues such as planning, organisation, and management responsibility in his paper [2]. The quality revolution in the in Europe and USA started in early 1980’s, when companies introduced their own initiatives in response to the Japanese success. In 1983 the national quality campaign was started in Britain to bring the awareness of importance of quality for competitiveness [2]. During this period the international standards ISO 9000 series brought the main principles of quality management in to all branches that specify the requirements for the documentation, implementation and maintenance of a quality system.

During 1980’s, many countries adopted TQM frameworks, aimed at helping organizations to achieve excellent performance. In the 1980s, the Malcom Baldrige national quality award came into existence as an excellence model to strengthen the competitiveness of US industries. Few years later, the European foundation of quality management – founded, supported and financed by the largest companies in Europe, developed the quality award based on the “Business Excellence Model” with similar criteria as Malcom Baldrige national quality award model [3].

2.2 Major Contributors to Our Understanding of Quality

There are number of people whose work dominates the quality movement. Ideas and approaches they provided have stood the test of time and have come to form a body of accepted knowledge on quality management. Only few of these had provided the new ways to understand and achieve quality. All the people in the field of quality management consider them as “gurus”, which literally means “*People who leads others from the darkness of ignorance to the light of knowledge*”[44]. According to the author, understanding the teachings of gurus is very important to every quality management practitioner. Out of all quality gurus, we consider Dr. W. Edward Deming, Dr. Joseph Juran and Philip B. Crosby as most prominent ones for their unique approaches towards quality management.

W. Edwards Deming: Deming is one of the founders of quality control. He is famous for the transformation of Japanese industry after World War II. Deming's philosophy is summarized in his famous “*14 Points for Management*”, provided to help people understand and implement the necessary transformation. Deming places lot of faith in the workers then management; he sees them as the root cause of problems and advocates that they should change instead of blaming production workers [36]. He recommends workers and managers must form a partnership to drive down errors, reduce costs and provide better quality goods and services [37]. He educated managers in the importance to understand the differences between special causes and common causes [36]. Deming believed that managers who lacked understanding of variation would take wrong decisions. He recommended the Japanese to implement a systematic approach to problem solving known as PDCA cycle (or Deming cycle) and continuous improvement cycle.

According to him improvements in quality will lead to improvements in productivity, which in turn leads to lower prices, greater market share, and future growth [47]. He recommended management to become actively involved in their company's quality improvement programs. He educated the western world by listing out deadly diseases and obstacles afflicting most companies in the western world.

According to Deming, the transformation to a new style of organizational management according to 14 points for management should be based on greater cooperation between managers and employees. This transformation is achieved by introducing “*System of Profound Knowledge*” consists of four interrelated parts [45]:

Appreciation for a system: This emphasizes the need for managers to understand the relationship between functions and activities. Everyone should understand that the long-term aim is to gain - employees, shareholders, customers, suppliers, and the environment. Failure to accomplish the aim causes loss to everybody in the system.

Knowledge of statistical theory: This includes knowledge about variation, process capability, control charts, interactions, and loss function. All these need to be understood to accomplish effective leadership, teamwork etc.

Theory of knowledge: All plans require prediction based on experience. An example of success cannot be successfully copied unless the theory is understood.

Knowledge of psychology: It is necessary to understand human interactions. Leaders must use differences between people for optimization. People have inherent motivation to succeed in many areas.

Joseph Juran: Juran is well known in the quality field as the editor of the quality control handbook (1951) and for his paper introducing the quality trilogy [42].

This model developed in the 1950's defines managing for quality as three basic quality-oriented, interrelated processes [39]: It shows how an organization can develop by better understanding the relationship between processes that plan, control and improve quality and achieve business results.

- Quality Planning — the process for designing products, services and processes to meet customer needs;
- Quality Control — the process for meeting goals during operations; and
- Quality Improvement — the process for creating breakthroughs to unprecedented levels of performance.

According to him, quality is defined as “fitness for use”, with this Juran means that quality has two meanings; quality means product features meet customer needs, and should be free from deficiencies [38]. Further Dr. Juran described how company wide quality management is structured into three parts, 1) Strategic quality management-providing upper managers with a structured approach for managing quality throughout the company. 2) Operational quality management-providing middle managers with a structured approach for managing quality 3)

The workforce and quality-for identifying the potential contributions of the workforce and provide necessary infrastructure and conditions that are necessary to realize this potential [38].

Philip B. Crosby: Crosby is known for developing the concept of “zero defects” and for defining quality as conformance to requirements. His argument was that quality is free, as the efforts for higher quality pays for itself in reduced rework and warranty costs, improved sales due to better product quality [46]. The book “Quality is free” made managers to take quality seriously; it helped them to realize that quality and productivity were not to be traded-off against each other but, rather, improving quality lead directly to improving productivity. According to him management should take prime responsibility for quality, and workers follow their manager’s example.

He established the “absolutes of quality management” the foundational elements of the body of quality knowledge, which includes "the only performance standard (that makes any sense) is Zero Defects”, and the basic elements of improvement.

The four absolutes of quality management [40] are:

- Quality is conformance to requirements
- Quality prevention is preferable to quality inspection
- Zero defects is the quality performance standard
- Quality is measured in monetary terms – the price of non-conformance

According to Crosby, lack of knowledge and lack of attention are the two main reasons for mistakes. Education and training will remove the first cause and a commitment to excellence (zero defects) and attention to detail will cure the second. Crosby stressed management style is important to successful quality improvement. He presented the quality management maturity grid to evaluate quality management maturity of firms. The five stages in the maturity grid are: uncertainty, awakening, enlightenment, wisdom, and certainty. These stages can be used to measure progress in categories such as management understanding and attitude, problem management, cost of quality as percentage of sales, and outline company’s quality position [41].

2.3 Quality Awards and ISO Standards

2.3.1 The Malcolm Baldrige National Quality Award

Introduction

The Malcolm Baldrige Award was established in 1987 to drive and guide American organizations towards excellence and achieve world-class quality [4]. The president of the United States gives the award annually to small and large businesses manufacturing and service, education, and health care organizations that apply and are judged to be outstanding based on the criteria [4].

Objectives

According to “[6]”, “The Malcolm Baldrige National Quality Improvement Act of 1987 - Public Law 100-107” the purpose of the award is to achieve following objectives:

1. Helping to stimulate American companies to improve quality and productivity for the pride of recognition while obtaining a competitive edge through increased profits;
2. Recognizing the achievements of those companies that improve the quality of their goods and services and providing an example to others;
3. Establishing guidelines and criteria that can be used by business, industrial, governmental, and other organizations in evaluating their own quality improvement efforts; and
4. Providing specific guidance for other American organizations that wish to learn how to manage for high quality by making available detailed information on how winning organizations were able to change their cultures and achieve eminence.

Important Benefits to the Organizations

1. Accelerates quality improvement efforts (through guidance of award criteria).
2. Provides outside perspectives of organizations processes through reviews of each application by experts.
3. Identification of strengths and opportunities for improvement through feedback (thorough written assessment).

4. Helps organization to determine its most critical performance measures and improve performance

Criteria for Evaluation

Criteria for evaluation depend on the core values found in highly performing organizations. These values and concepts provides basis on which organizations should run to become successful. Thus, derived criteria are reflection of these core values in a detailed manner [5].

Core Values

- **Visionary leadership:** Leadership should set directions, create values for all the stakeholders, and develop strategies, systems, and use of techniques to ensure performance excellence and act as role models for entire organisation.
- **Customer driven excellence:** All the features and characteristics of products & services including customer expectations and new developments (in technology and competitors) should be taken care in providing goods and services to customers.
- **Organizational and personal learning:** learning should be part of daily work of all the members of organizations and needs to be rooted in the organization culture.
- **Valuing employees and partners:** Organisations should work towards satisfaction, development, and well being of employees through more flexible, high-performance work practices. Organizations should also work towards building internal and external partnerships to achieve overall goals.
- **Agility:** Organizations should develop ability for rapid change and flexibility. Organizations should be able to cope with shorter cycles in introducing new products/services and more sensitive to ever changing customer demands.
- **Focus on the future:** Organizations should be able to predict and plan for future aspects (business challenges, competitions, new opportunities).
- **Managing for innovation:** Innovation should be part of the daily work as a means to achieve sustainable improvements in all the activities.
- **Management by fact:** Organizations should collect data (measure) for analysis of performance of various critical activities.
- **Social responsibility:** Leaders should promote organizations the responsibilities towards public, ethical behaviour and in practicing good citizenship.

- **Focus on results and creating value:** Organizations should take care that its performance measurements focus on key results, which create balanced value to all the stakeholders.
- **Systems perspective:** The Baldrige criteria provide a system perspective (*Figure 2.1*) for managing organization and its key processes. The seven Baldrige criteria and the core values form the building blocks and the integrating mechanism for the system. A systems perspective promotes using measures, indicators, and organizational knowledge to build key strategies and link these strategies with key processes and resources to improve overall performance and satisfy customers.

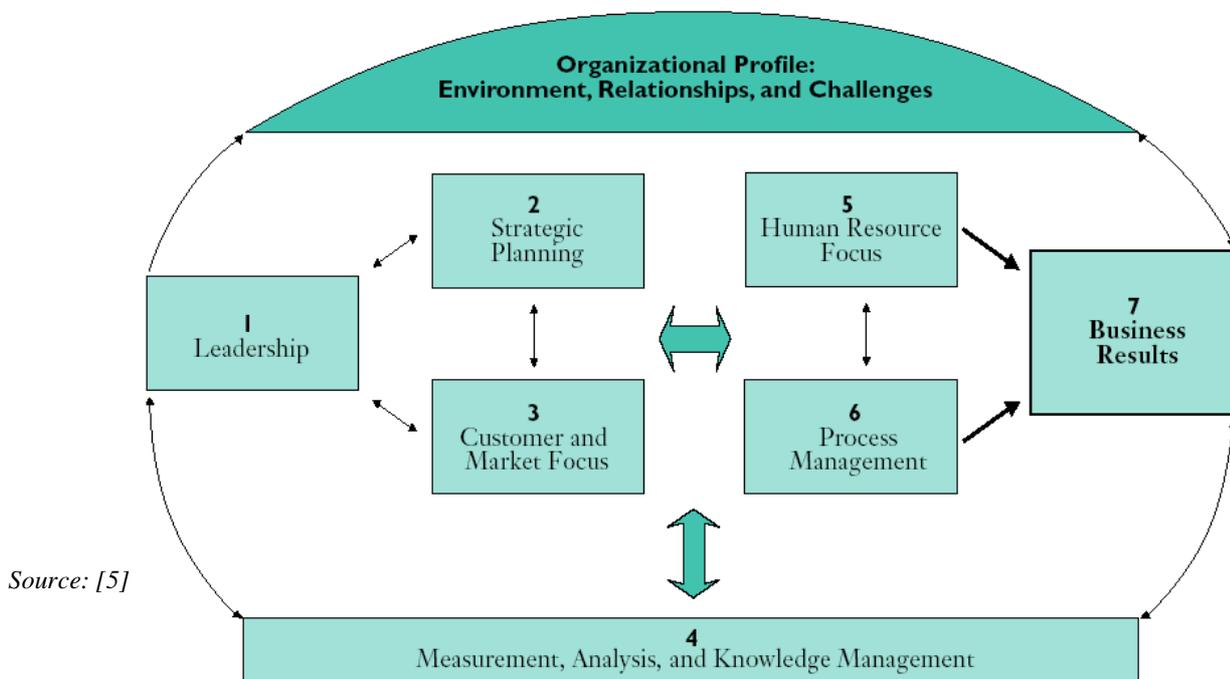


Figure 2.1 Baldrige Criteria for Performance Excellence Framework: A Systems Perspective

Criteria for Performance Excellence

Baldrige award for excellence is given to the organizations basing how well they score to performance criteria. The seven categories in the performance criteria are based on 11 core values presented [5].

Criteria

- **Leadership** examines how organization's leaders guide and sustain organization. It is also examined how organization addresses its ethical, legal, and community responsibilities.
- **Strategic planning** examines how organization develops and deploys strategic objectives and action plans, and how progress is measured.
- **Customer and market focus** examines how organization determines customer requirements, expectations, and preferences and how it builds relationships with customers.
- **Measurement, analysis, and knowledge management** examines how organization selects, gathers, analyzes, manages, and improves its data, information, and knowledge assets
- **Human resource focus** examines how organizations facilitate growth of its employees and how work systems and employee learning and motivation enable employees to develop and utilize their full potential in alignment with organization's overall objectives, strategy, and action plans.
- **Process management** examines aspect organization's process management, such as key product, service, and business processes for creating value to customer and organization and key support processes.
- **Business results** examines organization's performance and improvement in business areas product and service outcomes, customer satisfaction, financial and market performance, human resource results, operational performance, and leadership and social responsibility. Performance levels are compared to those of competitors.

2.3.2 The European Model for TQM

The EFQM Excellence Model is a self-assessment framework similar to Baldrige award used for measuring the strengths and areas for improvement of an organisation across all of its activities. “EFQM model for excellence” is widely used TQM framework in Europe. Many countries in Europe and around the world adopted EFQM model in establishing national quality awards.

There are three levels of reorganization for excellence in recognizing EFQM model for organizations [25]:

1. European Quality Award(EQA)²
2. Recognized for excellence
3. Committed for excellence

European Quality Award (EQA) is the highest recognition any organization can receive for achieving organization excellence according to EFQM Model. All the organizations that receive EQA are excellent organizations with minimum 5 years of success in continuous improvement. These organizations are treated as role model organizations in Europe.

Recognized for excellence is the second level for recognizing organization excellence, useful to organizations recognizing the structured approach to identify organizational strengths and areas for improvement. This reorganization is a step towards achieving the ultimate goal “European Quality Award”. The minimum score required is 400 or more based on EFQM model criteria for getting reorganization for excellence.

Committed to excellence is intended towards organizations that started their journey towards EQA. This is given to organizations recognizing their understanding of current organizational performance level and their ability to set improvement priorities and finally executing prioritized activities.

Potential Benefits

- The model provides a holistic framework that systematically addresses a thorough range of organizational quality issues and also gives attention to impacts through the ‘results’ criteria

² The award name was changed to EFQM Excellence Award (EEA) since 2006

- It provides a clear diagnosis of an organisation's activities and is useful for planning as it makes links between what an organisation does and the results it achieves, highlighting how they are achieved
- There is no requirement for external validation and the model can be used as an internally driven self assessment tool allowing an organisation to be as honest and open as possible in gauging its performance
- Scoring can provide an organisation with an internal benchmark for its next self-assessment, in order to capture trends. It can also be used among organisations for some external benchmarking and comparison

EFQM Model

EFQM model is a non-prescriptive framework for recognizing all the approaches, which help to achieve sustainable organizational excellence. EFQM model is built on basic concepts, which are essential for organizations aimed at excellence. Leadership of organizations should be committed to these concepts in their own way to achieve excellence [25].

Fundamental Concepts

1. Results orientation: Organisation should work for achieving results that delight all the organisation's stakeholders.
2. Customer focus: Organisation should focus on creating sustainable customer value.
3. Leadership & constancy of purpose: Organisation should lead by visionary and inspirational leadership, coupled with constancy of purpose.
4. Management by process and focus: Excellence is managing the organisation through a set of interdependent and interrelated systems, processes, and facts.
5. People development and involvement Organisation should strive for maximising the contribution of employees through their development and involvement
6. Continuous learning, innovation and improvement: Challenge the status quo and effecting change by utilising learning to create innovation and improvement opportunities
7. Partnership Development Organisation should develop and maintain value adding partnerships

8. Corporate and social responsibility: Organisation should be able to exceed the minimum regulatory framework in which the organisation operates and to strive to understand and respond to the expectations of their stakeholders in society.

The Structure of EFQM Excellence Model

The EFQM Excellence Model is framework based on nine criteria and 32 sub-criteria used by organizations across Europe to evaluate their strengths, weaknesses, opportunities, and threats and to monitor progress of strategic actions. For companies and more generally organizations, it provides a framework for continuous improvement.

The framework shown in *Figure 2.2* was revised in 2003 [24]. The criteria, summarized below provide an overview of elements in the framework that is grouped to two categories enablers and results.

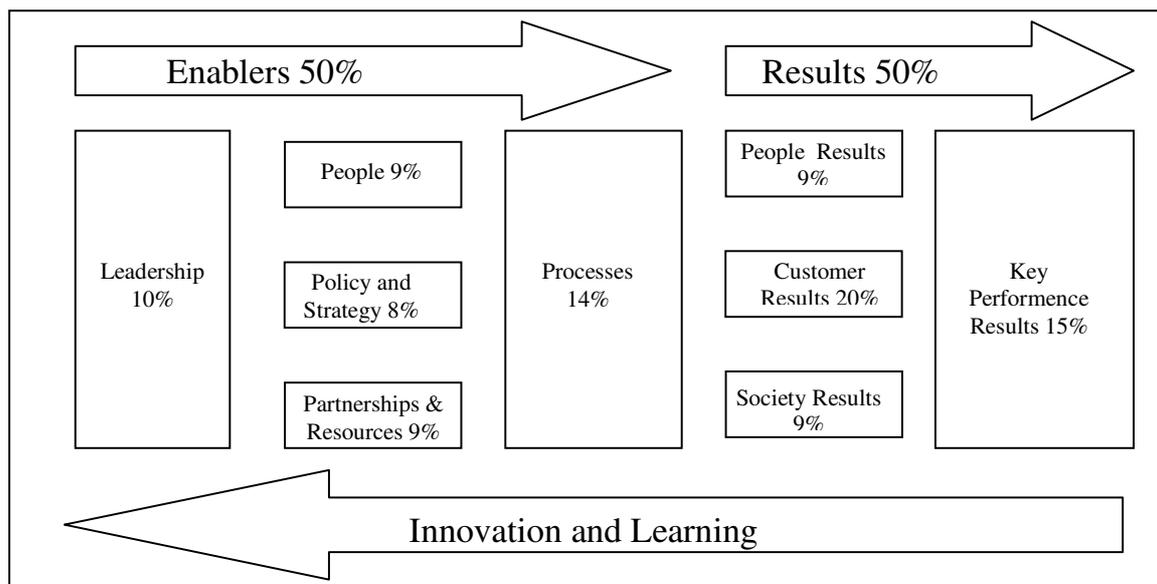


Figure 2.2 The EFQM Excellence Model Framework

Enablers: Enabler criteria deal with activities carried out in organization, how the leadership sets the goals, defines the objectives, and provides the means to achieve these objectives. Enabler criteria ask what does organization plans to achieve and what organization does to achieve it.

Leadership: Leaders from excellent organisations develop and facilitate the achievement of the mission and vision. They develop organisational values and systems required for

sustainable success and implement these via their actions and behaviours. During periods of change, they retain a constancy of purpose. Where required, such leaders are able to change the direction of the organisation and inspire others to follow.

Policy & strategy focus: Excellent organisations implement their mission and vision by developing a stakeholder focused strategy that takes account of the market and sector in which it operates. Policies, plans, objectives, and processes are developed and deployed to deliver the strategy.

People: Excellent organisations manage, develop, and release the full potential of their people at an individual, team-based, and organisational level, through fairness, equality, and empowerment.

Partnerships & resources: Excellent organisations plan and manage external partnerships, suppliers and internal resources in order to support policy and strategy and the effective operation of processes.

Processes: Excellent organisation's design, manage and improve processes in order to fully satisfy, and generate increasing value for, customers and other stakeholders.

Results: Results criteria deal with how far organization is successful in achieving its goals, related to customer, society and its own employees and importantly financial success. Results criteria verify organizations ability to achieve all the goals and objectives as planned.

Customer results: Excellence organisations comprehensively measure and achieve outstanding results with respect to their customers.

People results: Excellent organisations comprehensively measure and achieve outstanding results with respect to their people.

Society results: Excellent organisations comprehensively measure and achieve outstanding results with respect to society.

Key performance results: Excellent organisations comprehensively measure key results defined by the organisation and agreed in their policy and strategies.

2.3.3 Deming Prize

The Deming Prize is the most important award on TQM. Union of Japanese Scientists and Engineers (JUSE) established the prize in 1951 in honour of the late Dr. William Edwards Deming through his teachings on statistical quality control helped Japan to lay its foundation of quality management [7]. Deming prize is awarded annually. Any company in any country is eligible for this award. Any number of companies can win in a given year.

Categories of the Deming Prize

There are three categories in Deming Prize.

- **The Deming Prize for individuals** is awarded to individuals or groups for their outstanding contributions to the study of TQM or statistical methods used for TQM or contributions in the dissemination of TQM.
- **The Deming Application Prize** is awarded to organizations or divisions of organizations that manage their business autonomously recognizing their distinctive performance improvements through the application of TQM
- **Quality Control Award for operations business units** is awarded to operations business units of an organization recognizing their distinctive performance improvement through the application of QC/Management in the pursuit of TQM.

Key Principle

The definition of TQM is the key principle integrated into all the activities of organizations, which challenge the Deming prize.

“TQM is a set of systematic activities carried out by the entire organization to effectively and efficiently achieve company objectives so as to provide products and services with a level of quality that satisfies customers, at the appropriate time and price”.

- TQM as defined by Deming Prize Committee

Basic Requirements of Award

- Business must be managed in the most suitable manner to type of industry, business scope and business environment and should have established customer-oriented business objectives and strategies under their clear management leadership.

- TQM should be implemented properly to achieve business objectives and strategies as mentioned above, TQM should be unique and appropriate for its business and scale (no need to copy other TQM models).
- Avoid unnecessary activities in the name of TQM & use of tools and advanced techniques should be used only when necessary. Outstanding results should have been obtained for all business objectives and strategies.

The Deming Prize examination does not require organizations to conform to a model provided by the Deming Prize Committee and also does not specify what issues the organizations must address; rather the organizations are responsible for identifying and addressing all issues.

Evaluation Criteria³

The evaluation of Deming Prize is divided into three parts basic categories, unique activities, and roles of top management. Organizations are qualified to receive Deming application prize only when they pass the all three categories in the examination.

Basic Categories

1. Management policies and their deployment regarding quality management
2. New product development and/or work process innovation
3. Maintenance and improvement of product and operational qualities
4. Establishment of systems for managing quality, quantity, delivery, costs, safety, environment, etc
5. Collection and analysis of quality information and utilization of information technology
6. Human resources development

Unique Activities

Unique activities are the company's core quality related activities developed from ideas originated from the employees to benefit organization

- Top management vision, business strategies and leadership
- Creation of values for the customers

³ To understand criteria: Refer to explanation of TQM definition by Deming Prize Committee in The Deming Prize Guide and document related to "Examination View points". For details about examination and procedure of determination of Prize Winners please refer to: The Deming Prize Guide

- Remarkable improvement of organizational performance
- Establishment of the company's management foundations

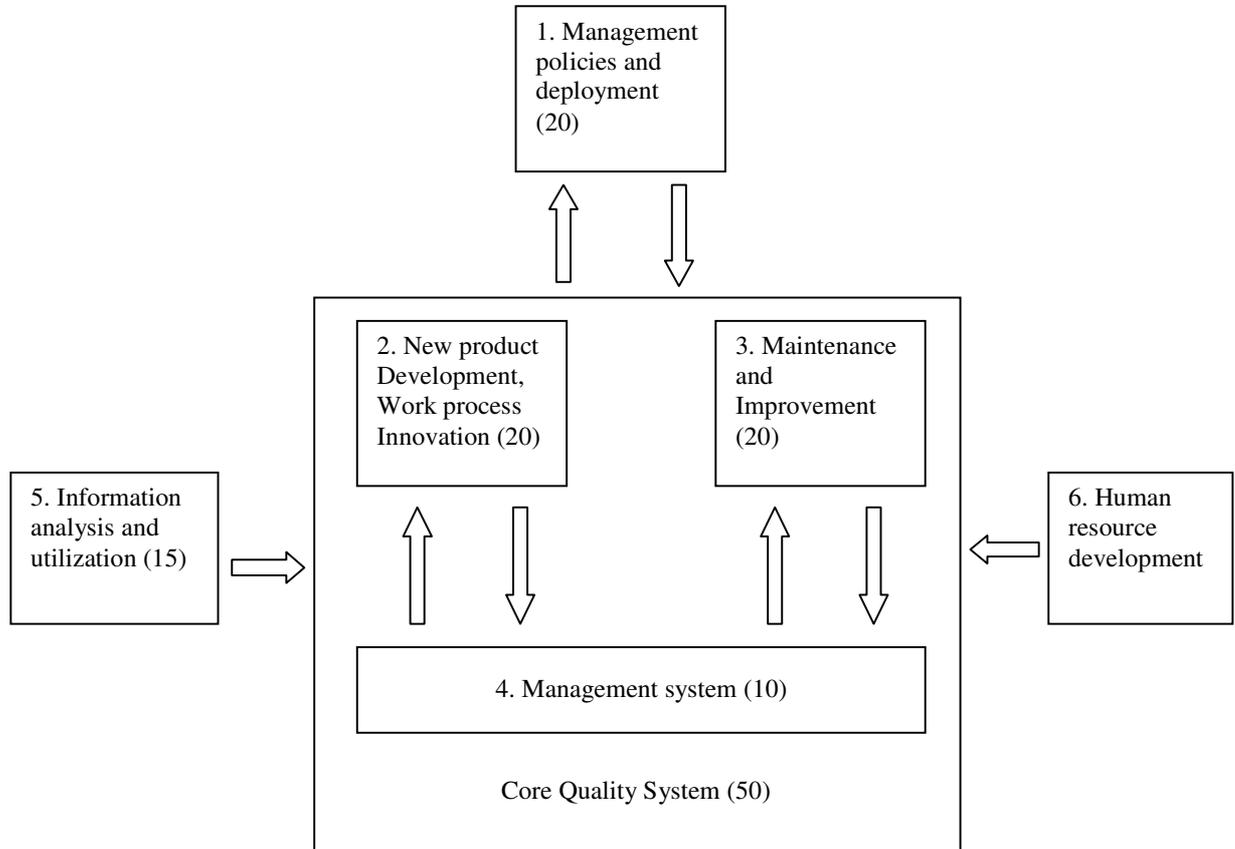


Figure 2.3 Relationship between basic categories *source: The Deming Prize Guide 2005*

Roles of Top Management

Top management plays the most important role in promoting TQM; “the executive session” is held to find top management understanding of TQM, specifically it addresses management understanding passion, in establishing and deploying policies and reviewing activities related to TQM.

2.3.4 ISO International Organization for Standardization

ISO a non-governmental organization is a federation of the national standards bodies of more than 154 countries, from all regions of the world. ISO officially came into existence on 23 February 1947 [9]. ISO technical committees comprising experts from the industrial, technical and business sectors develop standards. The purpose of standards is to provide a common language, between provider and their consumers to facilitate trade and the transfer of technology. In general, certification is required for entering new market segments and to work as a supplier for big manufacturing companies. ISO certification not only satisfies customers, it facilitates organizations to improve business process efficiencies, reductions in waste, and improve product quality.

Majority of ISO standards are specific to a product, material, or process, but the series of standards ISO 9000 and ISO 14000 are "generic management system standards". Any organization can use these standards, irrespective of its size (small or big), irrespective of its type (service or manufacturing) and whether it is a profit or non-profit enterprise, a public administration, or a government department to manage its processes [10]. The ISO 9000 family standards are "quality management system" standards deal with what organization does to fulfil its customer's requirements, regulatory requirements, improve customer satisfaction, and achieve continual improvement.

The ISO released the first standards in 1987, and revised in 1994 as ISO-9000: 1994. The next revision of ISO standards was released in 2000 as "ISO-9000: 2000 Standards". The new revision is designed around a "process approach" and is closely aligned with the principles of TQM.

ISO 9000-2000 series core Standards^[11]

ISO 9000: 2000 Quality management systems - Fundamentals and vocabulary

ISO 9001: 2000 Quality management system - Requirements

ISO 9004: 2000 Quality management system - Guidelines for performance improvement

ISO 19011 Auditing quality and environmental management systems

ISO 9001:2000 Quality System Requirements

ISO 9001:2000 details the requirements for a quality management system that has the ability to provide product/service that meets customer and regulatory requirements and leads to improve customer satisfaction. The standard is used for certification/registration and contractual purposes by organizations seeking recognition of their quality management system.

<p>4 Quality Management System</p> <ul style="list-style-type: none"> 4.1. General Requirements 4.2. Documentation requirements <p>5 Management Responsibility</p> <ul style="list-style-type: none"> 5.1. Management commitment 5.2. Customer focus 5.3. Quality Policy 5.4. Planning 5.5. Responsibility, authority and communication <p>6 Resource Management</p> <ul style="list-style-type: none"> 6.1. Provision of resources 6.2. Human resources 6.3. Infrastructure 6.4. Work Environment 	<p>7 Product Realization</p> <ul style="list-style-type: none"> 7.1. Planning of product realization 7.2. Customer related processes 7.3. Design and development 7.4. Purchasing 7.5. Production and service provision 7.6. Control of monitoring and measuring devices <p>8 Measurement, analysis and improvement</p> <ul style="list-style-type: none"> 8.1. General 8.2. Monitoring and measurement 8.3. Control of nonconforming product 8.4. Analysis of data 8.5. Improvement
--	--

Note: For detail information about each section of ISO 9001: 2000 Quality system requirements please refer to the Requirements Manual or appropriate document which can be obtained from ISO.

Quality Management Principles

All the revised standards ISO 9000:2000 incorporates eight quality management principles, which form as a core for quality management system. ISO technical committee ISO/TC 176 derives these principles [48].

Principles

Customer focus: Organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

Leadership: Leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

Involvement of people: People at all levels are the essence of an 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 activities and related resources are managed as a process.

System approach to management: Identifying, understanding, and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.

Continual improvement: Continual improvement of the organization's overall performance should be a permanent objective of the organization

Factual approach to decision making: Effective decisions are based on analysis of data and information.

Mutually beneficial supplier relationships: An organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value

Process Approach

In the earlier releases of ISO 9000 standards, continuous improvement was not given importance apart from quality management system elements such as "control of non-conforming products" and "corrective and preventive action". The standard ISO 9000:2000 focuses on customer, the process approach to continuous improvement and fact-based management [12], [13].

ISO 9000: 2000 defines a "process" as a set of interrelated or interacting activities, which transforms inputs into outputs. "Process approach," means systematically identifying and managing all process and their interactions in an organization. The process approach is built on the belief that a desired result is achieved more efficiently when activities and related resources are managed as a process [14].

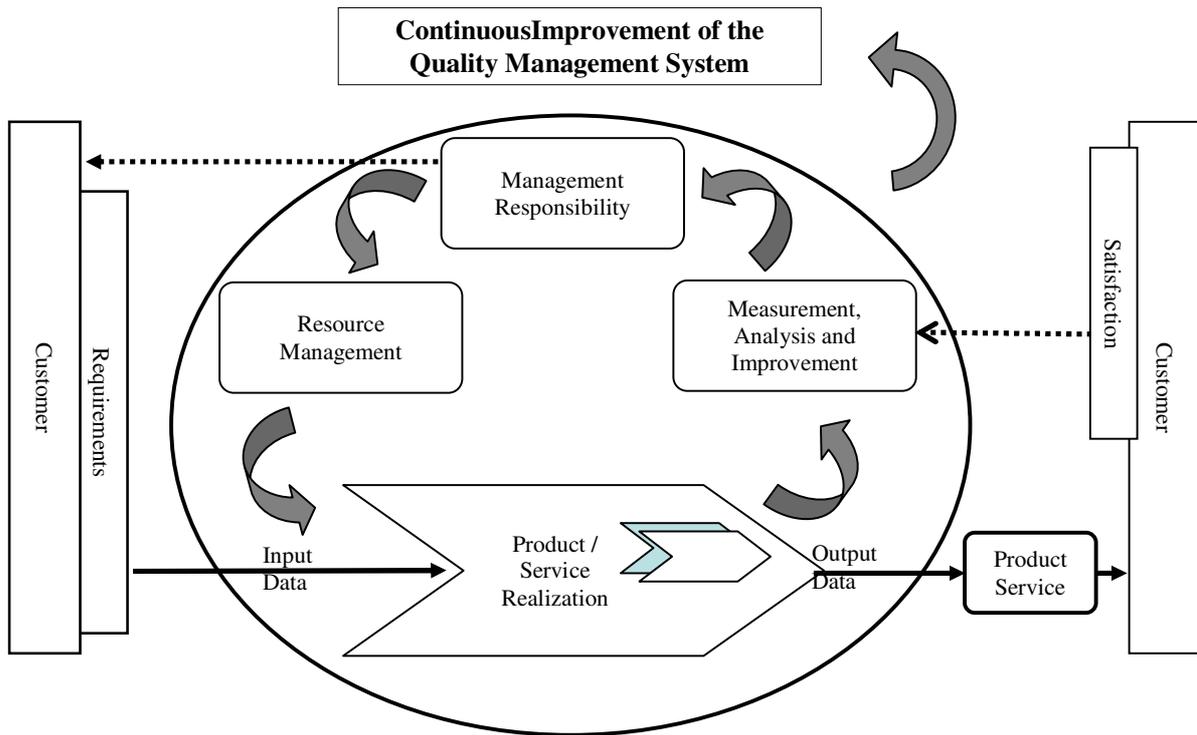


Figure 2.4 ISO 9001:2000 Process Model ^[15]

Source: ISO/TC 176/SC 2/N 544R2(r)

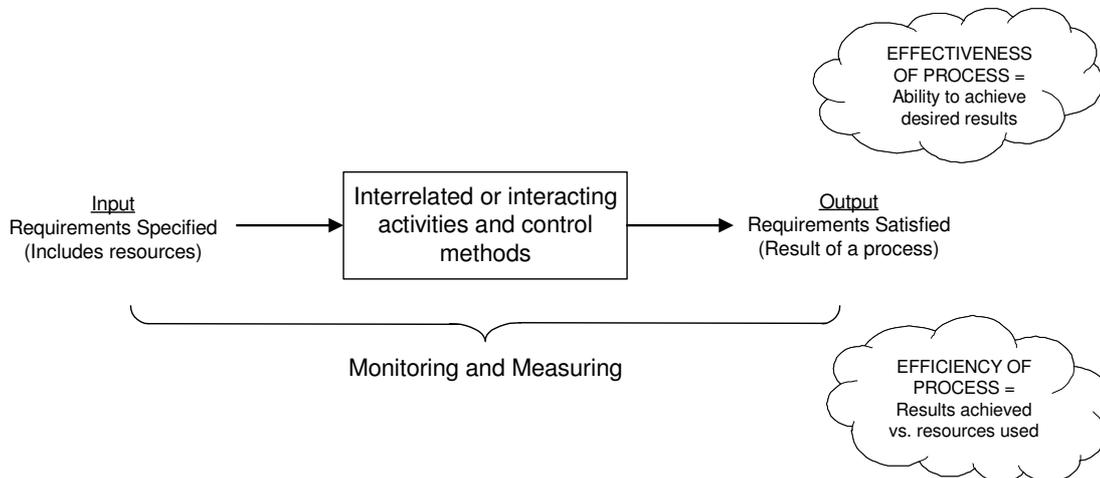


Figure 2.5 Process Approach

In a process-driven environment, all the employees are educated to understand the importance of their work in terms of how their work affects the quality of the processes that follow. This result in awareness of employee for good quality work leads to high-quality input and output each time processes intersect, and benefits both internal and external customers.

Implementing Process Approach

- Identify the customers and their requirements to determine organization's intended outputs
- Establish the organization policies and objectives
- Identify all the processes needed to produce the outputs (products & services)
- Identify interaction of all processes and stakeholders (inputs, outputs & customers for each process)
- Assign responsibility & authority for each process
- Document the processes
- Determine the activities needed to achieve the required outputs of processes, (define inputs, outputs, activities to be performed, sequence of operations, & how are they performed).
- Define the measures and monitoring criteria for process control & performance
- Define the resources required
- Verify the process and its activities against its planned objectives.
- Implement the process and related activities as planned
- Perform the measurements, monitoring and controls as planned
- Evaluate the process using data collected
- Identify and take corrective and improvement actions (use plan-Do-Check-Act methodology to implement and control corrective actions if necessary.)

2.4 Discussion

How can quality initiatives and models benefit to organizations? This question every organization should be able to answer before going for any model. Organisations should have clear understanding about different quality initiatives for implementing and maintaining company wide quality systems. The common requirement for organizations to achieve success is need to establish goals (both short and long term) and plan strategies to accomplish them. The most important component of organization that enables successful implementation of strategies is leadership.

Only through successful implementation of strategies, organizations can achieve long-term success. For this purpose, organizations should establish effective and efficient management systems to plan and carry out necessary activities. There should be clear purpose for organizations, which are planning to use a model. In this section author, discuss on the differentiation of the awards and their focuses.

2.4.1 Criteria for Discussion

Goals and Focus

The ISO 9000 family of standards represents good management practices to ensure the delivery of quality products and services. ISO 9001 aims to give assurance of product quality and to enhance customer satisfaction, while ISO 9004 uses a broader perspective of quality management to give guidance for performance improvement. The focus in the 2000 version of standard is on process approach in managing business. Deming prize aims to promote the continued development of quality control / management. The focus is on TQM, developing unique approaches to quality management in implementing TQM that meets business environment [7]. Other prominent award for organizational excellence “EFQM Excellence Model” aims to promote sustainable excellence in organizations in Europe. “EFQM Excellence Model” focuses on a way of managing business activities to gain efficiency, effectiveness and competitive advantage to ensure longer term success, meeting the needs of the customers, employees, financial, other stakeholders and the community. The aim of the Malcolm Baldrige Award program is to spread best practices in managing organizations across United States of America and make quality a national priority. The focus is on recognizing organizations according to elements critical for performance excellence and spread the

practices of organizations in managing elements critical for performance across the country [19].

According to existing literature, excellence models and ISO 9000 standards, showed *“to guide organizations in establishing and running effective and efficient management system which facilitates planning and execution of all the activities which are necessary for the realization of organization goals”*. Both the standards and excellence models have the same basic aim, excellence of the organizational performance, and similarity in structure and contents. However, they have differences that originate from their backgrounds. The standards reflect a large international consensus for harmonization of the approaches for quality management and quality assurance. The performance excellence models works for creating awareness about quality, and sharing best practices from the excellent organizations in the development of a national or regional competitiveness towards excellence [18].

Comparison of Criteria

The assessment criteria for giving awards for excellence more are less focus on same components of effective management system in which leaders strive for outstanding performance by aligning the whole organization with customer needs. However, the models differ in the number of criteria (9 in EFQM, 7 in Baldrige) and the number and grouping of sub-criteria (32 in EFQM, 19 in Baldrige).

The original frameworks, with their criteria, sub-criteria, and point weightings, are presented in *Table 2.1* the criterion for comparison is as follows:

- Customer focus / results
- Human resource focus / results
- Leadership, policy and strategy / results
- Process management/ process improvement / results
- Measurement, analysis, and knowledge management

Baldrige award	Deming Prize	European Quality Award
Leadership 12%	1) Basic Categories: Management policies and their deployment regarding quality management (20%), New product development and/or work process innovation (20%), Maintenance and improvement of product and operational qualities (20%), Establishment of systems for managing quality, quantity, delivery, costs, safety, environment, etc (10%), Collection and analysis of quality information and utilization of information (15%), technology Human resources development (15%)(Pass= 70% overall)	Leadership (10%)
Strategic planning 8.5%		Policy & strategy (8%)
Customer and market focus 8.5%		Partnerships & resources (9%)
Process management 8.5%		Process (14%)
Human resource focus 8.5%		People (9%)
Measurement, analysis, and knowledge management 9%		
Results Product and service 10%, Customer-focused 7%, Financial and market 7% Human resource: 7% Organizational effectiveness 7%, Leadership and social responsibility 7% (total=45%)	2) Unique Activities: Are core quality related activities Top management vision, business strategies and leadership, Remarkable improvement of organizational performance, Creation of values for the customers, Establishment of the company's management foundations, (Pass= 3.5/5 overall). 3) Roles of Top Management: Understanding of and enthusiasm toward TQM Insights into top management leadership, visions, strategic policies and environmental changes Organizational strength (maintenance and strengthening core technology, speed and vitality) Employee development Organization's social responsibilities (Pass= 70% overall) Award= Pass 1 & Pass 2 & Pass 3	People results (9%), Customer results (20%), Society results (6%), Key performance results (15%)(total=50%)

Table 2.1 Quality Awards Criteria

Source:

1. *EFQM Excellence Model Criteria*
2. *Baldrige award: 2005 Criteria for Performance Excellence*
3. *The Deming Prize Guide 2005, & Examination view points*
4. *ISO 9000 Quality Systems Hand Book, 4th edition, David Hole*
5. *Implementing ISO 9001: 2000, Pradeep Kumar Mathur*

Customer Focus / Results

Customer satisfaction activities are the organisational efforts towards determining customer requirements and expectations, building relationship with customers, setting performance indicators for customer satisfaction, and determining customer satisfaction.

Malcolm Baldrige and the EFQM awards give similar importance to customer satisfaction activities. MBNQA address enabler activities in model criteria at 3.1a2, 3.2 giving weight 6% (60 points), where as European quality award addresses these issues in model criteria at 5c, 5e-giving weight 5.6% (56 points). EFQM quality award gives more importance than MBNQA regarding customer related results. MBNQA asks for the evidence of customer-focused performance results under the sub criteria 7.2 giving weight 7% (70 points), which is significantly less compared to EFQM award which gives 20% weight (200 points). Deming prize does not have definite results criteria. The main aim is implementing unique brand of TQM suitable to organization, customer satisfaction is central to this. However, customer satisfaction was relatively addressed in evaluation criteria at basic categories 1a, 2b counting towards 20 points (20%). In addition, section two of examination criteria organization is expected to be involved in doing activities, which creates values and ensures customer satisfaction. In the same way as awards, ISO 9001:2000 asks for establishment of processes for determining customer requirements (7.2) and ensure that customer requirements are met (5.2). In addition, customer satisfaction should be monitored (8.2.1) to know how far organizations are able to fulfil customer requirements.

	Baldrige		EFQM	
Customer enablers	56	56%	60	6%
Customer results	200	20%	70	7%

Table 2.2 Customer enablers and results weights of MBNQA, EFQM awards

The major difference between awards and standards is, awards not only ask organisation to establish all the activities to enable customer satisfaction but also demands activities are fruitful and customer satisfaction is realised. In contrast, ISO certification, does not ask for proof of customer satisfaction.

Human Resource Focus / Results

Human resource activities are the organisational efforts towards development of personnel contribution to the achievement of quality objectives and competence of the people. It includes all the activities addressing the needs for training, evaluating employee performance as well as employee wellbeing and satisfaction.

Malcolm Baldrige and the EFQM awards give same importance to human resource activities. EFQM's model address HR activities in performance criteria at 3a, 3b, 3c, 3d, 3e (9% (90 points)). Baldrige model address HR activities in criteria at 5.1, 5.2, 5.3 (8.5% (85 points)). In contrast, EFQM model gives 9% (90points) more importance to human resource results than Baldrige model, which gives 7% (70 points). The greatest difference in results between the models is in their allocation of points between perceptual measures and performance measures. EFQM model gives more weight to perception 75% of 90 points, where as Baldrige awards not more than 50% of 70 points. Similar to excellence frameworks, Deming Prize addressed all the HR activities separately in "basic categories", "unique activities", and "roles of top management" of evaluation criteria.

ISO 9001:2000 address the human resource activities in requirement "6.2 Human Resources". However, ISO 9001:2000 does not address employee wellbeing and satisfaction as done in award models.

	Baldrige		EFQM	
Human Resource enablers	85	8.5%	90	9%
Human Resource results	70	7%	90	9%

Table 2.3 Human resource focus / result weights of MBNQA, EFQM awards

Leadership, Policy, and Strategy / Results

Leadership activities are the management efforts towards setting vision, values, and goals for organization, spread these values through out organization, and lead organization through necessary means to achieve goals. Policy and strategy activities are the organisational efforts towards developing stakeholder-focused strategy based on vision and missions developed by leadership. In addition, develop objectives, policies and action plans to deliver strategy and measure its progress. Baldrige model gives more importance to leadership criteria than EFQM

model. Baldrige model address leadership activities in performance criteria 1.1, 1.2 giving weight 12% (120 points). EFQM model address leadership in the criteria at 1a, 1b, 1c, 1d, 1e giving second highest importance with 10 %(100 points).

Deming Prize address leadership tasks in

1. “Basic categories” item 4. Establishment of management system
2. “Unique activities”, where organization leadership is expected to work in establishing vision, values and share the values among the members of organization.
3. “Roles of top management” in the third section of evaluation criteria.

The results of the review (of award application guides) suggest Deming Prize gives more importance to management activities compared to award frameworks. However, Baldrige award gives more importance to results of management activities than other models.

Development and implementation of strategy got the same importance in both Baldrige and EFQM models. Baldrige model address strategic planning activities in performance criteria 2.1, 2.2 (8.5% (85 points)). EFQM model address strategic planning activities in the criteria 2a, 2b, 2c, 2d 8.5 % (80 points). Results of leadership, policy, and strategy are the key performance outcomes of market and financial, organizational effectiveness, product and service. Baldrige model (at 7.1⁴, 7.3, and 7.5 with 21 % (210 points)) gives more importance to leadership and strategic planning results compared to EFQM model (at 9a, 9b, with 15% (150 points)).

Deming prize address strategic planning tasks in evaluation criteria in

1. “Basic categories” item “1. Management policies and their deployment”
2. “Unique activities” where organizations are expected to establish business strategies to become excellent company.

	Baldrige		EFQM	
Leadership, policy & strategy-enablers	205	20.5%	180	18%
Leadership, Policy & strategy -results	210	21%	150	15%

Table 2.4 Leadership, policy and strategy/results weights of MBNQA, EFQM awards

4. 7.1 focuses on organization’s product and service performance related to customers importance and relative to other organizations providing similar products and services. This is more customer-focused result than merely a product and service related performance.

ISO 9001:2000 address leadership in requirement in “5.Management responsibility”. ISO 9001:2000 standard asks for evidence of the management commitment in establishing, implementing, maintaining, and continually improving QMS, ensuring customer focus, establish and communicate the quality policy.

Process Management / Process Improvement / Results

Process management and improvement activities are the organisational efforts in identifying, designing controlling and improving key value added processes and support process. Baldrige and EFQM awards address management / improvement of customer specific processes in the criteria 3.1a2, 3.2 and 5c, 5e respectively.

Baldrige award and EFQM award give equal importance to process management activities. Baldrige award addresses process management in criteria 6.1, 6.2 (8.5% (85 points)) and EFQM model addresses process management/process improvement in the criteria “5. Process” (8.4% (84points)) excluding customer-focused activities. Baldrige model addressed results of process management / improvement in 7.1, 7.3, 7.5 sub criteria. Where as EFQM model criteria address results in “9. Key performance results” (in 9b. Performance results)

Deming Prize address the process management / improvement in evaluation criteria

1. “Basic categories” items 2. New product development and / or work process innovation maintenance and improvement of operational qualities and 5. Collection and analysis of quality information and utilization of information technology.” accounting for nearly 50% of basic categories
2. “Unique activities” where organizations activities related to improvement of performance related to quality, productivity, costs, and value for customers etc
3. “Roles of top management” where leaders commitment to maintenance and strengthening core technology, speed, and vitality is addressed.

ISO 9001:2000 address process management and improvement in requirements “7. Product Realization” and “8. Measurement, Analysis and Improvement”. Processes⁵ required

5. Processes related to customer (communication and requirements identification), design and development, purchasing, production and service, control and monitoring of measuring devices are addressed. In addition, continuously improvements and effectiveness of processes to meet product requirements through corrective and preventive actions is addressed.

for establishing requirements and realization of products including continues improvements of process are addressed.

	Baldrige		EFQM	
Process management/ improvement	85	8.5%	84	8.4%

Table 2.5 Process management / process improvement weights of MBNQA, EFQM awards

Measurement, Analysis, and Knowledge Management

Measurement and analysis activities are the organisational efforts in collection of data and information for determining performance. Baldrige award addressed measurement and analysis in criteria 4.1 (4.5% or 45 points). Selection of key performance measures and effectiveness of measurement system is given importance. Not only that, organization performance review and proper use the review findings is also addressed.

EFQM model does not address measurement, analysis, and review of organizational performance in separate criteria as Baldrige model. Nevertheless, addresses that in leadership sub criteria 1b, expects leaders to “establish and review measures and results” indicating progress towards the achievement of strategy. In addition, in, sub criteria 5a and 5b expects organisations to establish measures, assess performance targets and effectiveness of key processes.

Information and knowledge management activities are organisational efforts towards providing information through establishing reliable information system. Baldrige award (criteria 4.2, 4.5% (45points)) gives more importance to information and knowledge management than EFQM model (criteria 4e (1.8% (18 points))).

Deming Prize addresses “measurement and analysis” in evaluation criteria in “basic categories” item

- “4. Establishment of systems for managing quality, quantity, delivery, costs” where organization is required to establish appropriate performance indicators to manage the quality/delivery of products and services.
- “3. Maintenance and improvement of operational qualities” where organization is required to establish quality assurance indicators such as customer satisfaction, and

also processes performance indicators to analyze the effectiveness of processes in order to improve in planned and continual manner.

ISO 9001:2000 addresses “measurement and analysis” in requirement “8. Measurement, analysis and improvement”. Organization is required to collect all the necessary data for analysis as required in award models. In addition, according to requirement “5.5.3 internal communication” organisation is required to establish proper communication system to ensure access to information when necessary.

Summary

It is understood from the discussion both “EFQM Excellence Model” and “Baldrige Award” have the same objective to recognize role model performance of organisations through assessing organizational quality and excellence. Importantly, assessment criteria are divided into two groups enablers and results. Enablers ask for what organisation has done and results what are achieved. The main differences between these two models are in addressing measurement, analysis, and reviewing in the criteria. EFQM model does not address measurement, analysis, and review of organizational performance separately as did in Baldrige model. However, EFQM model addresses these points as part of criteria “leadership” and “processes”. In addition, relatively small differences exist in leadership, customer focus, and human resource management criteria. Baldrige model focuses more on leadership while EFQM model gives more importance to “customer focus” and “human resource management”.

This similarity in the criterion can be attributed to “*EFQM Business Excellence Model design was based on the USA's Malcolm Baldrige Award*”. Overall, the evaluating procedures used in carrying out assessments against award models display minor differences but the principles are the same [32]. In particular, Deming Prize assessment is different from the procedures used for the Malcolm Baldrige national quality award (MBNQA) and the EFQM award. Deming Prize examination does not require applicants to confirm to the model provided by the Deming Prize committee or criteria set by them. Rather, the applicants are expected to understand their current situation, establish their own themes and objectives and improve and transform themselves company-wide. Applicants for Deming Prize are provided with objectives to achieve, and were guided through “TQM definition” and “examination view points”. Organisations are expected to achieve these objectives in their own specific manner relevant to company. The main difference between other models and Deming Prize is that

Deming Prize applicants have to develop company specific culture in practicing TQM principles.

From the ISO 9000 series viewpoint, processes have to be described in procedures and defects have to be handled in a prescribed way. Most often, organizations already have some systems or procedures in place before they start working towards meeting the requirements of the ISO 9000 series [32]. There are many differences and similarities between ISO requirements and award models. ISO eight management principles address large portion of the enabler criteria of awards. The main difference is there are no result criteria in ISO 9001: 2000 standard. Other important differences are, ISO 9000 series are adopted mainly because of external market pressure [33, p 257], where as award models are adopted generally by internal desire to improve performance. Another important difference is independency of auditing or examination.

Taking into consideration existing auditing methods and motivations for certification, there is an opportunity for organisations to ignore eight management principles on which standards are based. Thus true comparison on benefits of award framework to ISO framework is valid only if auditing procedures ensure management principles are followed ISO certified organizations.

2.5 Conclusion

ISO 9001 certification requires relatively small change in an organization, because the reasons for implementing the requirements of an ISO 9000 series quality system are most often related to external demands. However, quality award models of TQM and excellence, needs the involvement of all employees working towards organizational goal. This requires a new approach towards working and managing organizational activities, which involves culture change, new styles of management, continuous improvement of all processes and building relationships with all the stakeholders. The implementation of award models or self-evaluations against the model criteria is driven by internal motivation; otherwise, organisations have no chance to stand rigorous examination of practices. The comparison of excellence awards framework and ISO framework will yield true benefits only when examination process of ISO certification ensures quality management principles are followed. In the present situation, ISO 9000 standard registration can only be a first step towards TQM.

Chapter 3 Review of Quality Management Practices

3.1 Quality Management in India

This section of the Chapter: 3 will address about introduction and development of quality management in India, where the progress of TQM, ISO, and their status in implementation is discussed and presented with the help of studies conducted previously on these issues. A special section is dedicated to world-class organisations in India presenting how they are running their organisations under the name of Deming Prize Winners.

3.1.1 Introduction

Introduction of new technologies and practice of quality management enable organisations to improve internal efficiencies and competitiveness. Japanese companies are first to adopt TQM philosophies in 1950s and 60s to improve internal efficiencies and competitiveness. Western organisations started implementing TQM in 80s. Developing countries were slow in understanding and implementing TQM philosophy, one reason being protective policies that existed until early 90s. In India the main reason for getting-away with low quality is lack of pressure from consumers. Companies used to be of the opinion that unless the customers are aware of their right to demand high quality, and insist companies to invest in quality, they continue to receive poor quality products [1]. Customers are now aware of the choice they have.

Bureau of Indian Standards (BIS) helped Indian companies foray ISO 9000 quality management system to achieve international quality levels [48]. Majority of the companies obtained the certification just to please the auditors while very few companies followed the spirit of registering customer complaints and taking corrective actions. The system soon reduced into a bureaucratic exercise with very little impact on quality [49]. However, a few companies did take TQM seriously and went about articulating their vision statements and quality policies with commitment.

India's journey towards TQM started with efforts of Confederation of Indian Industries (CII) in early 80s. In April 1982, quality circle forum of India (QCFI) was founded as a non-political and non-profit organization with headquarters at Hyderabad to promote quality circle concept to create awareness and impart skills in implementing quality circles. Bharat

Electronics Limited was the first to use quality circles concept. In 1986, CII invited professor Ishikawa to India to speak about quality [1]. In 1987, a TQM division was set up by CII. In 1987 and 1988 CII invited the Juran Institute to India to conduct three training workshops. In 1991, a new opinion about quality began in Indian organisations with Liberalization. From 1993, CII has been organizing “quality summit” every year in the month of November to provide an opportunity for policy makers, CEOs, academicians, and practitioners to confer about national and international developments on TQM [1]. This summit provides a platform to share best practices from various sectors such as manufacturing, service, education, and government, while offering a learning opportunity for industries from success stories of ‘unsung heroes’ [50].

A survey made for world competitiveness report indicated that the quality of Indian products and services are found to be disappointing [2]; observations from “[1]” suggest that India needs to adopt TQM principles for improving their output quality while attracting foreign investment. Government of India’s commitment is commendable in the present trend of globalization. The government has realized that improvement in the manufacturing sector with private investments, with export orientation as well as foreign investment will facilitate competition and expedite the drive for world-class quality. In 1996, the government of India set up the quality council of India (QCI), which was given the responsibility to monitor and administrate the national quality campaign with the objective of establishing and operating national accreditation structure for conformity assessment bodies and to raise quality consciousness in the country. Since then companies in India have been trying individually to improve their product quality, besides overall performance through TQM practices [51].

In Indian perspective manufacturing is a support activity for marketing and finance with miniature top management attention [41]. Most organizations have far from world-class practices while their international competitors are continuously working on improving manufacturing, bringing in new products and making manufacturing more proactive and responsive. Study “[3]”, talks about manufacturing priorities and action programmes of Indian industries. Despite organisations adopting programmes like ISO 9000 certification and TQM, their emphasis is more on operational issues like worker training, periodic review, staff awareness about cost etc. rather than strategic issues like JIT, concurrent engineering, reduction of suppliers etc. which require major structural changes. It is also found there is immobility in investment in aspects like automation, cellular manufacturing/GT. However,

study “[4]” on Indian process and manufacturing companies reveals that “quality” is being considered as the most important competitive priority. It highlights, “Indian companies are investing in advanced management systems as an improvement activity for gaining a competitive advantage over competitors” [4].

Success stories in TQM implementation are recognised through Deming Prize in Indian industries. Sundaram Clayton, under the visionary leadership of Venu Srinivasan, became the first Indian company to win the Deming Prize. Other companies like Brakes India and Sona Steering emulated this achievement in the subsequent years. Quality management practices in these companies and other Deming Prize winning companies is presented in the *Chapter 3.2*. Apart from this, the chapter discusses literature available and studies conducted on Indian companies regarding different aspects of TQM & ISO implementation.

3.1.2 General Experiences

Having the right QMS is the norm for performing activities as intended. According to study “[6]”, organisations in India do not have a formal quality management system and the application of ISO 9000 series certification is low. The level of quality practices such as training of employees, product design, and use of quality data is better in larger organisations. According to “[7]”, some organizations maintain consistent quality standards and encourage shop floor workers to suggest and try new methods to improve product quality. In addition, majority of the organisations believe that quality of their products is at par with the quality of the products manufactured by the market leaders in the global market place. Regarding customer satisfaction, majority believe that their customer services are better than their competitor’s [7]. Although organizations are satisfied with this situation, they do recognize the problems such as inadequate training of workers, poor quality control processes, and defective raw materials exist.

3.1.3 Quality Policies

According to the study “[11]” in Indian organisations, quality policies are oriented towards customer satisfaction and determined by: compliance with government regulations, meeting customer expectations, market share growth, company reputation and profitability. These quality policies are reviewed periodically. Quality policies along with quality objectives and quality slogans are displayed on the shop floor to make all the employees aware of their

responsibilities towards quality. Agreeing with “[11]”, study “[8]” in ISO 9000 certified Indian industries states that customer relations have an important place in determining quality policy and companies deploy quality policy through “posters”, “pamphlets”, training, and talking to employees about it.

3.1.4 Quality Department

In many Indian industries, though the quality department names are changed from inspection department to that of quality control (QC) or quality assurance (QA) or quality engineering department (QE) their activities remain unchanged. Though quality control is different from inspection, many companies still believe in inspection as the main QC activity. Efforts are not directed towards planning and acting for problem prevention but are directed towards find and fix approach. After liberalisation, organisations started practicing quality control (defect prevention activity), moving towards quality planning and improvement as departmental activities to meet the high quality demands of customers.

Several studies documented the information regarding the functions of quality department. These studies suggest that quality departments should be visible, autonomous, and have direct access to top management. Study “[11]” conveys that the major responsibilities of the quality departments in Indian manufacturing organizations are formulating and improving major quality improvement programmes and working closely with other departments. Quality control procedure includes activities from development to marketing, purchasing, manufacturing and distribution. The quality departments also prepare various types of summary reports of defects and failures at various stages of processing and final inspection. Study “[7]” found that the role of quality department was given the highest importance in Indian organisations. According to study “[10]” quality departments plays an important role in reducing scrap/defect levels and customer complaints. All companies had their quality departments highly visible. Their roles and responsibilities are substantially broadened and enjoy more functional-autonomy. Most of the quality departments have their own line of authority, reporting directly to the chief executive officer, with many companies having their top managers heading the quality departments.

3.1.5 Product and Process Control

Study “[5]” about the status of quality control in India, observed that no performance evaluations of quality control operations are done in Indian manufacturing organizations which are based on the application of statistical quality control techniques. According to “[11]” many organizations maintained an effective system for monitoring incoming raw materials, checking in-process production, and reviewing finished products. Supporting “[11]” to some extent study “[7]” found majority of the organisations both small and large incur interruptions in production due to non-conformations of products to the specifications. Organisations’ response to any breakdown or interruption is to take immediate action to put production back in track. While nearly 50% of organisations having trouble-shooting list available to handle crises, it is found that larger organisations are relatively poor in having trouble-shooting list. Less than 15% of the organisations involve in systematic documentation of time lost due to production. Conductive activities for quality management like having a customer complaint system, using of systematic sampling procedure and internal testing facilities are very good. Small organisations have inferior customer complaint system when compared to those of larger ones; but both offer less attention to quarantine of defective products. According to “[10]” most of the companies reported to have created a ‘foolproof’ process design, which minimized the chances of employee errors, ensures a stable production schedule and a high clarity of work instructions. All the companies reported in the study have relied on statistical sampling inspection for incoming materials. If defects were found, inspection is expanded to a larger number of units. To facilitate incoming inspection, most of the companies have been using acceptance sampling. Companies used in-process inspection as part of statistical process control to identify trends before nonconformities actually occur. All the companies accorded priority to the final inspection [10].

3.1.6 Quality Data and Reporting

Measurement, analysis and reporting of all-important activities at every level is required for achieving improvement, collecting information for planning and understanding the organization in a better way. Main parameters for measuring performance of an organization are scrap/defect levels, cost of quality, customer complaints, which can vary according to the type and requirements of the organization. Defect levels in manufacturing are basic measures

of effectiveness, yet has attracted a lot of attention in recent years along with the zero defect approach to quality improvement in India [12].

Indian organizations have an efficient quality cost reporting system that maintains data on vendors, defect or failures, error rates, scrap, warranty reports, cost of prevention, cost of appraisal, and customers' complaints. Apart from managers and supervisors, this data, which is updated on a regular basis, is made available for all divisions, in the form of control charts at employee workstations for full-time and hourly employees to examine. It acts as a tool to manage quality and to make necessary quality improvements [11]. Study “[10]” has interesting findings, here organisations collect the data in the form of inspection and test reports, in-plant scrap and defect levels and customer complaints and use them to manage quality. However, in contrast with the study “[11]” the display was very low.

3.1.7 Human Resource

Human resource management is the most important aspect for organizations to sustain success. Materials, manpower, money and machinery are required for organizational activities; of these, human resource is vital. Human resources act as fuel that makes the organization run. An organization comprises human minds, brought together to achieve organizational goals. Through the introduction of TQM practices and ISO certifications, understanding the changes to organizational practices in the context of globalization is important. The emphasis needs to be on people management, empowerment, teamwork, training and education, system for recognition and appreciation of quality efforts. In Indian context, it is always difficult to change, follow or adopt modern practices in human resources. Deming Award winning companies along with others IT companies are leading, guiding, and standing out as the best organizations in practicing better people management in India.

Studies conducted about QM practices in Indian organisations dissipated information about current human resource practices. According to “[7]”, few companies have employees actively involved in quality improvement teams. Similarly, study “[6]” found employee involvement program was given less attention. Training and participation in quality decisions was considered relatively unimportant. Overall, human resource related activities are poorly managed and given less importance by management. In addition, study “[11]” says about organizations, which have introduced employee involvement programmes such as quality circles for tackling quality-related problems found the programs had become non-functional.

According to study “[10]” in ISO certified companies the degree of participation in quality decisions by employees was small as decisions about whether a process should run or stop, whether a product conforms to specifications or not, are made by managers. Managers are apprehensive about delegating the decision making process to workers. As a result, employee involvement and empowerment had taken least priority in practice.

In general, the main barriers of employee involvement are lack of top and middle level management commitment to employee empowerment, and the prevailing adversarial relationship between management and unions.

3.1.8 Recruitment and Selection

Indian private sector firms’ emphasis more on talent acquisition strategies, compared to public-sector firms, which are over-manned and less efficient in India. As a result, management in these public-sector firms are adopting mechanisms to reduce costs by downsizing, divestment, redundancies, and voluntary retirements through a systematic and formal approach [28], [22]. Indian private-sector organizations emphasis on advertising internally and sort for employees’ referrals in recruiting staff, in comparison public-sector organizations rely on external advertising to recruit their staff [26], [27]. Studies “[30]” and “[31]” confirm the existence of a formal and structured approach to the recruitment of managerial staff in Indian public-sector organizations.

3.1.9 Training and Development

The quality of employees and their development through training and education are major factors in determining long-term success of organisations. Organisations should invest in the development of the skills of their employees to increase their productivity. Many Organisations provide training only to new employees. Continuous training for employees gears them for rapidly changing job requirements. Training also provides employees a greater sense of self-worth, opportunities for growth, dignity, and well being, as they become more valuable to the organisation and to society [42].

Though top management’s commitment to employee training is high, it is not reflected in making resources available for employee training [10]. Study “[11]” observes that effective and efficient training programmes to educate and communicate a focus on quality to managers and employees are available in Indian organizations. On-the-job and off-the-job training

programmes, specifically in the form of classroom exercises are used. However, training in special processes, advanced statistical methods, and the use of sophisticated measuring equipment is available that is merely like academic exercise. Another study “[10]” says that depending upon the nature of the company’s work and the employees’ responsibilities, ISO 9000 certified companies in India had imparted technical and vocational training to employees for reinforcement of knowledge and work skills. The statistical training programme of the companies focused more on basic tools while less importance was given for training in advanced statistical techniques. Quality-related training signifying strategic importance of quality, understanding customer complaints, problem solving, teamwork, waste reduction etc is needed to develop. Although attitude of organizations are changing to introduce quality-related training, many ISO 9000 companies are providing this training only to the managerial level where it needs to cascade down to every employee in the organization.

Generally, it is understood there is an increased importance of employee development in Indian organizations [32]. The effect of employee development on improving the quality of the organizations' products and services can be seen. However, on the flip side both the private and public sector organizations give a marked importance to the training needs of white-collar employees compared to their blue-collared [32]. Indian public sector is doing better in systematically analysing employee training needs and monitoring the effectiveness of their training programmes in comparison to the private sector. Apart from this, Indian public-sector organizations put more emphasis on annual career development interviews for the training and development of their employees, which indicates the presence of a relatively more formal HRM function [33].

3.1.10 Vendor Quality Management

According to study “[38]”, most of the Indian companies have some supplier evaluation systems; however, they fail in establishing the synergistic integration between buyers and sellers. Study “[11]” says in India unlike Japan, there is a desire to have alternate vendors (in relation to a single source) for as many materials as possible in order to ensure availability of supply and have purchasing advantage. However, in selecting suppliers, price becomes important, given a certain level of quality. In addition, a standard system of providing feedback to suppliers concerning the quality of their raw materials is seen in some

organisations. These organisations also provide assistance to help vendors identify and resolve problems when necessary.

Another study “[10]” suggests that ISO certified organisations have similar understanding about vendor practices in India. Generally, selection of suppliers is based on quality at the most economic price. Tendency is to purchase materials and parts from multiple suppliers. However, there was a clear trend towards significantly reducing multiple suppliers for the same material or part, to a few dependable suppliers by maintaining long-term relationships. An effective supplier rating system was practiced to identify reliable suppliers as well as to drive them towards continuous quality improvement. Supplier development is an important activity to provide a strong base for the continuous supply of quality material and building mutual trust. Supplier development requires investment of time, money, and manpower by the purchaser. However, Indian companies accorded lower priorities to supplier’s education, technical assistance and supplier’s involvement in the product development process.

3.1.11 Organizational Culture

The organizational structure and management style in Indian companies depends mainly on the size and ownership of companies. The commonalities attributed to culture differentiate the way the organizations operate and manage. Indian family firms do not permit information sharing and decision-making to the extent that MNCs allow [24]. For example, Indian family firms have a social hierarchical structure with norms like paternalism, non-disclosure of information and decision to safeguard the loss of key proprietary information essential for firms’ survival. MNCs need multiple competencies to handle issues rapidly, so diffusion of information and delegation of decision making help to develop the collective learning capacities and improve the response time of the firm. Managers in MNCs and family firms maintain high ethical standards. Public sector managers stress more on external compliance with legal and regulatory guidelines to sustain public trust and procedural fairness. MNCs are exposed to cross-cultural organizational ethics standards and usually have a more diverse workforce requiring explicit moral norms of conduct to ensure responsible work behavior that sustains global competitive advantage, regardless of the host country environment [24].

In the Indian context, there is a clash between the values acquired from education and professional training and those drawn from Indian culture and society [44]. Loyalty and belongingness are of utmost importance [25]. In India, rules regarding practices such as recruitment, training, promotions, and lay-off are ad hoc in nature and are subject to easy manipulation by the employers [22]. Private-sector organizations in India tend to recruit informally, such as appointing their relatives to top positions and practices related to promotion, transfer and benefits are manipulated as a result of social contacts and personal relationships [26]. In addition, a professional HR department based on formal rules is treated as a threat to the owners' ability to enforce control in private-sector organizations [27], [40].

3.1.12 Role of Management and Management Attitudes

According to studies “[6]” and “[11]” management is actively involved in quality control, setting quality goals and development of quality policy but when it comes to implementation phase they failed to communicate it properly and follow through the progress in organization and it resulted in lack of proper understanding of lower hierarchical personnel and failed in achieving goals. General attitude of management is on targeting costs and meeting schedule over achievement of any quality objectives further quality related issues are not reviewed on a regular basis at top management meetings.

Indian top management share less information related to both strategy and financial performance with their blue-collar staff in comparison to with managerial staff due to low faith by top management in their subordinates [24]. Second, Indian managers prefer centralized decision-making, practice tight control and do not like to delegate authority [35], [34]. In addition, majority of the lower-level employees in India are not aware of their rights and are exploited by management [22]. For such reasons, it is not surprising that little information is shared with employees in Indian organizations. The hierarchical system prevalent in organizations results mainly in top-down communications. Both in public and private sector companies' communication with employees is done through their immediate superiors. The other forms of communication with employees are through unions, work councils, suggestion boxes, quality circles and regular work meetings. This is mainly due to the presence of strong unions [31], [22]. A number of studies “[36]”, “[37]” and recent developments (Deming Prize winners) show the influence of the Japanese models on management in Indian organizations.

3.1.13 Reasons for ISO Implementation

India is late in practicing quality management or at least it was evident that quality movement in India was not started until early 90s. This happened because of the policy of globalisation and liberalization adopted by the Indian government in 1990s, which created new challenges to companies [1]. This has compelled the managers of local companies to look for those tools and techniques, proven and tested, which would help them to maintain and improve their strategies and positions in the market [1]. Study “[14]” among Indian manufacturing companies indicate that after the economy opened, the focus has shifted to quality and the use of the quality management practices to face the competition resulted from the entry of multinational corporations. Threat from foreign companies forced them to think in a new way of doing business efficiently and effectively by providing quality products at reasonable price and keep customer satisfied.

ISO certification, which is the quality assurance certification for recognising organisations’ quality system also helps in increasing business process efficiencies, reducing waste, and improving product quality [45]. In India according to K.P.Nyati⁶ the main reasons for ISO certification is cost reduction, regulatory compliance in respect of environment, improvement of corporate image, competitive advantage, and greater acceptance in international markets [46]. According to study “[8]” the significant benefits expected by Indian companies going for certification are improvement in financial performance by continuous improvement, focusing on quality and reducing cost, market place benefits such as global deployment, the competitive edge and meeting customer attitudes, work place benefits to ISO 9000 to install a formal system.

At present traditional quality control is being replaced by TQM practices. Indian companies perceive that survival of manufacturing is critically dependent on quality of design, quality of manufacturing and time of delivery [29]. Initially Indian manufacturing companies attempted to implement total quality management (TQM) in the hope that it would solve all existing productivity problems; but later realized that significant benefits from implementation in confronting the global challenge both for manufacturing and service sectors [17].

⁶ K.P.Nyati, Head of the Environment Management Division of the Confederation of Indian Industry (CII)

3.1.13 Perceived Benefits of TQM and ISO Certification

Organisations are going for ISO certification and TQM because of positive experiences. Organisations, which have undergone changes through the ISO certification process, have learnt many important aspects of quality management. A study in the ISO-9000 certified companies (CII, 1995) showed improved product quality, reduction in customer complaints, and lower cost of manufacturing and high motivation of employees of companies [1]. In addition study “[8]”, indicates organisations have also experienced “Improved product quality and contribution to competitive edge”. Similarly, ISO 9000 standards significantly helped organizations in implementing eight critical factors of quality management, contributing to the improvement in the quality performance [10]. Certification to ISO 9000 has generated a quality momentum in these companies to implement a total quality management program. Similarly, study “[7]” indicates, total savings realized exceeded the expenses for getting the certification and has helped organizations to improve their products and their positions in the domestic market. When it comes to TQM experiences, Indian organizations have had many successes in the journey towards TQM philosophy. Many organizations were recognized for their achievements through Rajiv Gandhi National quality award, Deming Prize [Chapter 3.2]. Success at awards and performances related to financial, market, customer satisfaction enabled other organizations to take path towards TQM philosophy.

3.1.14 Difficulties in Understanding and Implementation of TQM

Review of literature suggests many Indian firms that are taking strategic initiatives to implement TQM projects in their business units are not able to sustain these initiatives because they often lack in articulating the critical factors that are needed for continual pursuance. As a result, TQM activities have become stand-alone and the programs lost their defined objectives. Many firms speak of long-term strategic planning but short-term operational focus with compliance and control mind-set always remains an immediate plan.

Top Management Attitudes

There are complex views about top management attitudes, their involvement in quality programs and their commitment towards long-term success. According to the study “[11]”, top management of Indian manufacturing organizations was involved in developing quality policy; however, implementation was strictly accomplished by the efforts of the quality department personnel and they are not responsible for quality performance of the organisation. Similarly, study “[6]” says management is actively involved in quality control, setting quality goals and development of quality policy but they failed to communicate it properly in the organization, which results in lack of proper understanding of lower hierarchical personnel. In contrast, studies “[8]” and “[10]” found positive views regarding management involvement when compared to the other studies. Study “[8]” says that in nearly 81% of companies the top management was totally involved in the implementation process, whereas in 19% of the companies involvement of top management is minimal; these results are supported by the study⁷ [10]. In these companies, corporate quality goals were proposed at the top with middle and lower management levels responsible for identifying and establishing specific sub-goals for their departments. Later these goals were integrated into the overall specific quality goals of the company. Such a quality goal setting process involved comprehensive communication in both the direction of the hierarchy. However, there are no clear quality goals for inspiring superiority in quality.

Statement made by Philip Crosby as reported in “*The Times of India* (1997)” is important in understanding management attitudes in Indian organisations. Crosby said that complacency is a major problem with the Indian management system, which the management should consider seriously [1]. As pointed out by article “[47]” TQM continues to baffle

⁷ A total of 56 managers representing 16 ISO 9000 certified companies participated the survey .

corporate India, as evident by the different interpretations made by each person in the industry about what is TQM. It was observed during the sixth quality summit organized by the CII in New Delhi, that TQM means anything and everything depending on the individual's perspective, politics, and paradigms. As many as nine different definitions were presented by the speakers about what constitutes TQM. This means people in the corporate sector have no consensus about the concept of TQM and it could be a deterrent in its implementation [1]. Another survey [13] regarding ISO certified companies' points out interesting observations about implementing TQM in a company. Out of 17 companies that were surveyed, managers in seven companies said that they believed in TQM but do not know how to implement it.

3.1.15 Problems in Implementation

Traditional Indian organisations' management is the main drawback for implementing TQM and ISO. Traditionally what exists in India is hierarchy, where there is only one-way of getting things done; orders pass from top to bottom, where workers do not have a say. TQM advocates collective way of running business where every employee participates in fulfilling customer demands. Second is the cost, Indian consumers demand low cost products. Until late 90s, organizations were inclined towards reducing cost without any regard to quality; quality of the products was given secondary importance. Third is lack of awareness, managers are not well trained about the concepts of TQM, this is less significant in large and medium scale industries but in small scale industries it is widely found that management lacks understanding of TQM philosophy and knowledge of necessary tools. Finally, resistance by employees in adopting new practices and lack of resources to enable employee training are the barriers. For example, study "[6]" says that of the 81% of companies where the top management was totally involved in the implementation process, 43% of companies having problems in introducing ISO, due to resistance from employees who think it's just a extra burden on them and others who think ISO is just a paper work.

For instance, during the visit to India in 2004 author had an opportunity to work with a quality management consultancy for a couple of months. The experience makes us to understand that even big companies, which said to be following TQM, doing six sigma projects has lot of inefficiencies in their implementation.. In one case involving six-sigma implementation, a noted bank hired consultancy to do six-sigma project for reducing customer-waiting time in a call centre. At the end of the project, it was found that solution was

well known even before commencement of the project. The project solution was not implemented successfully, main reason was lack of management commitment and laid back attitude of employees. This may or may not be the prevalent situation but it signifies how a corporate bank was unable to utilize human capital and how management lacked commitment for customer satisfaction.

In any organization, TQM is implemented to analyze processes, identify barriers to quality, satisfy beneficiaries of the work, and create an atmosphere of building trust, competence and continuous improvement. Studies and research work in this regard show the problems in implementing TQM. Barriers that slow down the implementation of TQM in India are lack of know how of TQM, continued dependence on traditional incentive schemes, numerical targets, performance rating, slogans for improving productivity, and not identifying and providing the right type of training for each employee [13]. According to “[1]” if not all critical factors are given importance, many Indian companies may continue as ISO certified but not be recognized as a TQM firm.

Organizations must first build quality within, before providing it to those outside the organization through its products and services. This quality can be achieved only through quality management practices, which are well supported by committed leadership. The main reasons for Indian organisations not implementing these quality management practices were lack of understanding and resistance by managers/supervisors; in addition main problems during implementation are cultural change that is required, followed by managerial intervention, financial and technical problems [14].

Management must encourage employees to embed TQM in the entire value chain of an enterprise. To do this, it is necessary to incorporate TQM attributes in the performance appraisal systems. As per the study “[38]”, no organization has ever thought of incorporating TQM attributes in the performance appraisal systems. Many managers indicate that everyone’s commitment to quality is very important; a conceptual shift is needed in the current performance appraisal systems. Such a new appraisal system can provide opportunities for managers to work collectively with a strategic vision towards improvement of quality in management and establishing a collective value system towards total quality.

3.1.16 Conclusion

This section has presented an overview of quality management practices in India based on literature review conducted in Indian organizations. These studies conducted by researchers give an impression that awareness on quality of products and services has picked up in India.

One can say ISO certification was drive for many organizations as a quality related goal and many had positive experiences with certification, especially management awareness and involvement in quality improvements, but once achieved and when euphoria generated by ISO 9000 certification was over, there found to be a general tendency of complacency. Successful implementation of TQM seems to be an uphill task to Indian organisations mainly due to lack of understanding of the factors that can collectively affect the TQM.

In general, concentration of power, and lack of proper awareness in handling information and decision-making processes among certain Indian firms is hindering the implementing quality management practices. There seems to be clear difference in the way public sectors and private sectors are managed, one can identify public sector organisations with more formal procedures and inefficiency then in private sectors. However, to stand to the competition, a number of organizations, both private and government are actively propagating TQM through a variety of training and educational programs. Even though India has not reached the level of consistency in practicing TQM philosophy and ISO certification when compared with industrialized countries, these efforts by government, other agencies and some organizations for improving quality and the application of modern quality management principles is commendable.

The general situation of Indian organization can be summarized as:

“There is light at the end of tunnel (success) for the people who want to make journey (organizations) on the vehicle (TQM, ISO & other tools); only thing lacking is a skilled driver (proper management awareness) and sufficient fuel (Employee involvement, management commitment & financial resources in some cases) to make the journey happen”.

The review provided a comprehensive understanding of quality management awareness in India in general but failed to highlight the most critical activities that have to be addressed by the different groups of companies with different levels of practices for example small scale industries, export oriented organizations. These gaps must be addressed to gain complete understanding of practices in different types of organizations.

3.2 Quality Management in India, Deming Prize

Introduction

India's journey towards Deming Prize was started in late 80's just before liberalization of markets and was active during late 90' until present. From late 90's until present Indian organizations was forefront in wining Deming prizes. In total, they have won 16 awards, which are considered as the highest and best in quality management in implementing TQM concepts. In this section author will present four companies and their practices in achieving Deming Prize.

Deming Application Prize	Year
Sundaram- Clayton Ltd, Brakes Division	1998
Sundaram Brake Linings Limited	2001
TVS Motor Company Limited	2002
Brakes India Limited, Foundry Division	2003
Mahindra and Mahindra Limited, Farm Equipment Sector	2003
Rane Brake Linings Limited	2003
Sona Koyo Steering Systems Limited	2003
SRF Ltd, Industrial Synthetics Business	2004
Lucas-TVS Ltd	2004
Indio Gulf Fertilizers	2004
Krishna Maruti Limited, Seat Division	2005
Rane Engine Valves Limited	2005
Rane TRW Steering Systems Limited, Steering Gear Division	2005
Deming Quality Control Awards for Operations Business Units	
Hi-Tech Carbon GMPD	2002
Birla Cellulosic	2003
The Japan Quality Medal	
Sundaram- Clayton Ltd, Brakes Division	2002
<i>Source: JUSE, http://www.juse.or.jp/e/deming/index.html</i>	

Table 3.1 List of Deming Award Winning Companies From India

3.2.1 Sundaram-Clayton Ltd, Brakes Division

Sundaram-Clayton is the leading manufacturer of air braking systems in India. SCL won the "Deming Application Prize" in 1998, becoming the first in India and only the fourth company outside Japan to claim this honour [8]. SCL won the Japan Quality Medal⁸ for the year 2002,

⁸ Japan Quality Medal is the highest Honor in Quality Control – A Validation of Long-Term Practice of TQM.

the first in India and the second company outside Japan to win this honour. SCL belongs to TVS Group⁹, which is active in promoting total quality management (TQM) in all its manufacturing companies during 90's. The brain behind the success of SCL was its CEO Venu Srinivasan. Under his leadership, SCL followed the core principles of the TVS group - quality, reliability, and service. SCL integrated Deming's teachings into the four streams of its quality practices, namely policies, people, processes, and products, respectively. Its TQM model ensures total employee involvement, policy deployment, standardization, kaizen, and training, besides promoting employer - employee relations [9]. Other divisions of TVS Group such as Sundaram Brake Linings Limited (SBL) in 2001, TVS Motors Limited in 2002 and Brakes India Limited's foundry division in 2003 and Lucas TVS Limited in 2004 won the Deming prize keeping in line with SCL in applying TQM.

SCL was the first Indian company to get an ISO certification [2]. The company has been winning the 'supplier of the year' awards from the US giant General Motors, and has won TPM awards from the Japanese institute of plant maintenance (JIPM).

SCL's Definition of TQM

“TQM is a company-wide effort aimed at continuous quality improvement of all processes, products and services through total employee involvement that results in increasing customer satisfaction, loyalty and improved business results”.

TQM Activities^[1]

The following activities are realized because of TQM:

- Relationship of trust with employees, customers, and suppliers has been built as the basic philosophy.
- With TQM as the core, TPM, JIT, QS-9000, and Lean production system have been inducted and a synergy effect is being produced
- Considerable attention is given not only to education and training of employees for self-fulfilment and improvement in welfare of employees and their families, but also by way of contribution to the local society

⁹ TVS Group is one of the largest automotive components manufacturing groups in India.

- Quality diagnosis, education and guidance for suppliers are being carried out in a planned manner and satisfactory results are being achieved in terms of quality improvement and cost reduction.”

Results of TQM^[1]

There are many positive outcomes in measures such as share of business, profit and sales index, sales per employee and addition per employee. Benefits in the areas of customer satisfaction, supplier satisfaction, new product development processes, employee and family fulfilment, industrial relations, satisfied local society were realised. In addition, change in organisational culture resulted in high ownership among employees for improving the organisational performance, growth/business and international recognition.

3.2.2 Rane Brake Linings

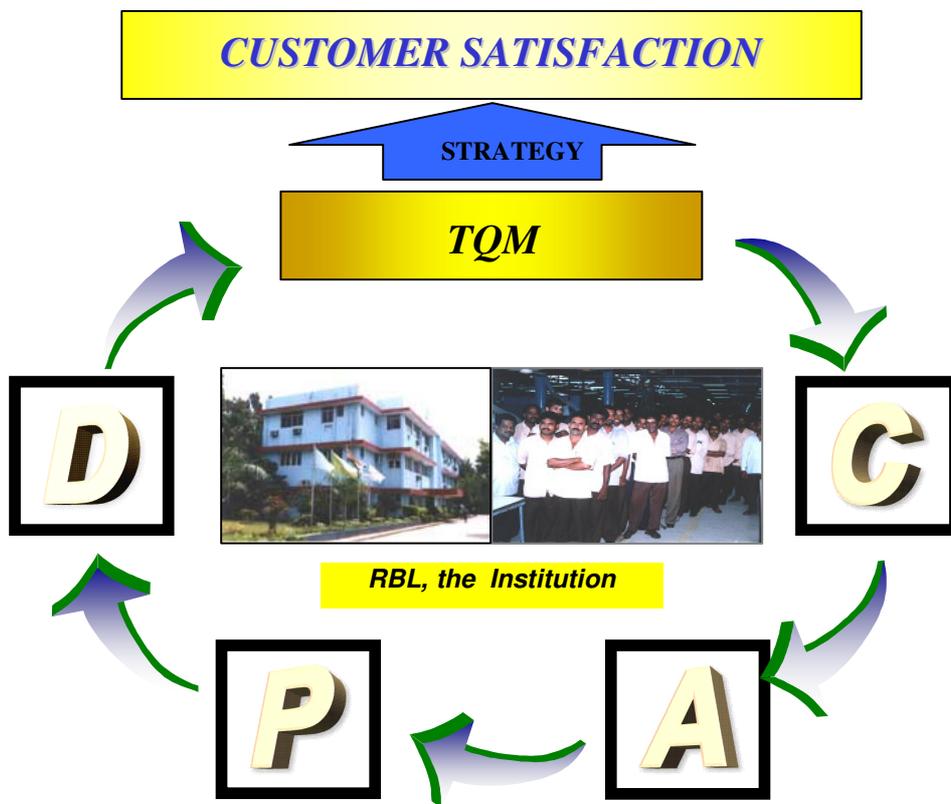
Rane Brake Linings is one of the promising companies, which achieved Deming application prize. It is a division of the Rane group¹⁰ and produces brake linings; disc pads, composite brake blocks, and clutch facings. RBL today is the No. 1 friction material manufacturer in India[5]. The TQM journey of RBL began in 1999 [10]; importance of this company is that it has achieved Deming application prize in 2003, which is just four years after start of journey towards TQM, which is a record.

“Belief in TQM as a philosophy that aims to define a methodology that creates quality that delights the customer while satisfying all other stakeholders”.

-Organization motive for TQM

RBL's TQM journey began with the help of Prof. Tsuda. He established the following criteria for excellence: 1. Develop a business model to generate business for long period through uniqueness in products & technology and uniqueness in achieving certain excellence 2. Reduce technological dependence on another company 3. Create new market or achieve drastic expansion of existing market, 4. Unique and enhanced utilization of manpower/human resources that drives a company to supply excellent people/manpower [10]. TQM implementation created tangible and intangible benefits for RBL such as clarity to each person in understanding their role in the organization, their suppliers and customers, and their metrics.

¹⁰ Is an automotive components company with a sales turnover of \$ 131 million and 4600 employees.



Source: Presentation by Mr S. Sundar Ram, President, RBL, Quality Summit 2003, www.ciionline.org

Figure 3.1 Rane Brake Linings TQM Model

Quality Policy ^[5]

- Customer satisfaction is an imperative and this is achieved by supplying quality products in time at competitive prices.
- Quality should be designed, engineered and built into the product through appropriate technology.
- Ensure adequate in-house testing facilities, to create confidence and trust in customers, on the performance of its products.
- Total employee involvement and commitment, by imparting adequate knowledge and skills to all levels of employees, are the prime objectives of the company.
- Doing things right first time and every time.

Before TQM

Prior to the TQM the organization's work is "basic," i.e., organisation focused on survival. The top management and only few other employees dealt with the customers, most employees are unaware of their customers and their needs. There exists high level of plant rejections and customer returns, few continuous improvement programmes. Statistical tools were used occasionally, no systematic initiative for improvements. Review and analysis were not carried out. Training programmes were need based and there was no structured training programme for operators. The concept of total employee involvement does not exist and employee involvement activities and analysis were not given importance.

After TQM and Deming

TQM model *Figure 3.2* is developed placing the customer satisfaction at the top. It includes activities defining the role of all the workers, development of new product development (NPD) system, setting up the review mechanism and daily routine management (DRM). In addition, process for strategy and strategy implementation, improvements in human resource practices to enable employee participation through suggestion schemes, Quality control circles (QCC) and quality improvement team (QIT) and practice of PDCA (plan, do, check, act) in all activities, systems, and processes [1].

Effects of TQM

RBL TQM journey enabled improvements such as reduction in plant rejections, reduction in customer line rejections, increase of net sales per employee, increase in new product sales and supplier raw materials rejections went down from 1.88 per cent to 0.70 per cent and the adherence to schedules is at 98 per cent [11].

3.2.3 Sona Koyo Steering Systems Limited (SKSSL)

Sona Koyo Steering Systems Limited was founded in 1985. It is a joint venture with Koyo Seiko Company, Japan. It won the prestigious Deming Application Prize in 2003 and was the first steering systems making company in the world to win. Organisation believes success depends on that quality journey, lead by TQM philosophy and supported by TPS and TPM, through the involvement all the employees of the company with their continuous education and training to help them to understand customer requirements and exceed their expectations.

“Commitment to defect prevention and continuous improvement while meeting or exceeding customer requirements at all times”.

-Quality policy Sona Group^[15]

First steps towards TQM journey started in early 90's with the help of expert, M.Tanaka from Koyo Seiko. With his help, SKSL implemented TPM, where poka yoke (fool proofing) systems were installed to avoid operator mistakes. All employees at Sona Koyo were involved in group kaizen activities similar to QC Circles [1]. Problem solving and Just-in-time are integral part of the work and their quality system was complaint with ISO-9002 standard by 1994. Active pursuit of TQM was started in 1997 in cluster¹¹. As a part of TQM, the 'managers' model lines, daily work management, gap analysis and root cause analysis with scientific tools were introduced. All the TQM activities are coordinated by a separate quality system division led by a general manager where TQM, total productivity maintenance (TPM), quality management systems (QMS) and environmental management systems (EMS) were formed and headed by a manager [12].

TQM Model^[1]

Sona-Koyo's model of excellence was built upon a strong base of retainment improvement and breakthrough. Precision, visualization, Poka Yoke and operations standards were the pillars for retainment. PDCA, TPM, group kaizen activity and managing points and checking points were pillars for improvement. Deep analysis, management for objectives, quality visits and technology developments were pillars for breakthrough. Operator role is related to retainment and the middle management to improvement; while, the top management focuses on breakthrough.

¹¹ In 1997 Maruti Udyog Limited suggested that Sona Koyo join the first total quality management (TQM) cluster of 10 suppliers to be trained in the TQM methodology

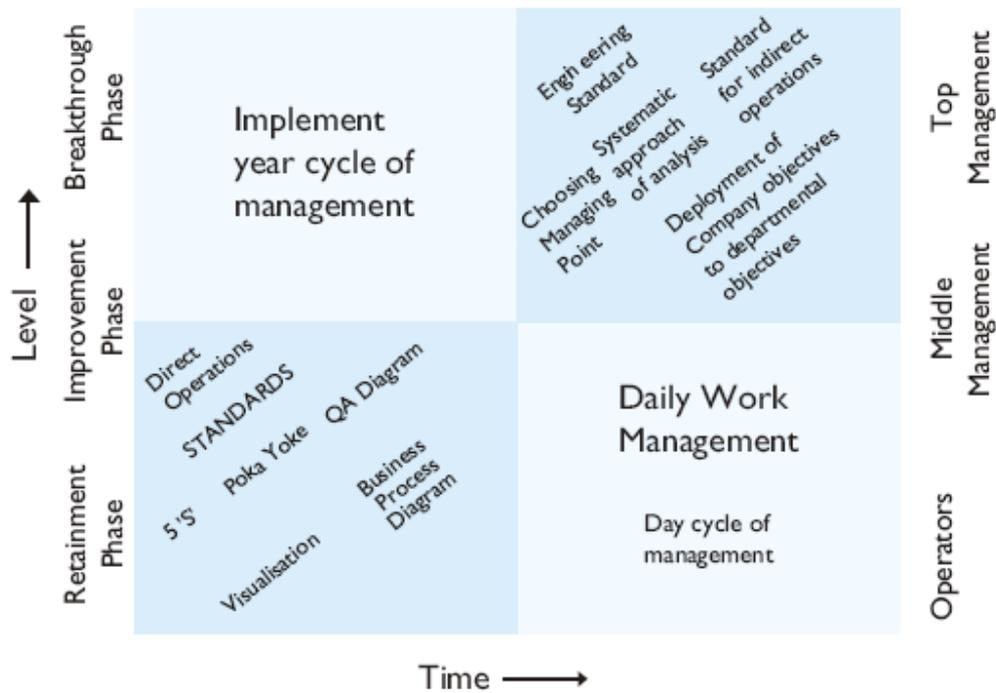


Figure 3.2 Sona-Koyo's Model of Excellence ^[1]

Positive Outcomes and Changes

The teachings of TQM enabled the company to understand the customer better. TQM approach enabled identifying weakness in the organization and working to eliminate the weaknesses. With the achievement of Deming Prize, it believes its brand equity is enhanced and now it can achieve confidence of global auto majors and is confidence of receiving positive reviews or will be seen with positive view from customers, prospective employees, shareholders, industry observers, and public [1].

3.2.4 SRF- Industrial Synthetics Business (ISB)

SRF is India's largest nylon tyre cord fabric manufacturer and the first tyre cord company in the world to win the prestigious Deming Application Prize [3]. It is the domestic market leader with 38% market share and is a significant player in the Middle East, Central Europe (Mitas), South Asia (Sri Lanka) and Central Africa (Kenya). SRF also has a presence in Western Europe and CIS countries. SRF has four plants at Manali, Malanpur, Gummidipoondi in India, in addition to plant Jebel Ali (Dubai) with total production capacity of 41,000 tpa of nylon tyre cord fabric [6].

Journey towards Excellence in Quality Management

SRF successful challenge for the Deming application prize was the result of more than ten years of unstinting initiatives towards raising the operating capabilities of the organization through TQM. Organization's belief is in the philosophy of "quality has to be caused, not controlled", and based on TQM, where quality is the result of a carefully constructed cultural environment [4].

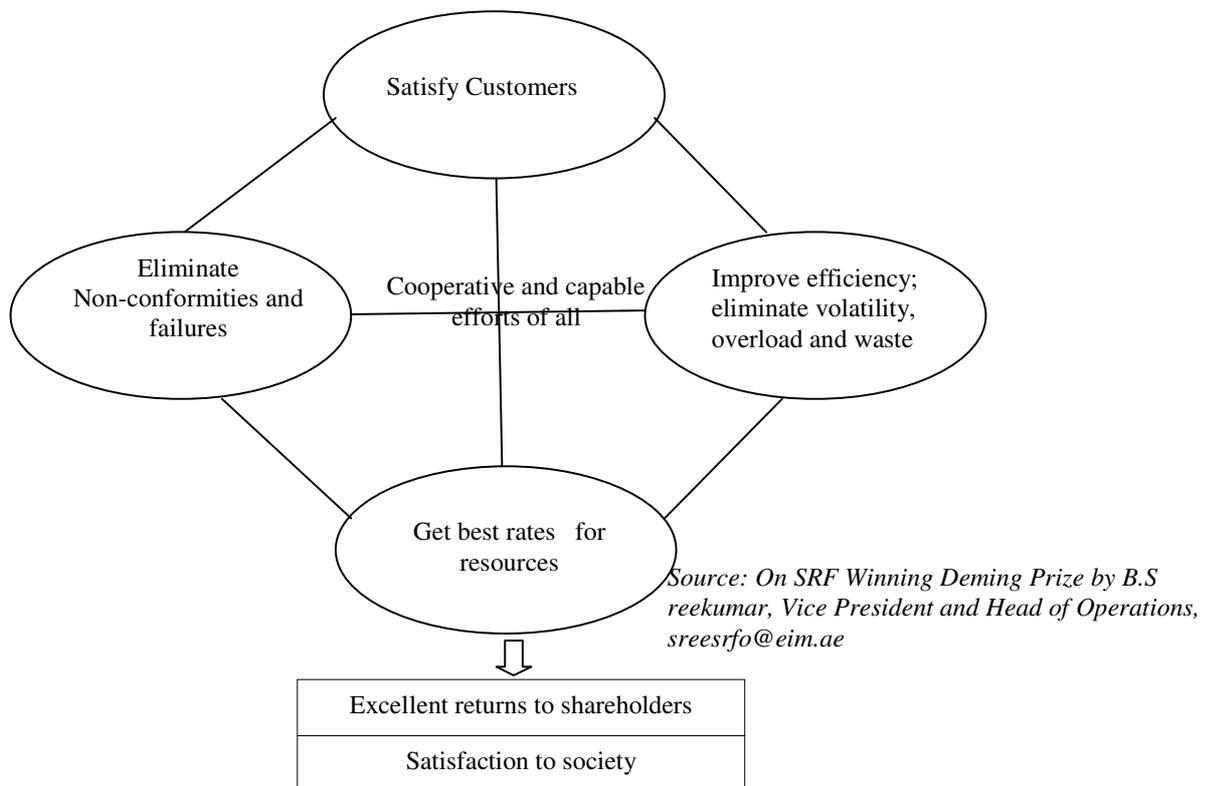


Figure 3.3 SRF TQM action Model

Important Features of TQM

Daily management standards: In each of the office and plant areas high level of visual identifications and controls are used to eliminate non-conformances to improve communication and encourage participation.

Skill evaluation matrix: Skill evaluation matrix is used for evaluating the skill levels of every employee, which provides an effective base of training and re-training of employees and enables multi skill development.

Evolution of a flat and empowered organization culture: The efforts are directed towards creating a flat and empowered organization with the help of consultant. A flat Model subjected to continuous improvement through sustained efforts.

Red book of people: This is a complaint /need register, provided to employees to enter their grievances, and needs. Each and every complaints are addressed in consultation with the person entered the complaint and the closure status is notified. Moreover, similar red book is available for customer complaint and internal next processes. The statuses of all the red books are monitored on a monthly basis by head of the plant.

Breakthrough management: Breakthrough management was started in the year 2002 to face the stiff competition and to focus on the profit margin.

Some Important Results of TQM

Internal results felt due to TQM are from SRF Overseas limited, shows decrease of waste and scrap by 23%, reduction breakdown hours by 80 percent, increase in training man hours per person/year by 226% and significant increase in employee satisfaction. Main external effect was significant decrease in customer complaints thus increase in customer satisfaction.

	Mahindra and Mahindra Limited, Farm Equipment Sector	Hi-Tech Carbon Gmpd
Introduction	<ul style="list-style-type: none"> Involved in designing, manufacturing and marketing agricultural tractors First tractor manufacturer in the world to win Deming Prize. 15% of the production is exported <p>TQM journey started in 1985.</p>	<ul style="list-style-type: none"> Hi-Tech Carbon (HTC) is a unit of Indian Rayon & Industries Ltd a part of the Aditya Birla group of companies. Unit won the Deming award - without assistance from an external consultant
Changes and methods	<ul style="list-style-type: none"> Introduction of quality circle movement (1985 to 1989) Quality improvement for problem solving and statistical process control (SPC), support to all suppliers to improve their processes and product quality (1990 to 1994) Implementation of robust systems, Business Process Re-engineering (BPR) with improvement in employee involvement and productivity (1995 to 1999) Focus on improving at a rapid pace towards the vision of global leadership and challenging the Deming Prize, new product development process was improved and brought to international standards (2000 to 2001) 	<ul style="list-style-type: none"> Introduction of work environment and waste elimination (WEWE) philosophy. Employee competition and individual awareness in 5S promotions were adopted. Development of quality circle consciousness for problem solving. Environmental management system strengthened and improved (1998-99) Moved towards process-based operations. Process re-engineering based on Plan, Do, Check and Act cycle was adopted. Deployment of analytical tools for improving process and product. quality culture in team work, quality system certification, customer focus, customer satisfaction, process re-engineering. (1999-2001) Manufacturing process improvement and Just-in-Time (JIT), Failure Mode Effect Analysis (FMEA) for processes improvement, lean culture was internalized by the employees, employee motivation through kaizen suggestion system (KSS), brainstorming, career development plan and multi-skill training, providing welfare measures
Gains & results	<ul style="list-style-type: none"> Rework and rejection (Quality) came down to less than 1000 PPM levels. Improvement in employees, suppliers and dealers working relationships Improved field quality and productivity due to (BPR). Quality of outsourced components improved. Use of tools QFD, FMEA enabled to meet exact customer requirements at reduce quality problems and product development cycle time was also reduced. Customer satisfaction and domestic market share improved and export volume increased substantially 	<ul style="list-style-type: none"> Remarkable improvements in product and process quality and high gains in customer satisfaction Strengthened customer focus through standard operating procedure (SOP) for building quality into business processes
Awards	<ul style="list-style-type: none"> Management systems certified first through ISO/QS 9000, ISO 14001 and Recognized with the Deming Prize in 2003. <p><i>Source: [13, 1]</i></p>	<ul style="list-style-type: none"> Quality control award for operations business units' in the year 2002. ISO certifications (ISO 9002, QS 9000 and ISO 14001) in the year 1999, In 2000, the Unit received ISO 18001 and ISO 17025 TS 16949 in the year 2003, which complies with the standards of ISO 9001: 2000 and QS 9000. <p><i>Source: [1, 14]</i></p>

Table 3.2 Mahindra and Mahindra Limited and Hi-Tech Carbon Gmpd

3.2.5 Conclusion

The common understanding from the companies is that, Deming Prize enabled to understand customers' better, it also delivers financial gains, employee's commitment, customer's loyalty and a big competitive advantage while entering new markets as potential customers are ensured that

“Organisations which follow TQM process had basic quality systems, quality improvement activities such organisation could consistently deliver a quality product.”

All these companies have good working relationship with workers union. As a result, unlike other organisations in India these organisations do not loose work hours due to strike or lockout. This can be attributed to training, commitment from the management to the welfare of all the employees. In their own words leaders from these organizations say, use of tools such as PDCA, Kaizan, 5S, Poka Yoke, SPC, QFD, FMEA enabled them to achieve what they had. They all see future to the organizations exists only with continuous commitment to TQM, and achieving Deming Prize is only a part of it or one can say a benchmark to management commitment to TQM and success it achieved with it.

All these organizations stand out as role models to those who want to achieve success. One can follow in the steps of Deming prize winners to understand what it takes to achieve success and what it takes to build world-class organizations.

To conclude *“committed management + 5-10 years of hard work in transformation”* is all it is required for successful Deming prize application (or) to transform organizations into truly world class.

3.3 Quality Management in Developing Countries

Introduction

As business is getting more competitive every day, management of all the organizations has to commit them for continuous improvement and run in a professional manner. In the new world-order, “survival of the fittest” has changed from the “one with big muscles” in future for the survival of developing countries. Organizations, especially in developing countries have not been professionally managed. Leading developing countries such as India, China, and Mexico are forefront in adopting new management philosophies in running business in a professional manner. Manufactured exports accounted for 70 percent of DCs exports at the end of the 1990s and 30 percent of world-manufactured exports. These global markets therefore present an excellent avenue for developing countries to participate in the benefits of a buoyant trading environment [1]. Developing countries can take their share of market only when they can be competitive that means they should be able to provide goods and services of highest quality at low price.

Until recently only advantage companies in developing countries having are “*ability to provide goods of low quality and low price,*” this was possible due to the availability of low skilled, low-paid and almost an abundance of labor. However, according to Feigenbaum [12], in this increasingly competitive world, quality is no longer an optional extra it is an essential strategy: without quality, an organization cannot survive. The making of quality products and services demands total commitment from the entire organization; it requires TQM. TQM therefore is a solution for improving the quality of products in developing economies so that they are accepted in a global market [18]. Therefore, situation will change for positive if thinking changes from quantity to quality, adopt modern management concepts such as TQM, use tools and techniques, and get ISO certified.

It is important to notice that developing countries understand the need to improve their quality of life and can see that their quality of life is influenced by productivity, which affects their national economy [9]. In the present scenario, many countries have taken steps in modernizing its industry to increase productivity and quality by adopting modern management concepts and achieved reasonable success. Even countries like India Mexico, China, have this common weakness. According to study “[15]”, employee involvement and employee participation and the training employees in basic statistical tools for total quality management

have been given the least importance even in organisations which are performing relatively better. Management in these countries is responsible to develop training programs and enrich the knowledge of workers to understand the realities in order to adopt quality management.

In this work, author will present general situation regarding quality management in developing countries with the help of experiences from few important developing countries, based on the studies specific to that countries.

3.3.1 Quality Control/Improvement

Developing countries are in different stages of the quality movement. This is due to changes in their economic and trading policies, opening their markets to the free market system, and competing in international markets. Quality control and improvement activities are particularly weak in government and service organizations, because they have traditionally been operating in a monopolistic state. On the other hand, this is traditionally applied in the manufacturing industries. Quality control application in the service part of the manufacturing companies is also weak. Most manufacturing firms measure the product quality, but not the service quality [3]. Biggest problem in controlling the causes of variation in DC's is in dealing with common causes. This situation is principal in local organisations when compared with multinationals or their subsidiaries in developing countries. Many of these organisations have a dependence on the availability of a cheap unskilled labour force and lack the financing to purchase modern technologies let alone upgrade frequently [9].

3.3.2 Quality Assurance (ISO Certification)

Quality assurance, which aims to ensure consistency in operations so that an accurate and consistent product can be delivered, is being well understood since the introduction of ISO 9000 standards [3]; however, being well practiced especially by export oriented companies in developing countries. National Standard bodies with the help of ISO in different developing countries are promoting the implementation of quality standards. ISO currently has approximately 161 members, of which developing countries represent approximately 75% [20]. The level of participation of developing countries in developing standards is relatively poor. Though situation is not encouraging, governments from countries such as India are providing assistance and also providing financial incentives to organizations, which are pursuing ISO certifications to encourage exports.

Countries	Dec.2001	Dec.2002	Dec.2003	Dec.2004	Dec.2005
China	7413	40997	96715	132926	143823
India	544	2247	8367	12558	24660
Brazil	182	1582	4012	6120	8533
Mexico	79	265	1437	3391	2890
Egypt	18	222	754	810	1326
Pakistan	96	186	464	695	2013

Table 3.3 Total number of ISO 9001:2000 Certifications

3.3.4 Important Considerations for Organizations

There are some problems typical to developing countries which management should solve while implementing QM, as stated by “[19]”, *“efforts towards improved efficiency often leads to loss of jobs and workers are unlikely to support quality initiatives when, in the long run, they will be victimized by their efforts”*.

According to “[18]” most organizations in the developing world are having following problems

1. Lack of employee involvement and participation in quality improvement efforts.
2. Lack of management commitment and motivation
3. Perception that quality is an optional extra and not a necessity for development.
4. Traditional belief that "quality costs money".
5. Lack of communication and trust between suppliers, dealers, management, and trade unions.
6. Unorganised and indifferent customers, lack of political support.
7. Lack of established quality standards and inadequate test facilities.
8. Obsolete technologies.
9. Low level of education.
10. Negligible capital investment in technologies, research and development and employees' education, etc.
11. Disrespect to the people as far as quality of life is concerned.
12. Undesirable social tensions such as terrorism, violence, religious fundamentalism, etc.

All the stated problems can be categorised as internal (organisational) and external (international) variables in accordance with study [14]. Study “[14]” has done an extensive review of existing literature and presented framework to understand these problems effecting quality in developing countries.

They are as follows:

Economic: Economic factors such as quality of infrastructure, resource availability, volatility, role of the private, sector in the economy, and the size of markets. For example due to lack of proper resources, governments in developing countries are unable to provide for good transportation and communication infrastructures to meet the necessary demands for the flow of materials and information.

Political/legal: The common political/legal factors are free-trade agreements with other nations, regulations, and role of the public sector, central planning, governmental priorities, governmental efficiency, and financial incentives. This is one of the most important influencing factors, as governments legislations till early 90's prevented foreign competition and thus monopoly existed in many developing economies, which is the reason for lack of competitiveness and focus of quality in organisations.

Cultural/social: Cultural/social issues such as relative status of personnel, hierarchical focus, achievement focus, education level of workforce, labour turnover, customer focus, and the degree of international communications are important in the context of developing countries. Hierarchical distance among various levels of personnel within a given organisations affects quality; many developing countries have high power distance at workplace and have low level of literacy.

Goals/priorities: Organizational priorities supporting quality efforts need to be in place for quality efforts to be successful. Implementation of quality initiatives such as TQM, ISO 9000 will be more successful only when top management give importance to quality improvement. Historically, this was not the case as many organisations in developing countries were state controlled and protected from private and foreign competition.

Commitment/control: Organizations in developing countries can facilitate quality efforts by creating conducive environment for their workers. This requires workers to be committed and involved in the quality improvement process. This workers commitment should be aided by policies and procedures in place that encourage process control to minimize defects. However, lack of employee involvement and participation in quality improvement efforts is common in developing countries [18].

Centralization/decentralization: The quality management philosophy requires decision-making be decentralized. Workers need to be empowered to enable them to make

decisions at the source. This will happen with creating flat organisations with higher transparency.

The listed problems are typical only to developing countries even to date; important things organizations should take care of to implement QMS and overcome some stated problems are to develop flat organizations, which will replace the traditional hierarchical structure present in organizations of developing countries. Organizations that have been successful in building up their quality management practice have been shown to dismantle this vertical structure [17]. Power sharing is, necessary in order to practice TQM. Concentration of power the most commonly found in developing countries is in conflict with Deming's philosophy. In addition, total quality management experts advocate teamwork rather than individualism [9]. The lack of internal communication and teamwork in the developing countries is the most important obstacle in achieving objectives of quality management. Cultural changes should take place in organizations to integrate workers and develop teamwork in achieving organizational goals. In the process workers should be educated and trained so that they possess the necessary tools and skills to do their jobs right. It is important that everyone in the organization share the same views and goals of management to implement quality as a culture. Typical cultural problem exists in developing countries is hierarchy of authority. In the society, it is disrespectful to challenge their thoughts of elders. This makes education, training and awareness programs necessary to managers, to make them understand that the importance of teams to improve processes, so that views of subordinates are accepted with out any feeling of disrespect to their seniority or position [9].

3.3.5 Overview of Some Developing Countries

Pakistan

Pakistan is one of the leading developing countries working its way to stand firm in this competitive business environment. However, Pakistan is less competitive and has less export growth rate compared to other developing countries such as China and India [1]. This is due to less appreciation of quality assurance through ISO certifications and use of other management techniques. According to article “[2]”, WTO recommends organizations in Pakistan to register ISO to honor WTO and SAFTA¹² requirements to ensure quality of products.

According to study “[3]”, quality in ISO certified organizations is suffering from with poor implementation in majority of organizations. Organisations are performing very poor in different quality assurance related processes, mainly in statistical quality control, corrective action, insufficient management review, weak auditing, insufficient internal quality audits. Consequently, excellence in quality assurance is not guaranteed with the proof of ISO 9000 certification. Some important characteristics of organisations according to “[4]” are

1. Marketing: only minority has established this department on a professional basis.
2. Design: Majority of the companies did not have any organized design or development department:
3. Production planning was followed satisfactorily in nearly 60% of organizations but nearly all organisations have good production control measures.
4. HRD was unorganised and in organisations where they are organised, they are usually not effective due to insufficient competence, commitment, and resources.
5. Top management, middle management, and supervisors/workers lack quality management skills essential for developing quality culture. Awareness of quality tools is poor.
6. Nearly half of organizations top and middle management not fully committed to quality.
7. Participation of workers is very low in taking up quality initiatives and involved in quality problem solving.

¹² South Asia Free Trade Agreement

Indonesia

Organizations in Indonesia are facing stiff competition from other exporters from developing countries like Pakistan, China, Vietnam and India. The problem is the quality of Indonesian products, which are reputed to be inferior when compared with products from other countries [5]. Quality issues were first recognized in 1983, the Indonesian government initiated efforts toward improving its national productivity. With this, quality concepts were introduced in a number of Indonesian companies with large foreign equities, notably Japanese-Indonesian joint ventures, and companies wholly owned by Japanese concerns. Even though organizations are successful to some extent in implementing quality management concepts, there exist profound problems according to various studies conducted when viewed in overall sense. Barriers for the successful implementation of TQM in Indonesian manufacturing organizations are human resource management, attitude towards quality, organizational culture, interdepartmental relations, materials, machines, equipment, information, method [5].

Yemen

The study “[8]” shows three main categories of difficulties in practicing quality management. Yemen consists of mainly public companies. The first category is related to government issues, which include the selection and assessment of managers in the public organisations and the lack of governmental programmes, which are needed to support the quality activities like those found in other countries. The second category is related to technical knowledge, which the organisations in Yemen lack. According to study “[8]”, organisations lack sufficient knowledge of new techniques and are short of skilled personnel to implement these activities. The third and most important category is current organisational practices related to inappropriate managerial traditions. As found in the study most quality related activities are not practised and are still new for both staff and managers.

Egypt

Egyptian organisations have good understating of the purpose of ISO standards [6]. Majority organisations believe that ISO 9001:2000 intend for establishing a consistent documentation and for establishing formal quality system. In contrast, study “[7]” found that the majority of ISO companies believe that adopting the ISO certification means implementing TQM, instead; ISO certification should be regarded as a first step towards TQM. In general, manufacturing

companies and larger companies had a higher level of understanding of ISO than small and medium sized companies did.

The study “[6]” revealed that many Egyptian companies place a great emphasis on certification. The most common reasons for seeking certification were to improve the efficiency of the quality system and pressures from competitors/foreign partners [6]. Study further revealed Egyptian companies see ISO mainly as quality system efficiency rather than achieving quality improvement, which is considered to be one of the least important influencing factors for seeking ISO certification. The perceived benefits of improving organizational documentation and the efficiency of the quality system appear to be the leading benefits for implementing ISO certification. Other perceived benefits are relative to supplier selection, improving product/service quality and using as a promotional marketing tool.

There is significant difference in manufacturing organisations about the understanding of efforts required and benefits TQM will bring. These differences in understanding the efforts required for improving the efficiency and effectiveness of the system is denting TQM implementation [7].

According to “[7]”, most important TQM influencing factors are top management commitment to quality and other important factors are promoting exports, attract foreign investments, improving quality and productivity-profitability, customer orientation. The main obstacles for TQM implementation is insufficient infrastructure, lack of training, workers’ reluctance to get involved in decision making, and inadequate knowledge base are regarded as resisting forces that inhibit the introduction of TQM strategy. To improve the situation in TQM implementation, study “[7]” recommends policy makers to enhance the capability of manufacturing firms that are willing to implement TQM strategy through increased funding, grants, incentives, and educational programs.

3.3.6 Conclusion

This section has presented a brief overview of quality management practices in developing countries, with specific views on countries Egypt, Indonesia, Pakistan, and Yemen. Although these countries may not be directly comparable, they have provided information regarding prevailing situation in organizations of developing countries in their journey towards excellence. Developing economies often have unique characteristics, notably lack of democracy, instability, corruption, unskilled labour force and others. While not all developing countries suffer from these ills more are less this is valid.

Presentation indicates organizations in developing countries have not been taking professional management seriously. Overall, issues relating to market forces, governmental responses to business environment, technology, and management, hamper performance in these countries. Difficulties in these areas can be removed only with professional planning, and implementation, both at the company and at the country levels. TQM and ISO programs which focuses on developing organizations for providing and aiding to satisfy mainly customers and stake holders are essential instruments for which organizations have to look for achieving success more keenly. ISO 9000 is a good framework for quality assurance, only if it is implemented effectively and efficiently which was not the case present in developing countries. The role of government is very important in disseminating quality management practices. Government should take steps supported by other groups to support development and utilize new organizational techniques.

3.4 Quality Management in German Organizations

Introduction

Historically product related quality philosophy has dominated in Germany where importance is given to the technicality of product [6]. The main goal was producing products, which cause minimum failures and statistical methods are used for this purpose. Such system for controlling the quality was continuously improved to keep German products as widely accepted for quality. With the time technical and production knowledge spread, competitors were able to produce at lower costs and quicker in responding to customer demands [5]. With this, German companies recognized the essence of change laying path for prevention-based approaches. This was the first step to establishing a quality system in many companies, providing the platform for ISO certifications. The ISO 9000 series of standards gave a strong momentum to the quality movement since it first published in 1987. The automotive industry was the first to identify the advantages certification [5]. With the help of automotive industries the association of German car manufacturers has developed an independent standard for quality management VDA, the German quality management system (QMS) for the automobile industry (Verband des Automobilindustrie e. V.) which is mandatory for all German car manufacturers.

Just in Time concept was being in use in Germany since the beginning of the 1980's and Lean concept became popular since beginning of the 1990's, especially in medium sized and big organizations [1]. At present main emphasis of quality is on customer satisfaction. Fulfilling customer requirements and giving the customers what they want is of prime importance [6]. Total quality management is the philosophy originations followed to achieve customer orientation. Total quality management and business excellence gained importance since 1988 when EFQM was founded [5]. Further commitment towards business excellence is strengthened by establishing the "Ludwig-Erhard-Preis – Auszeichnung für Spitzenleistungen im Wettbewerb" in 1997 as the German quality award, named after Ludwig Erhard, the first minister of trade and commerce after World War II and is based on European Quality Award (EQA). At present self-assessment, concepts are used for internal purposes. At the same time, positive trends can be seen in applications for the Ludwig-Erhard-Preis as an outward sign of the companies' commitment to quality [5].

3.4.1 Management Attitudes of EFQM Award Applicants

The study “[3]” has produced an extensive understanding of leadership practices in German organizations applied for EFQM award. The main criterion to be a leader in organizations is having ability to provide technical assistance to subordinate. The leaders, inclusive all employees in general prefer to work alone or with clear interaction and show a strong desire for control over uncertainty.

The common objectives of leaders in these organizations is to ensure employees have targets that support business objectives, review progress towards objectives, provide training to employees, and recognizing employees for successful achievement of objectives. Even though both individual and team recognition is practiced, team recognition was preferred over individual by majority. Empowerment is key, in this regard majority organizations practice decision-making by the lowest possible decision-maker. That means employees were expected to act on their own responsibility and the teams were largely self-directed. It is common that leaders to encourage employees’ to network outside their own organization to learn from organizations in other industries. Media such as newsletters, intranet, video, meetings, e-mail, voicemail, and notice boards was used for internal and external communication. In general, communication is formal, especially for arranging meetings. Informal meetings with employees such as to spend time outside work with employees to integrate and communicate is not common.

As the emphasis of quality is on customer satisfaction, communication with customer was given prime importance. Organizations stress their commitment and involvement with customers through customer visits by the top leaders to understand them in better way. In addition, customers have always a possibility to contact leaders at any time. Teamwork was regarded as usual practice and cross-functional collaboration using teams, which included employees from all levels and all functions of organization, is a commonly seen in organizations.

It is in practice that leaders encourage employees to take part in improvement activities and provide time and training to do so. It is the norm for senior managers to lead improvement teams, set improvement priorities with reference to vision, mission, strategy, business targets, and customer needs. In addition, leaders usually engage themselves in a role in the local community to fulfil their responsibility towards society.

3.4.2 Quality Management Systems

The quality management-systems in the organisations are based on different standards and models such as VDA6.1, QS-9000, and ISO. Overall, QMS certification in German organisations is very positive. From the study [6], it is known that 74% organizations being certified and from the study “[7]” it is known that 62.3 % organizations when seen in the context of other countries this is relatively large. According to study “[7]” most organizations have certified their QMS according to ISO 9001:2000, with fewer going for TS 16949, QA 9000 certification.

According to “[6]” leading motives driving organizations for introducing QM-system are “customer demand” and internal desire of wanting to “increase the efficiency” of the enterprise. It can be conformed by “[7]” to some degree but in contrast with study “[6]” internal desire of wanting to “increase the efficiency” of the enterprise is not the main motive. Overall the studies “[6]” and “[7]” show that the main advantages of QMS as seen by organisations are clear operational sequences and processes and clear organizational structure, transparent workflow. Increase in output, better reproducibility and tractability are major advantages particularly for small enterprises, which is quiet different from medium and large scale companies. Biggest disadvantage of QMS as seen by most enterprises is the complex documentation and the high administration expense. Cost and time-intensive work are main problems for introducing QMS in smaller organizations.

According to study “[7]” internal effects of QMS are transparency of the processes, decrease of the internal errors, and decrease of the complaints. Other effects such as personnel development, motivation, and satisfaction of the employees are not that significant. External effects of QMS are increase in customer satisfaction, general reputation of the enterprise, and improved relationship with suppliers. When it comes to organisations with certified QMS, increase in general reputation is the strongest effect of quality management. Enterprises without certified QMS indicated certification a positive effect concerning their credit-worthiness with banks.

Success of Quality Management System

The success of quality management system depends not only on its support by the top management and the strategic deployment, but also based on support of all the employees in the enterprise. From the study “[6]”, two third organisations practicing QMS are able to

sustain QMS after certification; overall the sustainability of QMS is about seventy five percent. Same high percentage of sustainability of QMS can be observed in the study [7], where certified organisations considered being partially successful 50% to 50% very successful but in general the activities related to application quality management such as quality planning, control, improvement of process have weakness particularly in the organizations without certification.

Use of Tools and Techniques

Overall use of quality tools and techniques in organisations is poor with only one third organisations having relatively good use of all the tools and techniques available, with the remaining organisations seems to be unaware of tools and practically poor in using them [6]. In general, use of tools and techniques is proportional to production size, with larger the production batch size more the intensity of use of tools, in the same way large the number of employees and/or the amount of turnover, strong the use of techniques.

Methods such as customer survey, customer observation, benchmarking and customer complaint analysis known for idea generation and for developing new products in German organizations [7]. However, relatively few organisations know creative techniques such as morphologic box, brainstorming, and brain writing.

Common methods used in product development are Failure Mode and Effect Analysis (FMEA), target costing, chance-risk analysis and QFD. However, FMEA is the best-known and regularly used method. Considering widespread customer-oriented quality philosophy in the organizations, it is somewhat surprising to know that QFD regularly used only in twenty percent of the organizations.

FMEA is the popular method used regularly in nearly forty percent of organisations in the production. The main purpose of FMEA in production is to uncover the potential mistakes and evaluate these mistakes and suggest suitable measures if necessary. Other techniques widely used are array data evaluation, process capability analysis, statistical process control (SPC), fault tree analysis and poka yoke.

Process Improvement

Production process optimisation/improvement ensures that resources are operating at their peak performance at all times to maximize production. The ability to optimise a process depends on the ability to control it. For the optimisation of production processes majority of

the organisations, wait until severe manufacturing problems arises [6]. Other major influencing factor for process optimisation is outside pressure for a necessary cost reduction. Only minority of organisations normally intervene in ongoing process to accomplish an optimisation. In general, organisations with large volume of production regular optimisation optimize processes and work with continuous improvement programs.

TQM Activities

TQM activities have started in 80's, but the actual impetus only came with the initiation of "EFQM Excellence Award" which was later followed with "Ludwig-Erhard-Preis" the German national quality award. However, according to "[7]" even after initiatives such as establishing regional quality awards such as "Qualitätspreis Berlin – Brandenburg" the broad acceptance of TQM, as an organisational philosophy was not materialized. Majority German organizations are not inclined towards engaging themselves in activities other than conforming to QMS [7]. Organizations believe they are not required to survive without TQM and are of opinion that TQM is just a cost intensive program. Those who believe otherwise are engaged in self-evaluations, TQM, and six sigma activities. However, according to experts, general attitude of organizations is positive towards TQM.

In general, organizations are engaged in following activities important to TQM. All organizations are having clearly defined goals for the future with certified organizations being more systematic in having a vision. In general, employees including leaders of organizations devote 60 per cent of their time for keeping the processes under control, and invest remaining time on improvements and innovations in organizations [7]. There are positive trends towards training and development of employees. In addition, organizations work on determining employee satisfaction through various means directly and indirectly. Directly through regular meetings and questionnaires, and indirectly through indicators such as absenteeism, sick leaves, employee turnover, and readiness for the further training. However, certified organizations have positive trend compared to non-certified organizations. Performance related to employee suggestions is very poor in German organizations; number of suggestions made by employees per year ranges from 1 to 5, far low when compared with Japanese 167 suggestions per employee may be better than USA 1.1 suggestions per year [8].

3.4.3 Conclusion

This section has presented an over view of quality management practices in Germany mainly basing on two studies “[6]” sampling from organizations all over Germany and “[7]” sampling from Berlin and Brandenburg region.

There is clear indication from the studies a shift towards "customer-oriented quality". Nearly half of all enterprises regard this view of quality as important element for their success and the majority of the enterprises already orient itself to customer-oriented quality philosophy [6]. Though the majority of organisations from studies “[6]” and “[7]” complain about complex documentation and cost of QMS they still found to be having certified QMS, which indicates organisations commitment to deliver products and services with consistent quality. Large organisations and in particular manufacturing organisations are inclined towards certified QMS and doing activities related to TQM. It is also clear that to be a successful organisation, leadership, customer orientation, employee orientation, quality of process, control systems, communication process are very important as organisations with success are performing far better compared to ones with less success [6]. One can also sense the differences in level of quality practices when measured by QMS certifications and activities related to TQM, where average Germany company looks far better then ones from Berlin and Brandenburg [3],[6],[7].

Although studies show TQM is being welcomed mostly in larger organisations, one can see the TQM based awards such as EFQM, Ludwig-Erhard-Preis and Qualitätspreis Berlin – Brandenburg are providing frame works for organisations for self-assessment. Organisations using these frame works are performing far better in all aspects of QMS “[7]” when compared with organisations with and without certified QMS.

Chapter 4 Research Methodology

Introduction

Research can be accomplished in many ways. In this chapter, aspects related to the research process of this thesis are described and discussed. A general description of available research methods is presented, underpinning a discussion of why some of these have been considered suitable for this specific research project.

4.1 Research Design

The role of research design is to connect the questions to the information collected in various forms. Design sits between the two, showing how the research questions will be connected to the data, and the tools and procedures to use in answering them. Research design provides the glue that holds the research project together.

“A design is used to structure the research, to show how all of the major parts of the research project -- the samples or groups, measures, treatments or programs, and methods of assignment -- work together to try to address the central research questions”^[1].

4.2 Research Strategies

The mission of research is to generate knowledge with new ideas/methods. As a researcher, one also gains knowledge during the path of reading, discussing and investigating. The research, and how it is conducted, is influenced by the researcher's understanding of world. There are alternative perspectives of what the process of undertaking research should look like [2]. The choice of research approach is not only dependent on the researcher's epistemological position, but should also be based on the type of research questions we set out to illuminate [6], [8].

Empirical methods are the means by which scientists gather information about the world in order to develop theories [9]. For conducting empirical research, there are two methods of data collection: qualitative and quantitative. The qualitative method permits researchers to study selected issues in depth and detail. Approaching fieldwork without being constrained by predetermined categories of analysis contributes to the depth, openness, and detail of qualitative inquiry. The quantitative method, on the other hand, requires the use of standardized instruments so that the varying perspectives and experiences of people can fit a limited number of predetermined response categories, to which numbers are assigned. The

advantage of a quantitative method is that it is possible to measure the reactions of many people to a limited set of questions, thus facilitating the comparison and the statistical aggregation of the data. This gives a broad and generalised set of findings presented briefly. By contrast, a qualitative method typically produces a wealth of detailed information about a much smaller number of people and cases.

In order to avoid their respective disadvantages, one important way to strengthen a research design is to use both qualitative and quantitative methods. The objective of generating knowledge about organisations' following QM implementation by studying, analysing and describing implementation is done by both qualitative and quantitative methods. However, the first and most important condition for differentiating among the various research strategies is to identify the type of research questions being asked [8]. The explanations for adopting research strategies for different research questions proposed in this study are presented in the following subsections.

4.2.1 Literature Review

A literature review provides the meaningful context of project within the scope/knowledge of already existing research. "Meaningful context" can elevate research from disconnected observations or number crunching to the level of significance in the field of investigation [5].

The first and the second research questions *Development of different quality management concepts, how they complement each other? and How quality management work is organised in India and other developing countries?* are descriptive in nature.

As explained by Punch [7] descriptive study sets out to collect, organize, and summarize information about the matter being studied; it is concerned with making complicated things understandable. For answering these two research questions, a literature review approach was the best strategy. The literature review on all aspects of QM helped to provide a detailed understanding of development of quality management concepts and their practices through different forms in the world. It also details the state of different quality management practices and basically how developing countries such as India practice these concepts in industries today. The literature review identified how different quality management practices are related. Thus the first research question, "*How different quality management concepts are developed, how they complement each other?*" was answered. Similarly, the literature review on all aspects of "Quality management practices in Indian

industries” developed understanding and identified some gaps in literature. Thus, the second research question, “*How quality management work is organised in India and other developing countries?*” was answered to some extent. In addition, in addressing the fourth question, “*What lessons can be learned from these practices of these organisations and how can these practises better implemented?*” literature review is used to get the understanding of various elements of implementation model.

4.2.2 Questionnaire Survey

The third research question “*How are export oriented organisations practicing quality management?*” is to examine the activities of QMS implementation, quality results, and organisations intentions towards quality management practices and their understanding for improvements. Based on the existing ISO 9000 system requirements model a two level survey was done to collect information about QMS practices. Here the objective to generate knowledge regarding export oriented organisations by studying, analysing and describing their practices. Therefore the design chosen is descriptive, non-experimental quantitative based.

“Descriptive designs are used to gain more information about a particular characteristic within a particular field of study. A descriptive study may be used to, develop theory, identify problems with current practice, justify current practice, make judgements or identify what others in similar situations may be doing. There is no manipulation of variables and no attempt to establish causality” [10].

Characteristics of Descriptive Research ^[11]

- Descriptive research aimed at describing the characteristics of subjects -- may be students, teachers, administrators, parents, the community at large, etc.
- Descriptive research usually takes one of two forms: 1) survey research 2) observational research
- Have objectives instead of hypotheses

The greatest advantage of a questionnaire survey is its lower cost compared to other methods. A questionnaire survey can be used only when the objective of the study is clear and not complex [3]. In understanding quality management practices, research has been conducted using questionnaire surveys to collect information from Indian industries [Chapter 3.1, ref 7,

10]. Thus, a questionnaire survey was the most appropriate strategy to answer this research question.

4.3 Structured Interviews

In dealing with second question “*How quality management work is organised in India and other developing countries?*” there is not sufficient information regarding practices of QM in small scale industries, especially which are local market oriented. The available knowledge of SSIs suggest that they lack proper QM practices, with technically low educated people maintaining these organisations it was understood that detail structured interviews are the only way to gain knowledge of their practices, because these people do not understand standard questions in a questioners due to lack of awareness and knowledge about quality management concepts. Interviews will allow researcher to analyse the understanding of QM through interacting with organisation managers to get information about knowledge and quality management practices.

Such information obtained from structured interviews was used to develop understanding of quality management practices. Generally, structured interviews can obtain more detailed information when compared with questionnaire surveys; some information that cannot be obtained through questionnaire surveys can be obtained through structured interviews. In the research area to understand QM practices, some researchers’ uses structured interviews to develop implementation frameworks. These results obtained from the structured interviews give the author a better understanding about QM practices followed in small-scale industries in India.

4.4 Questionnaire Survey

Many researchers in the field of quality management have used questionnaire surveys. Most of these researchers developed their questionnaires for data collection, based on their own research purposes, thus, differencing from each other. Therefore, it was necessary to develop a new research questionnaire. However, the questionnaires developed by these researchers did give much needed insights into developing the questionnaire required for this research purpose. As the purpose of the survey is to gain understanding QMS practices of Indian organisations, after consultation with research promoter and colleagues, ISO 9001:2000

requirements standard, which is broadly accepted standard for managing quality management system, is used as a core part in the design of questionnaire [Appendix: 4].

The process of designing a research questionnaire can be split in to three elements [12].

Following these three elements and answering all the questions might ensure the successful design of the questionnaire.

- a) Determine the questions to be asked,
 - What is the aim of asking question?
 - Is the question of proper scope?
- b) Select the question type for each problem and specify the wording,
 - Can the respondents answer adequately?
 - Will the respondents answer willingly?
 - Are scales clear?
- c) Design the question sequence and overall questionnaire layout
 - Is the questionnaire logical?
 - Is layout of the questions easy and simple to follow?

4.4.1 Questionnaire Modification

During the initial stages of preparing questionnaire an active discussion with colleagues prompted many changes in the content mainly to simplify the structure; the questionnaire is divided into three parts mainly

Part 1: General information

Part 2: Information regarding quality system

Part 3: Quality results & satisfaction with results

Further modifications were made with critical review from promoter, which prompted to alter the sequence of questions and removal some unnecessary questions. The changes took place mainly to the Part 2, which was intended for collecting information regarding quality management system. Before finalising the questionnaire, it was rechecked with the people who are working in middle managerial position in Indian industries, who met author during visit to India before this study took place. Changes to the wordings of the questions suggested, and these changes were amended in the questionnaire before final version was drafted.

4.4.2 Research Sample Regarding Survey

All the organisations considered for the initial study [Appendix 1] are doing business with German organisations or at least having some collaborative work with German organisations.

The choice to use the organisations doing business with German organisations or organisations having some collaborative work as the sample for the Survey 1 is motivated by the following arguments:

- Provides much needed understanding about practices of export oriented or export capable organisations.
- Studying these organisations gives a great opportunity to compare these organisations practices with German organisations to gain some understanding in their practices, as it was one of research objective.
- Organisations are expected to have formal following of QMS.

Comparison with German organisations was made possible only with author's ease to obtain sufficient information regarding German organisations.

Survey Samples

The type of samples and the number of firms were determined on the basis of the information requirements for the research. In this research, all companies investigated for [Appendix: 1] the survey were randomly selected from "Directory of German Companies in India - I, Collaborations, Joint Ventures, Subsidiaries, 12th Edition published by Indo-German Chamber of Commerce". The selected sample is limited to directory of German companies in India, manufacturing firms that are export oriented and/or having some sort of collaboration with German organisations. Therefore, the research results might be generalized to all organisations in collaboration with German organisations, which are manufacturing oriented.

To extend the understanding of all export-oriented organisations to a greater extent, a second study was undertaken to compliment the main study [Appendix 1], with a sample based on organisations, which are practicing QMS systematically, certified according to ISO 9001: 2000, also registered for export and located in and around the city Hyderabad. This study was mainly conducted to check how far results from [Appendix 1] could be generalised. This study was made possible only with the help of Joint Secretary, O Vasudeva Reddy, Charlapally Industrial association, Hyderabad. The association provided the author with a firm name list. And upon the request of author to get information about organisations that have

established QMS practices and may have certification according to ISO 9001: 2000. This association personally, with the help of Joint Secretary provided means to get in contact with organisations, and helped to fill out the survey. Upon the willingness to provide information, about 30 organisations were contacted. Questionnaire along with cover letter stating the purpose of the survey is delivered to responsible persons in these organisations, requesting them to complete the survey within two weeks. After two weeks, organisations were contacted again through telephone and completed questionnaires were collected personally there after. In total, twenty-three duly filled questionnaires were returned but only 21 were used for analysis after scrutinising thoroughly.

4.5 Structured Interviews

The design of the structured interviews was based mainly on the research objectives, the research questions, and the extensive literature review. As said in earlier sections structured interviews are conducted to gain understanding of quality management practices in small-scale industries. However, before the structured interviews began, content was reviewed with management consultants, practitioners' in the quality management. Pre-test was done to finalise the contents and difficulties in answering them with the help of a small-scale industry owner, who suggested some questions could be irrelevant to SSIs even though literature suggests to search for such practices. Minor alterations were made as a result of this pre-test. The categories of questions, which were asked during each interview, can be classified into: General information about respondents, customer relationships, quality control/ improvement practices, employee management practices, and future orientation.

4.5.1 Sample Determination

To conduct structured interviews, first step is to decide the sample of firms, the interviewees in the firms to be interviewed, and the number of firms for interviews. After selecting the type of firms (SSIs) to be interviewed, the next step was to decide how many firms would be selected for structured interviews. The number of interviews was decided by considering the information required against the cost and time of conducting structured interviews. Finally, ten structured interviews were regarded as sufficient for this study. Not all of the 10 firms were available during study; finally, seven SSIs selected were selected for the study as recommended and introduced by local industry association member, who also owns an SSI in

that area, whom I know from a very long time. Before selecting companies for interview author had discussions with the member who though well educated not aware of quality management concepts in order to make him understand the research topic and requirements of present study. After understanding the requirements of the study two weeks time was taken to select the potential organisations that could be participating in the study. All the potential candidates address was given by the association member, he also personally got in touch with those organisations to inform about my study and to know about their willingness to participation, before passing on their information such as names, address and telephone numbers. Author then made telephone calls to each interviewee and explained the aim of the interview and time required. As a result, they all agreed to participate in this research. With the help of associate member author then made appointments with all the interviewees. Only with the help of this associate member, it was relatively easy to get their appointments.

Process for Structured Interviews

The structured interviews were conducted in the months of July and August 2004. During the process of the interview, the interviewees were encouraged to give the major points of about practices. Each interview was approximately 2-4 hours long and only single case it was continued to the following day. Most of the questions asked were not exactly as prepared, but only relevant questions applicable to these organisations as they come up during interviewing process. Questions are prepared only to make sure that none of the important points are missed. Generally, start of each interview was preceded by a small look into plant where actual work happens. All interviewees were owner managers and have the complete knowledge about their company activities, thus are ideal source to collect information. This makes collected information more valuable and presents complete picture about practices of these organisations.

4.6 Reliability, Validity and Generalizability

Precision and accuracy are the two most important qualities measured in research success. In practice, they are measured by reliability and validity [13].

The present study can be reliable if the interviews, information, observations and survey study lead to the same results when repeated. However, at the same time it is not valid if the result incorrectly reflects the actual phenomenon. The following argumentation describes the author's efforts to accomplish the study as accurately as possible in relation to the two concepts validity and reliability.

4.6.1 Validity Regarding the Survey

Validity is defined as the extent to which any instrument measures what it is intended to measure [14]. The three most popular methods of evaluating the validity of a measurement instrument are content validity, criterion-related validity, and construct validity.

The construct is the initial concept, notion, question or hypothesis that determines which data is to be gathered and how it is to be gathered, it deals with all the items that are meant to be measured can actually predict the phenomenon or an attribute under measurement. Content validity refers to the extent to which a measure represents all facets of a given concept [15]. The evaluation of content validity typically involves an organized review of the survey's contents to ensure that it includes everything it should, and does not include anything it should not. In this research, however, it was argued that the 5 scales of QMS implementation constructs had content validity since the development of these measurement items was based mainly on an extensive review of the literature related to ISO 9001:2000 requirements and reviewed by peers. The references list the literature reviewed by the author during the period of conducting this research, and the research methodology section addresses the detailed process of developing the research questionnaire.

4.6.2 Reliability Regarding Survey

The extent to which results are consistent over time and an accurate representation of the total population under study is referred to as reliability and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable [14]. Reliability refers to quality of measurement; it means there is "consistency" or "repeatability" of measurements [16].

According to Earl Babbie [13], reliability concerns with whether particular technique, applied to the same object would yield the same result each time. There are four methods commonly used for assessing reliability, namely, (1) Inter-Rater or Inter-observer reliability (2) the Test-retest reliability (3) Parallel-forms reliability (4) the internal consistency method. The most general form of reliability estimation is internal consistency method. In internal consistency, reliability estimation is used to judge the reliability of the instrument by estimating how well the items that reflect the same construct yield similar results. It indicates how consistent the results are for different items for the same construct within the measure. Coefficient alpha measures internal consistency reliability among a group of items combined to form a single scale. Generally, professionals consider reliability coefficients of 0.70 or more is valid [17]. This internal consistency method was used in evaluating the reliability of the survey instruments in this research [Appendix 3] though this can be said to be valid only with sample of significant size. The requirement of sample size is dealt more in generalizability.

In addition to internal consistency method, to ensure the reliability of the study, clear instructions were given in questionnaires about how to interpret the questions and what should be considered while answering the questions. For convenience and simplicity, special care is taken to keep different type of questions in different sections. And questionnaire was also tested for understanding to avoid any misinterpretations.

4.6.3 Validity of Qualitative Approach (Interview)

Qualitative research uses a naturalistic approach that seeks to understand phenomena in context-specific settings, such as "real world setting the researcher does not attempt to manipulate the phenomenon of interest"[18, p. 39]. Validity in qualitative research has to do with description and explanation, and whether or not a given explanation fits a given description. It is important for the researcher to describe the studied phenomena as correctly as possible, which implies that the researcher's comprehension and interpretation of the studied phenomena should be in accordance with the real phenomena. The best tactics for increasing validity of qualitative research by multiple sourcing, reviewing of interpretation by key informants. In the present study author worked towards validity by continuously engaging with people in the small industry who has experience about practices in these industries and later reviewing the interpretations by these people. Author also took in to consideration

information from other sources such as book on “*Small Scale Industries in the New Millennium*” by Dr. Syed Vazith Hussain to check uniqueness of the interpretations.

4.6.4 Reliability Regarding the Qualitative Approach

Quality concept in qualitative study has the purpose of “generating understanding” about a group under observation. To ensure quality of the study researcher should be able to persuade his or her audiences that the research findings are worth paying attention to. [19, p. 290]. To be more specific with the term of reliability in qualitative research, [19, p. 300] use “dependability”.

In order to ensure the reliability, author has reviewed the group and collected information mainly in the form of personal interviews with the help of standardized interview questions; this will enable another researcher to walk the same path during the data-collecting phase. Special care was taken to convey every interviewee the purpose of interview is for generating understanding about small industries and interviews are conducted with full commitment from the managers to provide complete information regarding their practices.

4.6.5 External Validity and Generalizability

Along with internal validity, every researcher should deal with external validity by defining the boundaries of the results. As said by Adams and Jay [20, p 89] external validity refers to generalizability or representativeness of research findings. To determine external validity questions such as, to what group of population can the findings be generalized? In what type of settings under what conditions? Should be answered.

Population from which study [Appendix 1] represents organisations, are associated with German organisations. However, with response of about only 20% from sample 150, the findings cannot be generalised to whole population. However, the main objective of the study is not to generalize to whole population but to develop understanding about export oriented organisations in India and their practices related to quality management. Only in that process (develop understanding about export oriented organisations) the framework organisations associated with German organisations is selected. So one can only generalise the results to these organisations to a great extent. One supporting argument for this is that study result shows more homogeneous practices in these organisations, as it is known fact that generalisability depends not only on sample size but also characteristics of sample. In

addition, to achieve overall objective of develop understanding about export-oriented organisations in India and their practices related to quality management, a second sample representing organisations with established quality management practices was selected with convenient sampling method and the result from this study shows more are less same trend in practices. These results add to confidence of results representing wider population. With this one can say objective of achieving understanding of quality management practices in export-oriented organisations of India was relatively successful.

Chapter 5 Summary of Studies

5.1 Summery of Survey

The study [Appendix 1] quality management in Indian organizations says, organizations are working towards implementing and operating a determined quality management system. Though organizations are embracing modern systems, majority of them are yet to successfully implement and achieve success. Our study shows almost all the companies (90%) are pursuing excellence through philosophy of continuous improvement and customer orientation. For this purpose, 83% of the companies use cross-functional quality improvement teams in introducing improvements in organizational processes. In addition, nearly 75% organizations have their quality systems certified. In general, the quality management system of the companies participated in this survey found to be very good, with 73% of them systematically established and maintaining a quality manual with strong control of documentation at all levels.

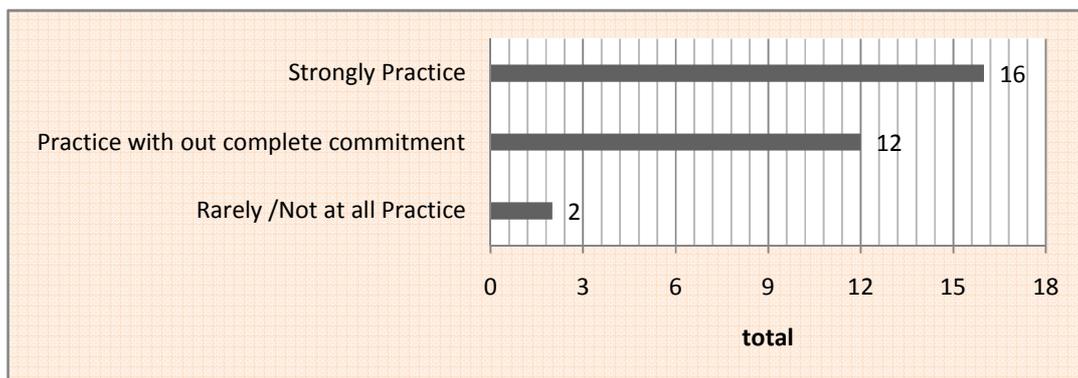


Figure 5.1 Survey Results Management Commitment

Over all management commitment in the organizations participated in this survey is good with majority of (53.3%) organizations' are having management strongly committed in establishing strong quality policy, quality objectives and communicating them to organization. Even though customer satisfaction was given high priority, observations revealed only 47% of the organizations are systematically doing all the activities such as assessing customer needs and expectations, studying customer complaints, collecting data from customers and use data on customer expectations and / or satisfaction in designing new services and products.

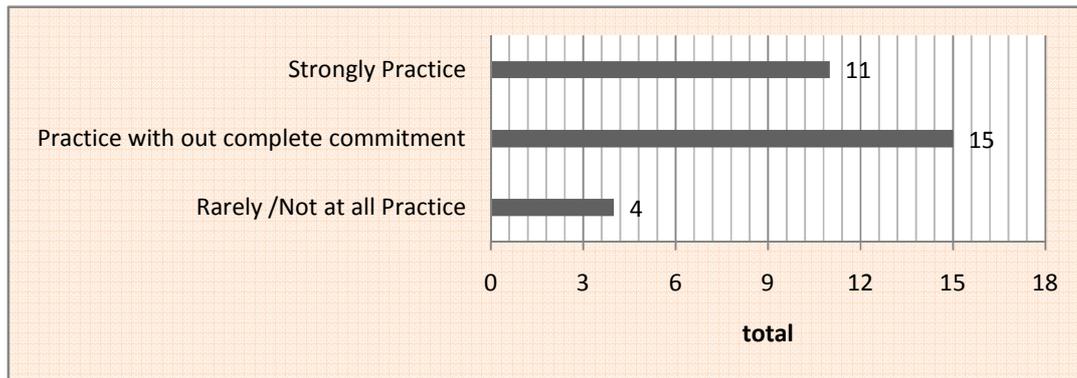


Figure 5.2 Survey Results Quality Planning

The performance of activities related to quality planning is not encouraging; only 37% of organizations are performing all the activities such as establishment of measurable quality objectives, documenting procedures for key activities identifying and allocating resources and activities needed to achieve quality objectives to complete satisfaction. Communication system is essential for effective and efficient running of any organization. Results from this study showed, good communication system prevails only in few organizations; only 27% of organizations have established a very good communication system and 57% of organizations should improve in their communication system, necessary for effective implementation of QMS.

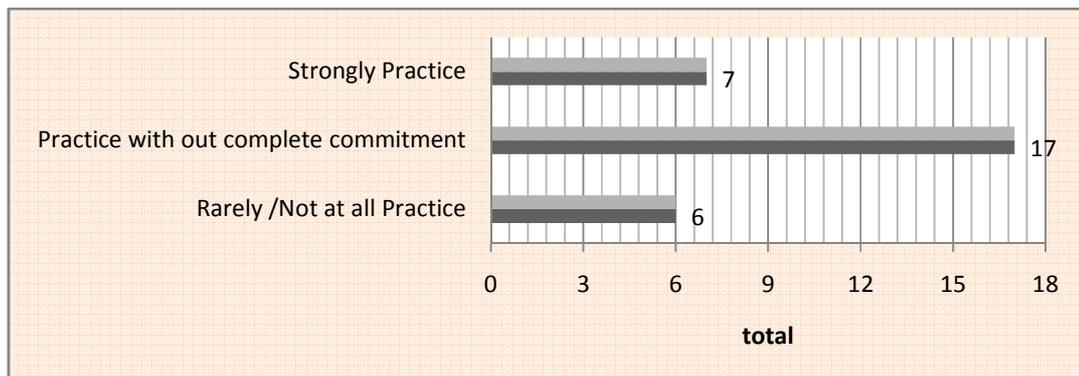


Figure 5.3 Resource Management

Performance of the activities related to resource management in Indian organizations is not good. This study found only 23.3% of the organizations doing excellent resource management activities. These activities include allocation of sufficient resources for implementing, maintaining and improving QMS providing education and training the staff and infrastructure to achieve conformity to product requirement. In addition, majority (56.6%) of

organizations have to improve resource management activities in realizing organizational goals.

Activities related to purchasing such as, evaluation of supplier, and working with suppliers to improve the quality and developing new products are being performed very well by Indian organizations. This study found, about 45% of organizations are having the excellent system while the remaining 45% of organizations agree to be working on the criteria to perform all the related activities. Indian organizations are conscious about customer satisfaction, majority (52%), collect information about customer satisfaction to know whether organization actually meet customer requirements. In addition, products are checked and monitored carefully to avoid defective products reaching customer. As found in many modern organizations, study found only 45% of organizations have standard system in place to take action to eliminate the cause of non-conformities and also to eliminate potential cause of nonconformities, and the remaining organizations need improvements in this regard.

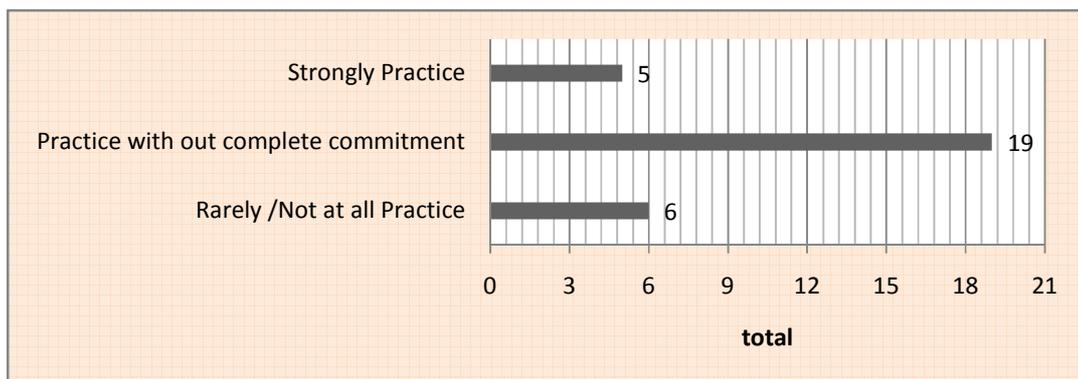


Figure 5.4 Measurement Analysis and Improvement

The use of statistical tools to monitor and measure product and process is very poor; only 17% of organizations strongly use the statistical tools to monitor product and process and in 48% of organizations using statistical tools, their application is limited. In addition, only 17% of organizations actively work and analyze the appropriate data to demonstrate the suitability and effectiveness of QMS.

Taken together, quality results of the organizations are reasonably good. From the study, it was found that 43.3% of organizations are doing very well and are having excellent quality related results considering the criteria in simplifying how products and services are provided to improve quality of products and services, and reduce the costs.

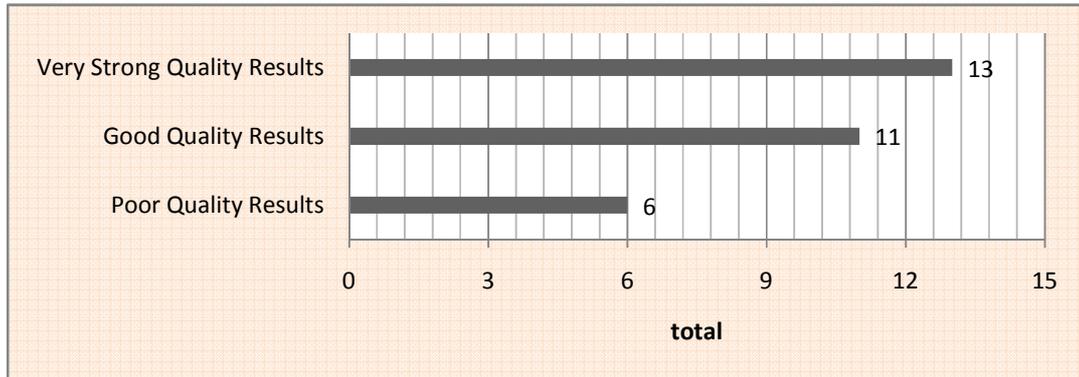


Figure 5.5 Organisations Quality Results

It was clear from the study that only 27% companies are completely satisfied with their quality improvement efforts and all other activities they are undertaking related to QMS. Majority (63%) organizations are merely satisfied with their efforts and there is considerable work still to be done to get desired results.

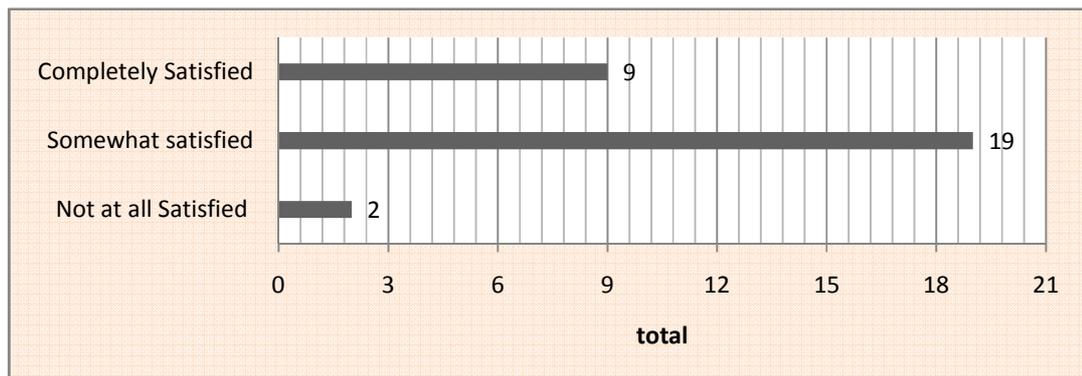


Figure 5.6 Satisfaction with Quality Improvement Efforts

Conductive work environment is very important to make employees interested in their job and get desired results. Results obtained from the present study showed, majority of (53%) companies are completely satisfied with present situation of having conducive work environment and satisfied workforce. However, about 43% organizations are not completely satisfied with their work environment and believe there are definitely many necessary improvements to be made to make work environment more conducive.

5.2 Summary of Interviews in SSIs

Organizations participated in the study [Appendix 2] are having total number of employees from 4 to 23, which are manufacturing oriented. All the studied organizations have a small customer base, which does not exceed six in number; however, majority of the business is done with only 2 to 3 customers, who are locally based medium sized industries. These organizations produce parts that require not more than 4 to 5 operations. The quality of the product is assured through 100% inspection; however, there is no special planning for quality or quality improvement activities. It is common to see; neither workers nor owners to have any technical background. In the present study, people who have technical education such as engineering own only two out of seven organizations; remaining organizations are owned by people who have working experience in similar field. Except a single company, none of them is technical oriented. In general, workers with experience are preferred for employment. However, some of companies provide initial training to workers in specific operations they have to do in their job.

Worker incentives or motivational activities are not common among organizations, but performance based appreciation has been observed in some organizations. Giving incentives to workers will not be a problem for companies because organizations have a single owner. Overall, it has been reported that workers are not enthusiastic in improving the quality. In general, there is a strong negative feeling regarding workers attitude, some owners think workers try to avoid doing work, even they suggest incentives does not work to motivate employees. Apart from two organizations, none had positive experience with workers. Only one organization has a method of problem solving and nonetheless, there is no documentation or logbooks to make a case history. In the process, targets such as “reduce machine breakdowns”, “reduce rejections” are set and reviewed that after specific period, the reviews are also based just on workers remembrance of problem occurrence, because there is no recorded data to verify improvements.

Repetitive orders are the yardstick for organizations to know about customer satisfaction and decide on changes or improvements to the product. Organizations do receive customer feedback, to provide suggestions or give compliments for products/services they provide; normally this is done through phone calls. Common channel to receive customer orders are is on phone because most of companies do not have marketing person; however, it makes sense to deal with customers on phone as they have very few customers.

In the present scenario, most of the organizations are facing heavy competition; and are concerned about future, because of constant decrease in price due to competition. As a result, none of the organizations has any major changes or plans that they will undertake other than technology up gradation plans to face the competition.

Chapter 6 Discussion

- 6.1 How ISO certified Indian organisations are managed
- 6.2 Classification of Indian organisations
- 6.3 Quality management in Germany and India
- 6.4 How organisations can successfully implement ISO

6.1 How ISO Certified Indian Organisations are Managed

Preceding chapters presented a view of current quality management practices in Indian industries from wide range of sources. This section will focus on discussing quality management practices of organisations implementing ISO standards. This discussion, based on study [Appendix 1] and research studies available, will provide greater understanding of practices of ISO certified organisations in India.

Introduction

Literature review [Chapter 3.1, 3.2] indicates Indian organisations are moving from traditional quality control practices and investing in advanced management systems. This is truly the case; present study¹³ gives ample evidence that organisations are giving importance to QMS certification and following TQM principles. Even though, the intentions to follow the philosophy of continuous improvement and customer orientation are evident, it is far from accomplished work.

Implementation, Maintenance, and Sustainability of QM

Sustainability of quality management refers to the organization's ability to continue support in all activities in the manner it is planned during the period of its initiation. Management commitment is the most important influencing factor in implementation, maintenance, and sustainability of QM. Results of this study indicate increase in management commitment in establishing quality policy, quality objectives, allocation of resources and communicating them to organization compared to what found in the studies [11],[8]. Studies "[8]" and "[10]" indicate increase in customer orientation in 90's due to increase in competition and conform organizations had positive experiences by implementing ISO certification. Agreeing with this present study indicates customer orientation was gained much needed importance, but only half of these are systematically doing the activities. Which indicates organizations intentions but in practice, they are not successful in performing. Activities related to quality planning are performed in the same manner. Despite organizations carrying out planning activities most does not seem to do with conviction. In addition, results indicate only few organizations actively work for effectiveness of the QMS. In general, the study shows positive trends

¹³ Among the organisations, which are, outward oriented and are doing business and having collaborations with organisations from other countries.

compared to previous studies, however, sustainability and commitment may be lacking in implementing and maintaining QMS.

Resource Management

According to the present study, majority organisations are not providing proper resources for implementing, maintaining, and improving QMS. This indicates organizations lack of strong commitment for sustaining QMS. This belief is shared by the study [Chapter 3.1, ref 8]. However, in maintaining infrastructure necessary to achieve conformity to product requirements and assuring quality, organizations are doing better. The most important aspect of resource management is providing education and training to staff for identifying and acting on quality improvement. Organizations performance in this regard is not encouraging. In agreement with the studies [Chapter 3.1, ref 11, 8] two third organizations provide education and training but only one third of those are able to do it properly. The same was reflected in the study [Chapter 3.1, ref 10] in the certified Indian organizations. Study [Chapter 3.1, ref 10] indicates resources available for employee training is low among the Indian organizations and number of days training provided is low compared with other countries.

Customer Orientation

TQM philosophy says organizations must work towards customer satisfaction with whatever service/products they provide, ISO standards says proper system to be in place to ensure customer requirements are met. Results show Indian organizations are not receiving this message properly.

Studies [Chapter 3.1 ref 10, 11] indicate organisations are involved in activities such as collecting data regarding customer satisfaction, but there is lack of information really how their performance in this regard is. Present study provides more information; it tells that overall organisations are involved in collecting necessary data used to manage quality and to make necessary quality improvements to ensure customer satisfaction. However, majority of them are not performing to the desired maturity level, especially organisations need to address activities regarding assessing customer needs and expectations and using the data in designing new services and products.

Product/ Service Realization

Product/service realization activities are organisational efforts in determining the requirements, design the product/service and establish processes and documentation, and provide resources and facilities specific to the product/service. There is not much from information from previous studies regarding how organizations are performing. However, careful review suggests activities regarding defining objectives and requirements of new products are in practice in Indian organizations. Though the inputs to define products specification are taken from customer, systematic process of collecting information for defining product is not identified. Particularly the use of tools such as QFD is not commonly found. Present study indicates only fifty percent organizations doing very well in product realization activities. Even though the remaining organizations are involved in these activities, there is definite scope for improvement in activities such as “collecting product specific information from customer” and “reviews to ensure organization has the capability to provide requested product (or) service”.

Supplier Involvement

Supplier is the most important element of organizational network whose performance will directly influence organizations reputation and product performance. Thus supplier involvement, supplier monitoring, evaluation became important organisational activities. According to study [Chapter 3.1, ref 38], Indian organizations have supplier evaluation systems. However, these systems failed in establishing the synergistic integration between buyers and sellers. Result from the present study agrees with this to an extent. Results suggest organizations have documented the criteria for supplier evaluation, but only a few organizations seem to be doing systematically. According to study [Chapter 3.1, ref 11, 10] organizations are having a standard system of providing feedback to suppliers concerning the quality, and effective supplier rating system for identifying the reliable suppliers as well as to motivate them towards improvement of quality. But there is no enough information regarding how widely this is practiced. Present study indicates many organizations are working closely with their suppliers and have a system to measure their performance from time to time. Even though this is widely practiced, only half of these organizations seem to do with perfection. This indicates necessity for organizations to review their process to enable them to work more closely with suppliers thus benefiting in organizational performance and customer satisfaction.

Measurement Analysis and Improvement

Collection and analysis of data for improvement is very important to organizations, as performance in this regard will significantly, and negatively affects the customer complaints [Chapter 3.1, ref 10].

Monitoring customer satisfaction is necessary to make sure that product/service fulfils customer needs. If customer needs are not met, it gives the opportunity to make necessary improvements to ensure customer is satisfied. Results of the present study show, majority of the companies comprehensively work towards monitoring customer satisfaction, but significant portion of organisations still have to work in this regard. This indicates organizations are well aware of importance of monitoring customer satisfaction but they have not standardized their efforts. The same is true regarding eliminating the cause of non-conformities, nearly fifty percent have systems to prevent their reoccurrence, the remaining having systems but may not functioning properly.

The most important aspect of measurement analysis and improvement is the use of statistical tools to measure and monitor product and process. Study [Chapter 3.1, ref 10] indicates organizations realized preventing problems is much better then correcting defects later but preventive work is not widely practiced.

According to study [Chapter 3.1, ref 8], awareness of statistical tools is poor in Indian organisations. It suggests management needed to be educated in using statistical methods in improvements. Another study [Chapter 3.1, ref 10] in this regard indicates Indian organisations use statistical sampling inspection for incoming materials and in-process inspection but does not give clear information about how strongly they use statistical tools. Present study indicates improvement in the awareness of statistical tools compared to previous studies. However, only few organizations (less then 20%) strongly use tools to monitor product and process. This indicates the application of statistical tools is limited, though majority of organizations know about their use.

Human Resource Management/Employee Satisfaction/ Work Environment

Employee relations is aspect of HR that directs attention to assist employees and management to establish a work environment that is stimulating and creative and that supports an environment in which the individual can perform to the best of his or her ability [1]. Customer satisfaction is important for every organization to achieve organisation goals; however, it is

impossible goal to reach without satisfied employee. Employee's satisfaction has direct influence on customer satisfaction. According to [Chapter 3.1, ref 1], "how employees feel about their job has an impact on their work experience, but also on tangible business outcomes such as customer satisfaction, sales, and profit" [2]. Management commitment to employee empowerment influences employee involvement in organizational activities. Studies show employee participation in improvement activities is low in Indian organisations. According to [Chapter 3.1, ref 10] the degree of employee participation in quality decisions was low, since decisions on whether a process should run or stop, and whether a product conforms to specifications or not, was made by managers. Employee involvement and empowerment was given least priority in practice in these organizations [Chapter 3.1, ref 10]. Present study agrees with this, only one-third organizations have their employees' active in giving suggestions for improvement of quality. The majority of organizations are not completely satisfied with the level of employee participation in giving suggestions and sees scope for improvement. There is also evidence that many certified organisations recognised the importance of teamwork and involvement of employees for successful implementation [Chapter 3.1, ref 8]. In general, the main barriers to employee involvement are lack of top and middle level management commitment to employee empowerment [Chapter 3.1, ref 10].

Recognition and rewards play an essential role in inspiring employees regarding quality. There are different practices in recognizing employees in Indian companies. Study [Chapter 3.1, ref 10] indicates employees in ISO companies were recognized and rewarded individually for their superior quality performance. Even though this is true in the organizations participated in the present study; it shows only 57% of companies are completely satisfied with their policy of recognizing employees. This shows significant work remains to be done by relatively large number of organizations in encouraging employees by recognizing them in proper way.

Process changes are common in any organization and very important for improving the efficiency and introducing new technology. To implement changes organizations need employee cooperation. In general, it is believed gaining support for process changes in Indian organizations seems to be a tough task. Present study shows only one-third organizations are getting proper support from their employees for making changes, with in the majority organizations this seems to be relatively challenging task. Not only gaining support for process changes challenging task, but also it is relatively hard task to transfer good practices from one

department to others. Lack of cooperation from employees could be due to lack of proper communication from leaders, employees feel insecure towards new changes and not motivated to change practices.

Quality Improvement Efforts

Quality improvement efforts are investments to improve the performance of key processes within an organization. Improvement focuses on improving customer satisfaction through continuous and incremental improvements in processes; the best-known tool for implementing CQI process is PDCA cycle.

Management understanding of quality is necessary to initiate quality drive and carryout improvements. Present study results are not encouraging in this regard. Results show more than half of organizations believe their management has very good understanding of quality requirements but it remains significant portion of organizations (more than 40%) lack proper understanding of quality. Despite this situation, more than 63% of organizations strongly follow the principles of continuous improvement of quality. This situation may be the result of trend in the Indian industry; continuous improvement philosophy has lot of publicity after number of companies won the Deming award. However, in contrary strong commitment to continuous improvement of quality exists only in 56% organizations, the reason for this could be management lack of understanding for quality.

Present study indicates overall quality improvement efforts are poor with less than 25% organizations carrying out improvement activities systematically. Remaining organizations are required to put extra efforts into quality improvement activities. Same can be inferred from the study [Chapter 3.1, ref 10] where situation demands extra efforts; here leadership gives importance to quality and review quality issues in meetings, but the same message was not taken up by the employees who work on improvements. In addition, study indicates organisations does not exhibit real commitment to pursuing a path of meaningful quality improvement and does not make sure necessary resources are made available for improvements. However, some organizations recognize the need for extra efforts for improvements [Chapter 3.1, ref 8]. Agreeing with the findings of study [Chapter 3.1, ref 8], present study indicates the needs for extra efforts should be realised by organisations. Because organisations are unable to provide excellent training, communicate about quality, encourage

employees' active involvement in improvement efforts and in effective utilization of resources.

Conclusion

The result from present study regarding awareness about the status of practices was encouraging when compared to other studies. Though study [Chapter 3.1, ref 8] gives some indications of management awareness of organisation requirements, other studies in ISO certified organisations does not provide any information regarding management awareness of organisation requirements. In the present study, only 33 percent of organisations are completely satisfied with their performance and think that they have good growth prospects through happy customer and satisfied employee. However, the quality results showed only 43 percent of organizations are in healthy state and have good growth prospects, organizations perception in this regard indicates they are aware that they are not secured, which is a good sign to have for any organization to make necessary improvements.

This discussion had a definite limitation. Due to the differences in study objectives and information presented in various studies, discussion has not provided opportunity for direct comparison of status of various quality management related activities. Information provided in this discussion will only serve as indicative of status of current practices in ISO organizations.

6.2 Classification of Indian Organisations

There are different levels of quality management practices in this world. Studies and literature available in this regard indicate different levels of awareness and practices of QMS in India. This is mainly due to the status of transition period since 1991 when liberalisation of Indian economy started. In this period, it was easy for some organisations to adopt modern systems, for others, the management have not realised fast enough, but they are just in the right direction and the remaining have not realised yet. Many factors such as management awareness, their education levels, cultural aspects, organisation size, market direction, customer base are influencing these practices. One of the simple ways to differentiate organisation practices is according to customer base (or) potential customer base. For example, Indian manufacturers, who were eager to become suppliers and collaborators to larger European, Japanese, and US companies, pursued QM rigorously by implementing TQM philosophy and used related tools to achieve competency. In contrast, small-scale industries that are local oriented and works for one or two local industries do not have any formal practices. With the thorough analysis of literature and understanding from the studies four levels of quality management practices are identified.

TQM Organizations (Level 4)

These organizations attained “*Global green card*” through implementation of “TQM philosophy”. Organisations follow the philosophy that creates quality and delights the customer while satisfying all other stakeholders. These organisations are the best in the business, and reached the level where they can compete with any known organisation in the world in terms of quality, customer satisfaction and profits. These organizations regularly use tools and techniques, to identify and measure customer needs and satisfaction, in order to plan and improve organizational activities to enable them to provide required products and services. These organizations focus particularly on development of design and human resources in addition to process quality. Most of these organisations are Deming Prize winners [Chapter 3.2].

Export Oriented Organizations (Level 3)

These organizations work nationally/internationally and have achieved export competence as one can say “*International licence*” through “quality assurance practices”. They try to assure customers that organisation possesses processes which will enable them deliver quality

product and service. These companies try to standardize their processes and use internal audits to check the standardization and their conformance. Organizations knowledge of continuous quality improvement (CQI) and related quality tools and techniques is moderate and practical use is poor. Most of these organisations are recognised by their certification to International standards as found in [Appendix 1].

Regional/National Organizations (Level 2)

These organizations work nation wide or have the potential for the same. These organisations achieved “*National licence*” through “quality control practices” that makes sure organisation process will not deliver defective product or service. These companies carry out inspection and testing at different stages of production. Use of SPC, SQC can be seen in these organisations. Defect detection in products and rework remain focus of these organisations. Quality assurance practices are relatively low among these organisations. Knowledge of continuous quality improvement (CQI), and related quality tools and techniques is very limited and practical use is relatively poor. These organisations may be effective but lack of efficiency; it is almost impossible task for these organisations to with stand heavy competitions. Most of these organisations comes under these category can be identified with the characteristics found in literature review [Chapter 3.1].

Local Organizations (Level 1)

Most of these organisations do business with local customers, mainly for medium scale industries or local markets. If they work as suppliers to medium, larger scale companies, they will not have more than three to four customers. These organisations are single owned and come under category SSIs. Formal quality management activities do not exist. These organisations are characterised by use of low technology, uneducated labour, run by uneducated owner or a person without technical background. Most of the organisations comes under this category can be identified with the characteristics found in study [Appendix 2].

Further understanding of practices in these organisations is achieved through discussing important aspect such as, human resource practices, management attitudes, quality control/process control/ improvement activities, and customer/supplier relationships.

6.2.2 Human Resource Practices

Level 1: These organisations follow outdated human resource practices. In general, it is not common for workers to have any voice in these organisations. In majority organisations, workers do not have formal education. In particular, training is not given importance, if necessary employees are trained only for specific job they have to do. Empowerment almost does not exist in these organisations. However, it is common to see workers to give information if problem exists, to take action and correct mistakes. Workers participation in improvements is poor, and generally, management do not encourage workers involvement. General practice is that no-incentives are given to workers other than wages, but in some SSIs employees are motivated with financial rewards for good performance and special care taken towards their personal problems if they arise. However, this is happening only where managers/owners are well educated.

Level 2: Human resource practices in these organisations are not particularly well-established ones. Education and training to enable employees for identifying and acting on quality improvement opportunities is poor, here many organisations know (or) aware of these practices and are practicing them but only few are able to do in an organised way and do activities what is required. Empowerment is relatively poor, here only supervisors and low-level managers have some sort of power, and people tend not to delegate power by any means. Workers care particularly in low skill jobs in private sector is poor as abundant people are available to do those jobs. To conclude, organisations give least priority to employee involvement, training and empowerment.

Level 3: It is evident there is not much difference between organisations when compared with Level 2 organisations. However, the trend is slightly positive in organizations ability to give training, have their employees active in giving suggestions for improvement. Recognising and rewarding workers is more systematic as managers tend to recognise TQM principles as important and are practicing QM in an organised manner. To conclude, employee involvement, training and empowerment practiced in organised manner but only in few organisations in successful manner.

Level 4: These organizations work for total employee involvement and commitment. Organisations provide training to impart adequate knowledge and skills to all levels of

employees; as part of achieving objectives of the company. Organisations use regular employee opinion survey (EOS) to identify gaps, in performance appraisal, employee training, to undertake improvements.

6.2.3 Management attitudes

Management understanding of quality concepts such as, defect prevention, quality management system, and other quality concepts such as TQM, depends upon their level of education, awareness and their attitudes towards quality in general. In general, management in Indian organisations is hierarchal, where organisations are vertical with power concentrated on the top with delegation of power to subordinates not commonly found.

Level 1: Most of SSIs are owned by individual's who are not well educated or trained in running the business. These managers use different management styles. Most common style is authoritative type, but provides opportunities for workers to report on problems. Majority do not know quality management concepts, tools, their purpose or any sort of understanding related to quality management. Only few organisations, which are more technical oriented and managed by well-educated persons, maintain good relations with employees through attending their personal problems to involve them to attain company goals. Except few, even in these organisations, understanding related to quality management does not exist, but they do follow some elements of quality management.

Level 2: Here managers prefer centralized decision-making, practice tight control and do not like to delegate authority. Majority of them have limited knowledge of quality management concepts, tools, and their purpose. Management though involved in quality control, setting quality goals and development of quality policy but when it comes to implementation attitude of management is mainly meeting schedule over achievement of any quality objectives. Further, top management does not review quality issues on regular basis. To conclude, limited knowledge of quality management concepts and commitment towards implementation are drawbacks.

Level 3: There is increase in organisations' understanding in the importance of QMS certification and following TQM principles compared with Level 2 organisations. In addition, there is increase in management commitment in establishing quality policy and achieving quality objectives. To conclude one has to say management needed more commitment

preparing organisation for changes, in establishing proper infrastructure for sustaining QMS, training of employees, and creating suitable atmosphere for employee involvement.

Level 4: Management is committed in establishing, vision mission, and setting quality policy. All the activities directed towards creating a flat and empowered organization subjected to continuous improvement to achieve customer satisfaction. To conclude, management is working towards future through creating suitable atmosphere in organisation, which actively promotes employee development and involvement.

6.2.4 Quality Control/ Process Control/ Improvement

Level 1: It is normal for SSIs to do quality checks through 100% inspection because the volume is very low. Even after 100% inspection at every stage of operations, some organisations have rejections at final inspection. In addition, documentation to show the quality related data for example: total number of rejections, number of defective products, how often problems are repeating and where and in what conditions are not practiced. In dealing with daily problems, solve the problems, as they arise, no future planning. In general, there is no specific approach followed to set or trace quality improvement targets. In some organisations, targets are set with out any detail information about problem; for example if a particular machine is giving trouble regularly (no specific count on how many times, it is just overall observation) target is set as the breakdown time of the machine should be decreased.

Level 2: Activities related towards monitoring customer satisfaction, eliminating the cause of non-conformities are being practiced but poor in nature. Many organisations do not pursue preventive actions to control potential problems. Systematic documentation of data regarding production stoppages, defects, and other problems is poor with very few organisations involved in doing that. Use of sampling techniques to control incoming and outgoing product quality is in practice in majority organisations. Generally, use of statistical tools to monitor and measure product and process is poor.

Level 3: Majority of the organisations comprehensively work towards monitoring customer satisfaction. Most organizations maintain an effective system for monitoring incoming raw materials, checking in-process production, and reviewing finished products and taking action and eliminate the cause of non-conformities. Majority organisations know about continuous improvement of process and products, but very few practice it successfully. The main reason

for this situation is lack of knowledge of statistical tools to monitor and measure product and process and commitment by the management in pursuing continuous improvements.

Level 4: Organisations pursue improvements in a way that all the stakeholders benefit; customers and suppliers are the part of improvement network. Development of metrics or indices for manufacturing/non-manufacturing areas to all-important activities, systems, and processes is done to monitor performance. Organizations pursue improvements through systematic analysis of the problems, take necessary steps to resolve it, monitor impact of the steps and learning from each observation. For the purpose of improvements, quality teams in these organisations use tools such as PDCA, Kaizan, 5S, Poka-Yoke, SPC, QFD, and FMEA.

6.2.5 Customer Relationship/ Supplier Relationships

Level 1: Most of the organisations are targeting local markets; customers present in either the same district or same state. Organisations, which are targeting non-local customers, are very few, and organisations, which target other countries, are negligible. As the products are not highly technical and customer is local based, there is no problem of communication. Orders are in general repetitive type, so customers just order when they require, just by calling on telephone or just by visit from their personal. Generally, each SSI has minimum of one to maximum of 5-6 customers and not more than 2 suppliers. Satisfaction level of customers is generally understood from the repeated orders and whatever little feedback they get from the customers. The means of contact with customer is personal or by telephone, only in few organisations a special marketing executive is present who looks after customers.

Level 2: Customers are considered very important in these organisations. However, organisations lack proper process to know customer requirements and customer satisfaction is not monitored properly. Organisations have a long way to go in maintaining relationships with customers during product development and production and providing information when necessary, and maintaining special relationships after sales. Most of the organisations have some sort of supplier evaluation systems, and have a system of providing feedback to suppliers concerning the quality of their raw materials existed; most of the companies did not depend entirely on a single supplier due to lack of reliability. However, organisations need to establish processes, so that all the activities related to customer management dealt in a systematic manner.

Level 3: Organisations give priority to customer focus and monitor customer satisfaction regularly. But issues such as using customer requirements for developing products, improvements and providing proper information to customer when necessary during production and after sales, during service, organisations needs to develop further. Most organizations have established criteria for supplier evaluation and work closely with suppliers to improve the quality of their products and services. In these organizations systematic monitoring of the supplier's performance and involving suppliers for quality improvements of products takes place. Though knowledge of supplier management and standard system for supplier management exists but in practice not more than half of them are successful in implementation and maintenance of the system.

Level 4: These organisations work continuously for the satisfaction of customer, right from the product concept until the end of life of the product. Customer is integrated in a way that he always has the opportunity to contact organisations whenever necessary to provide information regarding products performance or other necessities as they arise. That means, customers are treated like extended network of the organisation. Top management is continuously engaged in monitoring customer satisfaction and on the improvements made to continuously delight customers.

Suppliers are the other end of the same network. They are actively engaged in organisational activities and work together in developing products and implementing improvements. Organisations see suppliers as a most important part of their organisation as their products and innovations affects customer satisfaction.

6.3 Quality Management in Germany and India

German products are well known for their quality and organisations have standardised quality management practices. In the light of present research about developing countries, comparing the practices against practices from developed country will provide an opportunity to identify gaps and determine minimum levels for organisations to remain competitive. The essence of this part of discussion is to develop a general understanding of practices by Indian organisations [Appendix 1] compared to German organisations

Activities of a Manager

Indian managers tend to act as coordinators and coaches, helping employees meet the organizations goals and objectives, which is the same with German managers, as it is usual for managers to be expert in their area and to help employees in their day-to-day work [Chapter 3.4, ref 3]. German managers are formal than Indian managers, but when it comes to organizations, they are hierarchical in nature in both Germany and India. German managers have high uncertainty avoidance; in contrast, uncertainty is prevailing factor in Indian culture. As quoted in [Chapter 3.4, ref 3] “*German employees want role/tasks to be clearly defined, they will not change from the status quo unless the new solution is perfect - better is not sufficient reason. They prefer to work alone or with clear bilateral relationships, rather than with amorphous teams*”. In India, one cannot expect things to be done always as planned; flexibility and delay are common factors in coming to decisions in Indian organizations.

Review of the effectiveness of the organizational strategies, quality policies is done by top management in majority of organizations in both countries but only third of them do it regularly in India, which signifies Indian organizations lack of commitment to some degree. In both countries, behaviour of nearly two third organizations leaders is consistent with values relevant to quality and continuous quality improvement, can be said to be role models for their organizations.

TQM Involvement

TQM philosophy is first practiced by organisations in Japan; upon the success it was adopted all over the world in last two decades. In the present scenario German organizations are not in the favour of TQM. They believe, formal involvement in TQM is a cost intensive and organisations can survive without TQM initiatives. But according to experts, there is a positive trend in some common characteristics of TQM such as customer orientation, setting clear goals for future, employee involvement, training and development of employees and continuous improvement activities [Chapter 3.4, ref 7]. Where as in India strong moment towards TQM can be identified. Though majority of organizations formally involved in continuous quality improvement/TQM; according to study, they are far from being called as TQM organizations. With this one can interpret Indian organizations are more TQM oriented at least from the management point of view; in reality, there does not exist much difference in organizational activities from both countries.

Empowerment and Control

There is a significant difference in employee freedom. Employees in German organizations seem to have more freedom than in Indian organizations. In German organizations, employees can act on their own initiatives to identify quality problems and improvement opportunities and to take action on these problems and opportunities in their own working area.

Teamwork

Encouraging teamwork is considered important in both German and Indian organizations. In German organizations it is not common for leaders to work in different functions; just 20 percent organizations usually practice it [Chapter 3.4, ref 3]. Whereas in Indian organizations even though greater than eighty percent are involved in cross-functional quality improvement teams only 24 percent strongly use cross-functional quality improvement teams to introduce improvements in organizational processes. To conclude, both Indian and German organizations do not use cross-functional teams effectively.

Recognition

Recognizing employees is major element of employee management. Organizations in both India and Germany are practicing this in a combined manner, recognizing both individual and group achievements. However, in German organizations, team recognition is more popular than individual recognition. In India, individual reorganization is more widely practiced. In doing so, people with individual initiatives and those achieve objectives are recognized most.

Quality System Certification

Germany with 39816 certifications and India with 24660 certifications of ISO 9001:2000 are in 7th and 8th positions in the world at the end of 2005 [Chapter 1, ref 1]. In both Indian and German organisations majority have their quality systems certified [(Chapter 3.4, ref 6, 7), Appendix 1], but certification is more in German organisations compared with Indian organisations. Sustainability of QMS is also more in German organisations, in Indian organizations the overall sustainability of QMS is around 60 percent, while sustainability in German organisations is around 75 percent. This significant difference indicates ability of German organisations to deliver consistent quality.

Customer Focus

Studies indicate shift towards “customer-oriented quality” in Indian and German organisations. Nearly half of all enterprises regard this view of quality as important element for their success and the majority of the enterprises practice customer-oriented quality philosophy [Chapter 3.4, ref 6]. Whereas, Indian organizations focuses explicitly on “customers” – both external and internal [Appendix 1] and have, measurable goals related to customer satisfaction. However, only half of these organizations are pursuing it strongly. To conclude Indian organizations seems more customer oriented but in actual practice we cannot say that which much confidence.

Use of Tools and Techniques for Improvements

Knowledge of a proper tools and techniques is required to understand the processes, so that they can be improved systematically. The effective use of these tools and techniques requires training the people who actually work on the processes, and their commitment. Among the German organisations majority do not pursue systematic optimization of production processes;

most of the problems are solved and improvements made only after severity of problem is felt [Chapter 3.4, ref 6]. This makes us to understand that organisations do not take preventive measures. In addition, the use of tools and techniques is not any better, only one-third organizations having relatively good use of the tools and techniques available, with the remaining organizations seems to be unaware of tools and practically poor in using them [Chapter 3.4, ref 6]. Indian organizations are not doing any better in this regard, with education and training in statistical and other quantitative methods that support quality improvement can be said to be poor with no more than 20 percent organizations strongly use the tools. What one can understand is both Indian and German organizations are not actively pursuing continuous improvement and preventive measures and at the same time both the knowledge and use of tools is relatively poor. Positive point about Indian organizations is they recognize the importance of continuous improvements and necessity of training provided to employees, even though they do not pursue it.

Summary

An overall look at quality management practices says there are no significant differences between Indian and Germany organisations. In use of tools and techniques and training of employees, both countries are doing poor with German organisations doing better than Indian. In Indian organisations, employee freedom is less when compared to German organisations and uncertainty avoidance is more in German organisations compared to India. Both Indian and German organisations are customer oriented, but in not more than fifty percent organisations, you can find it in practice strongly.

TQM concepts are more acceptable to Indian organisations when compared to German organisations though in practice it cannot be seen. Regarding ISO certifications both Indian and German organisations are doing well but in sustaining the QMS German organisations are doing far better than Indian organisations; which makes it clear that German organisations are more predictable than Indian organisations in delivering consistent quality.

When looking into the results of discussion it is worth to take note that the sample size which Indian organisations are representing is not big enough; however, these organisations have established QMS and into advanced stage of management practices compared to an average export oriented company. The comparisons made from the studies may not be universally acceptable due to the differences in the survey methodology, sample sizes of studies in German organisations.

6.4 How can organisations successfully implement ISO Certification

In this section author will discuss a model based on common problems that comes out during implementation of changes or improvement strategies based on literature review and study results, to enable organisations to benefit from implementing improvement strategies.

Introduction

In order to pursue the improvements through ISO certification, the present scenario makes it mandatory for organisations to establish structure for carrying out basic activities, and also pursue all the activities, necessary to continuously improve the system and provide sufficient resources to demonstrate commitment to quality.

The study indicates Indian organisations are unable to carryout many activities successfully according to ISO 9001:2000 requirements. Importantly data from the results of the study suggests that the organisations are unable to demonstrate their commitment to quality or at least they are failing in pursuing activities related to continuous improvement and providing resources. Review of literature suggests failure to implement improvement strategies depends mainly on motivating factors and implementation factors; these factors addresses why organisations are pursuing improvements and how are they implementing.

6.4.1 Motivating Factors

According to study [1], the motivating force for most of organisations is the demand from customers to obtain quality certification and the fear associated with losing business. From the study [2] it is understood the first reason for the ISO 9000 certification lie in a reactive approach to doing business, lacking any strategic consideration and planning, usually on request by customers. In many studies, it was noted that marketing provides the second major explanation for the adoption of ISO 9000 initiatives. According to study [5], organisations consider the implementation of ISO 9000 may affect not only their economic but also their organizational or operational performance.

Similar motivating factors can be seen in Indian organisations [Chapter 3.1]. The significant benefits expected by Indian companies going for certification are improvement in fiscal performance, improvement in focusing on quality in addition to market place benefits, competitive advantages, and most importantly installation of a formal system.

6.4.2 Implementation Factors

Studies identified many organisational problems, which are effecting implementation of QMS. Study [33] identified barriers such as a lack of implication of management team, the company culture, the resistance of workers to assume new responsibilities, or difficulties of communication among organisational units and groups effecting certification. According to [34], deficient supplier management, unclear lines of authorisation, non-conformance to procedures, lack of management review and inconsistent inbound practices are major influencing factors.

Similarly, in Indian organisations, top management was involved in developing quality policy but implementation was done by efforts of quality department personnel who are responsible for achieving results regarding quality. In addition, quality policies are not properly communicated to the entire organisation resulting in lack of proper understanding of lower hierarchical personnel.

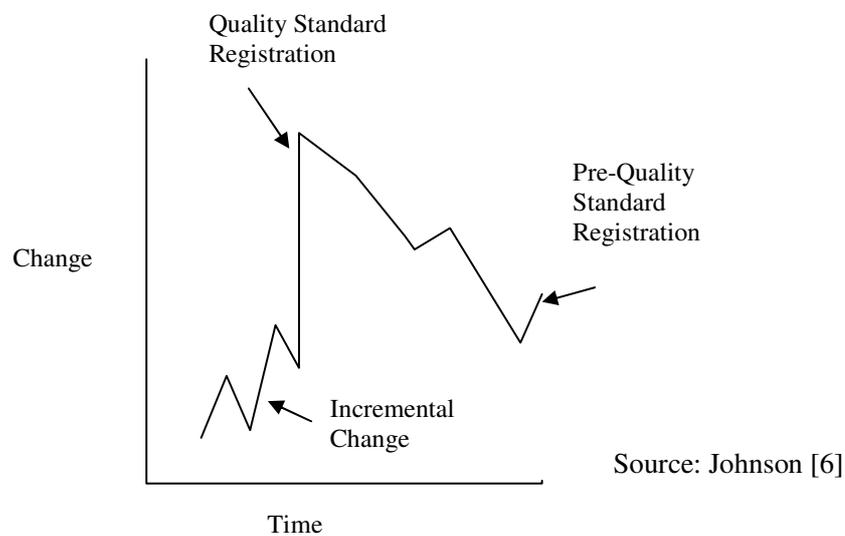


Figure 6.1 General trend in ISO Certified Organisations

Figure 6.1 shows how organisational change is occurring before and after the quality standard registration if QI is not followed.

So, what could be the cause of these problems? According to Dawson [3], failure in the implementation of a quality management system resulted from lack of clear goals, unrealistic

team expectations, inadequate management support, no implementation strategy, and limited training. In addition, Cummings and Worley [16] says communicating “what” and “why” of organizational change to employees is very important, but leadership fails to communicate information throughout the entire organization during certification. Study “[17]” recommends implementation of QMS through transforming an organization to a form that is flexible, agile, adaptive, responsive, and value adding. What is commonly found is customer forced standard registration. However, customer forced quality standard registration demands organizations to change rapidly, which means organisations undergo discontinuous change [18]. If discontinuous change is unavoidable during implementation organisations should constantly improve QMS once established.

Organisations should always be ready for a change in this competitive environment. As said by “[19]” readiness for change is a prerequisite to implementation of a quality management system, because it makes organisations well prepared for problems that it may be forced upon by external elements.

6.4.3 Model for Implementation

The model was formulated to enable the researcher to gain a better understanding of key variables associated with quality performance outcomes and quality standard registration. The main objective is to enable management to focus on key issues for successful implementation and realise the benefits of continuous improvement. Model is also important which according to [5] adoption of ISO 9000 must be part of the firm’s overall business strategy. Thus, all adoption-drivers are encapsulated in a firm’s dominant strategic orientation. Strategic orientation of firms has direct influence on ISO related benefits and it gives a push for organisational thinking to adopt ISO as a strategic change by defining its goals.

Literature Review

According to previous studies the failures are due to the implementation of the quality assurance system without a previous analysis that permits understanding of the nature of the standards and which facilitates a suitable fit to organisational needs and capabilities. According to study “[20]” deficient understanding of the standards provokes the firms to consider the quality assurance implementation process as a project, which ends up with the certification. This highlights organisations lack of proper preparation and understanding affects its success. Common understanding is that certification does not guarantee success

unless committed management prepare organisation to absorb the changes when going for implementation of QMS and ensure continuous improvement. Lack of preparation for changes generates mistaken expectations and attitudes in managers and workers, which are a source of conflicts and a cause to reject the system [21]. On the other hand, the lack of a prior strategic analysis implies that companies start the implementation process without having defined a set of clear and measurable goals [22]. Because the way of interpreting ISO 9000 standards and their adaptation to the organisation's competitive strategy affect the implementation process. Study "[22]" suggests that company's managers must understand standards, interpret them, and decide the best way to implement them in the framework provided by the company's strategy.

Supporting Arguments for Proposed Model

According to the results of present study, the management of activities in the companies is poorly oriented to continuous improvement, even though management have the policy of CQI. This leads to understanding that organisations concepts and policies permitted to the boardroom and not completely translated in to true actions. On the other hand, it is found that documentation of QMS is being done exceedingly well in all organisations. This leads to understanding that documentation which is the most common form of verification of QMS done just for the purpose of certification and establishment of structure for QMS but not for the purpose following the eight management principles of QMS as required.

The following briefly describes the present situation in Indian organisations
[Appendix: 1, Appendix: 3]

Management Responsibility

Management Commitment: All the activities regarding management commitment are in the margin of improvement, but special care towards "*regular review of suitability of quality policies and objectives*" is necessary because this being the only means organisations can survive in rapid changing business environment. Study also indicates management should be more committed to spread the values throughout organisation. With out proper understanding of what organisation stands for (values) in real terms it can't expect employees to stand for the values.

Customer Focus: Though organisations are committed to customer orientation, not a single activity that ensures customer satisfaction and loyalty is performed to excellence; all of

them are in improvement zone. Especially *“use of data on customer expectations and/or satisfaction when designing new services and products”* needs more attention than all other activities.

Planning: In key activities related to planning; only maintaining quality manual was done with reasonable effectiveness, but importantly care should be taken in *“establishing measurable quality objectives and allocating resources and activities to achieve objectives.”*

Responsibility, Authority and Communication: Responsibilities and authorities are clearly defined and communicated within the organization with reasonable satisfaction, but *“communication process in organisations should be given more importance to have an effective QMS”*.

Resource Management: The most under performed activity is resource management, especially *“education and training of staff for supporting and carrying out quality improvements and to improve job skills should be given more importance.”*

Product Realization

One of the better-performed activities, defining quality objectives and requirements necessary to deliver product/service, which can meet customer demands, and all organisations are doing well in this regard but problems related to *“effective customer communication”* to capture customer voice should be addressed properly. Regarding relationships with suppliers, none of the activities is effectively followed. It shows *“involving suppliers while developing new products should be taken care of”* required more attention than other activities. Involvement of suppliers is necessary to avoid problems that may arise due to lack of supplier’s capacity and ability to produce necessary parts; it also helps suppliers to give necessary input for developing product and also helps to have better understanding of customer demands necessary to deliver quality parts during production.

Measurement, Analysis and Improvement

This is one of the poor performers; only controlling product to ensure it actually meet all requirements is being performed effectively. Some important aspects in quality improvement such as use of statistical tools to monitor and measure product and processes for effectiveness and/or improvement is considerably ineffective. Special attention is required in this regard. In addition improvements to other activities such as monitoring customer satisfaction, evaluating suitability and effectiveness of the QMS is required.

What one can understand from the studies and literature is that there exists three situations in organisations, which could influence effectiveness of QMS:

1. Organisations do not have proper understanding of principles of quality management and the importance of continuous improvement.
2. Organisations do know the importance of continuous improvement but failed to achieve it due to lack of knowledge regarding how to prepare organisation for implementing QMS.
3. Third situation could be, organisations are forced to go for certification by external forces but do not have time to prepare for change.

These three situations enable us to come to the understanding that the important elements that influence the successful implementation are knowledge, commitment, time, and resources.

Knowledge: Top management understanding of quality management principles and requirements of ISO.

Commitment: Importance given to continuous improvement in daily activities.

Time: Why is organisation going for ISO? Is it due to external forces or internal reasons? If so, is organisation ready for certification, or change?

Resources: Enough resources to hire consultants, establish, and maintain QMS.

Assumptions for model

Every organisation that looks at this model is assumed to have

- 1) Management committed to quality.
- 2) Enough resources to hire consultants, train employees and provide other resources when required.

Target: Organisations who have not implemented QMS, and want to implement if demanded by customers or when decided by management.

(or)

Organisations who implemented QMS but unable to realize any benefits and want to rethink the approach for renewing the certification.

Providing the assumptions 1 and 2 are met model framework provides a better understanding of the target.

Taking into consideration the three situations, important elements as defined, the results of study conducted and literature available, model is required to address the following

points. Which otherwise might hinder the successful implementation of QMS as commonly found in organisations.

The need for “*strategic quality management*” based approach: to ensure quality policy and quality objectives are established, deployed, and continuously reviewed throughout the organization,

.... Supported by “*proper communication system*“: for effective internal (management, employees) and external (with customer and supplier, society etc...) information exchange,this ensures “*involvement of employees*“: through training and empowerment to realize organizational goal of “continuous improvement”

Thus, preparation consists of mainly three steps. To successfully implement any changes or improvement strategies organisation should implement these constructs. (Preparing for quality management system is merely to implement these three steps, which occurs through a set of practices by committed management)

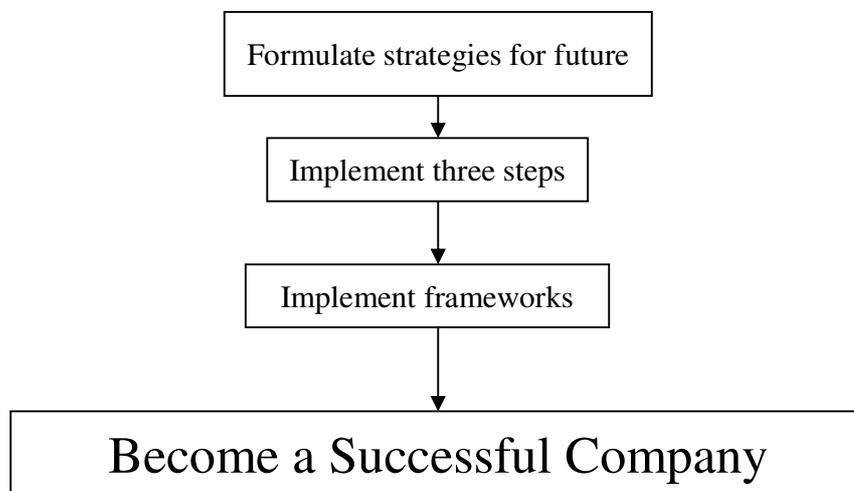


Figure 6.2 Structure for Implementing Frameworks

According to the proposed model, managing change depends on developing leadership competency, employee competency, supported by competent communication system which facilitates smooth execution of all the activities.

First Step: Develop competency of management for changes; management has to develop competency in SQM as defined by Dr Juran. As a first step, organisations have to develop competency in developing suitable quality policies, goals, communicating them to organisations and continually reviewing the achievement of goals with respect to customer satisfaction.

Second Step: Develop competency in communicating with in organisation. Look at organisation communication system, develop competency in two-way communication for connecting with organisation and understanding organisational requirements clearly.

Third Step: Develop competency of providing resources, mainly by addressing requirement of human resource management. Employees are those who continuously work towards organisational goals. To achieve organisational goals it is necessary to develop employee competence (imparting necessary skills) and wining employee commitment.

Following sections will detail how organisations can look into implementing these three steps.

6.4.4 Elements of the Model

- Management Activities (SQM)
- Communication System
- Employee Management

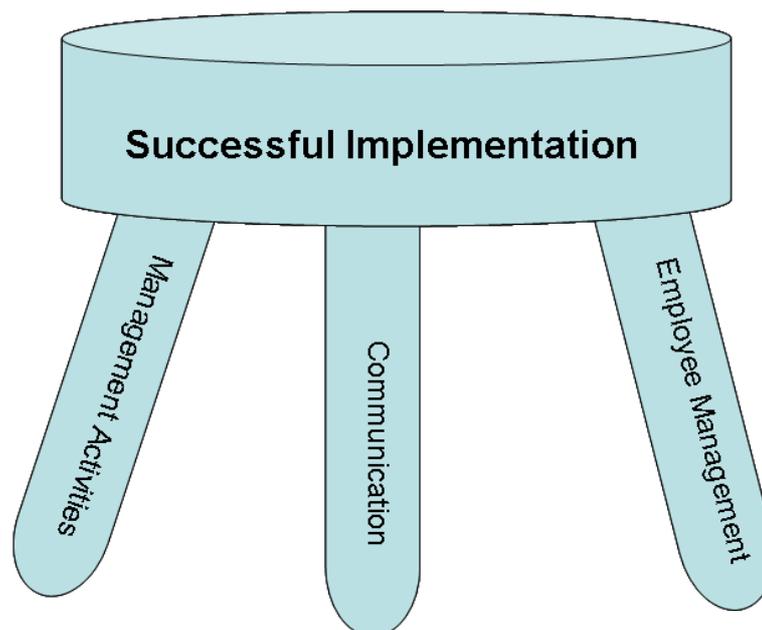


Figure 6.3 Model for successful implementation of ISO Standards

The model *Figure 6.3* propose that if strategic quality (management activities), communication, and employee management issues are addressed in organisations before implementation of any quality initiatives such as ISO, TQM, organisations will realise the true benefits of such initiatives.

There are many models presented in literature addressing these issues, preparing management for changes, developing and implementing strategic quality in organisations.

6.4.4.1 Management Activities (SQM)

Strategic quality management model enables management to understand the right perspective about quality and to organise relations and resources, and so that organisation is prepared for good when changes such as ISO standards or other models are adopted.

Strategic management is that set of managerial decisions and actions that determines the long-run performance of a organisation. It works as a framework, which enables highest management level activities that sets the terms and goals for a company. This includes environmental scanning, strategy formulation, strategy implementation, evaluation, and control [34]. Practicing of strategic management involves allocation of sufficient resources, establishing cross-functional teams, assigning responsibility of specific tasks or processes to specific individuals, monitoring results, evaluating the efficacy and efficiency of the process, controlling for variances, and adjusting the process as necessary.

Strategic Quality Management

SQM was defined by many authors in many ways. Some in a very broad sense, for example Juran defines “*SQM is a systematic approach for setting and meeting quality goals throughout the company*”. Others define SQM as “*a comprehensive and strategic framework linking profitability, business objectives, and competitiveness to quality improvement efforts with the aim of harnessing the human, material and information resources organization-wide in continuously improving products or services that will allow the delivery of customer satisfaction*” [10].

For the purpose of our framework, after thorough review of literature we define SQM as “*a systematic way of addressing organisational strategic quality goals that provides value*

to customer, focuses on quality improvement, competitiveness and enables to achieve objectives“.

Previous Models

There are many models presented in the literature to understand and implement strategic management. Study “[6]” developed a testable framework for quality standard registration success based on all the key organizational variables together. The framework focuses on organizational change with applicability to quality management standards, and change management. Study “[4]” presets a control loop system model for implementing a new strategy. The model presents various stages on how to develop and implement strategy, and how to measure and evaluate the results achieved during implementation. This model provides basic understanding for organisations to implement changes. Study “[7]” presented an integrated framework for adopting different standards based on systems approach to management. It provides an approach for harmoniously integrating the elements of different systems such as quality management system, environmental management systems. The paper “[8]” proposes a fit and contingency model based on level of decision-making centralization, level of formalization-standardization and common values within the organization. Study “[9]” presented a focused system model for strategic quality management based on single manufacturer TQM framework. This model is comprehensive in its approach and detailed in its application, integrating all the major elements of TQM.

Though the literature provides different approaches for strategic quality management, there is definite gap to be addressed in the scenario where failure of implementing certain aspects of ISO 9000 in particular as identified in the study. The model presented is developed based on SQM framework presented in the study [10] and Dr. Juran’s lessons on SQM presented in “[11]” and “[12]” in addressing the gaps identified.

Core Elements of Framework

Management/ Leadership: Leadership of the organisation is required to create quality values and develop quality policies that enable them to lead in the right path. They should actively involve in developing quality goals. It is necessary to create quality councils which will oversee the deployment and achievement of goals and provide resources required. They should actively involve in reviewing of accomplishment of goals and customer feedback so

that new goals could be established and policies changed if required for continuous improvement and achievement of goals.

Policy Deployment: Policy deployment refers to methods used to make sure that everyone in the enterprise is working effectively towards the same goals [13]. It is process of identifying tasks to be done across the organisation to achieve the goals set by the management.

The activities involved in policy deployment are:

- 1) Subdivision of goals until specific tasks are identified
- 2) Allocation of until responsibility is assigned to achieve the tasks.
- 3) Receive the request for resources to accomplish the tasks

Strategic Quality Planning: SQP is a structured process for defining strategic goals for an organisation and determining the means to achieve those goals [12]. Achieving excellence in quality and market leadership requires a strong future orientation and willingness to make long-term commitments to customers, employees, stockholders, suppliers, and the community. The quality goals as well as the strategic and operational plans need to reflect these commitments [10].

Implementing strategic planning is based on organisations ability to answer the following questions [35].

1. What is organisation's performance w.r.t quality?
2. What is the goals w.r.t quality?
3. How to achieve the goals?

Continuous Improvement: Continuous improvement is the most important aspect of SQM. SQM requires quality improvement of all processes, in order to provide continuous improvement in the value provided to the customer. For this purpose, organisations are required to regular monitoring of goals achieved and study customer feedback and competitive factors to act on gaps and full the purpose of organisation.

Implementation of SQM Framework

Figure 6.4 gives a clear idea about the implementation process of SQM. The management of the organization must start with quality initiatives, goals with strategic quality planning (SQP). Policy deployment ensures that all the activities are assigned to responsible people or departments to carry out the initiatives. There after resource management should ensure

through necessary means, involvement of employees, training and education, rewards and recognition to carry out the activities. Proper measurable controls should be agreed and be placed in order to verify ability to reach defined goals and evaluation of performance. Continuous improvement will ensure time-to-time evaluation of organisations ability to satisfy customer needs, organisations ability to remain competitive so that organisations can be remain focused to pursue changes necessary.

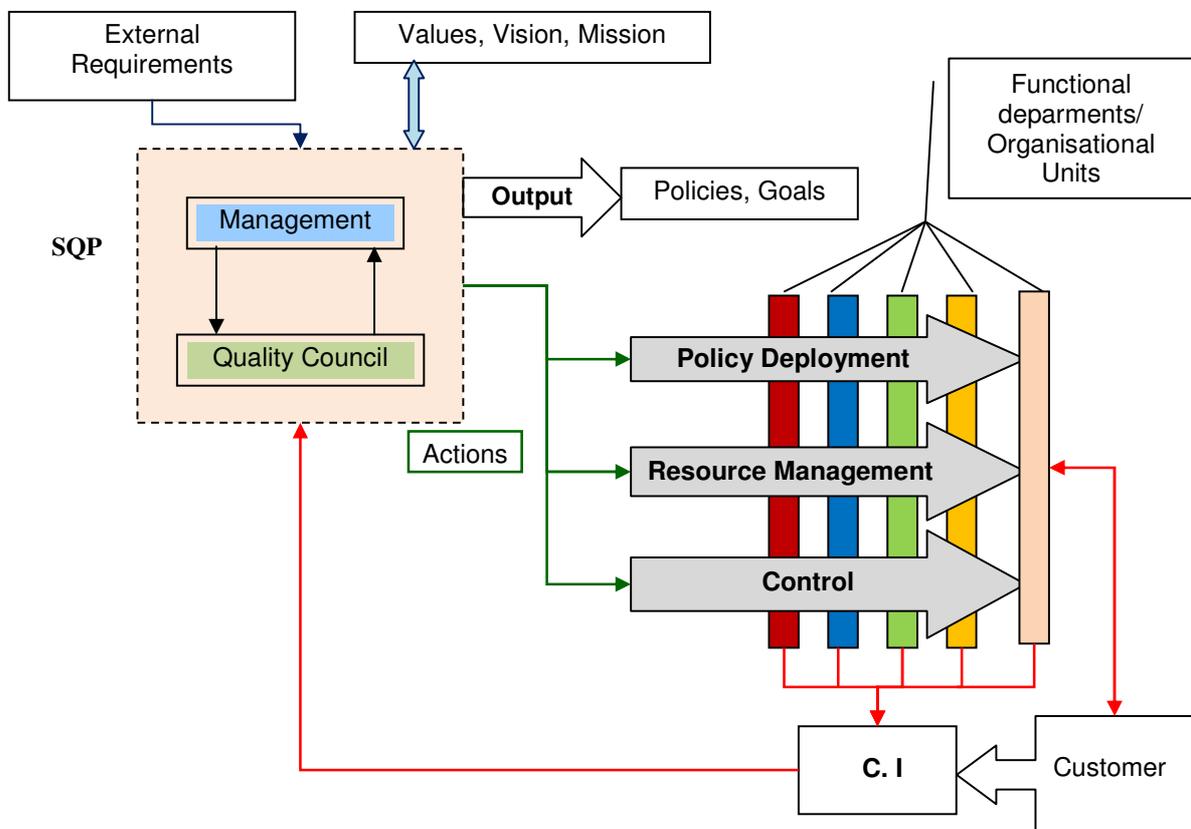


Figure 6.4 Strategic Quality Model

Despite having advantages adhering to SQM as an initial management philosophy; as a basic concept it will ensure management will regularly review policies, goals, customer requirements, and problems why goals are not attained and formulate new goals by understanding the problems in achieving overall objectives. Thus, in principle activities required by management as part of ISO 9001:2000 will be addressed by SQM framework.

With this, the problems (critical activities identified in the study) such as regular reviewing of quality policy, attending the problems or reasons for lack of achievement of goals, such as failure to provide resources, lack of understanding of goals by low-level employees will be addressed by management. In short, organisations will look into the reasons beyond why they are unable to achieve goals or objectives as part of their activities.

Once organisation has achieved this maturity level where it will enable regular reviewing of suitability of what organisation does, how it does things, and reasons why it has not been able to achieve things as planned; it provides basis for success of any planned strategic initiatives. When organisation achieved this status, then it would have achieved a major objective (maturity level to implement planned strategies such as ISO, TQM) in achieving success in what ever it may plan to achieve in future. Thus, success of an organisation in any planned improvements is more predictable and more realisable when compared to present status in organisations.

Present framework if implemented through three steps will assure everything is in place to achieve quality and ensure quality results are achieved, and those results are valid with respect to organisation's quality policy, customer requirements, and meet external requirements. Therefore, it will improve organisation's ability to meet requirements of all the stakeholders.

The two other elements that have to be addressed along with strategic orientation to achieve the desired status as presented above are communication and employee management. Importance of communication and employee management is and how organisations have to view communication and employee management processes are discussed in the following sections.

6.4.4.2 Organisation Communication

Literature review identified that a proper communication is the most important element of organisations achieving success. Study shows that majority of the organisations are lacking good communication process, which is necessary to ensure effective QMS. Articulation of the organization's values relevant to quality and continuous quality improvement is poor. The first goal of organisational communication is to inform the employees about their tasks and about the policy and other issues of the organisation [36]. Same can said to be true with communication with customers, where providing product information, handling enquiries, orders and customer feed back is not being done at the required level.

Effective communication is essential for transmitting information, building co-operation and team spirit, optimizing performance and satisfaction, avoiding and solving problems. The ultimate purpose of information and communication flows in an organisation is to raise awareness of customer needs, quality and overall firm performance. The aim is to gain higher levels of commitment to the work process, to the end user and the organization as a whole [25], [12]. In the process it also helps in maintaining good relationships with customers, suppliers and other external elements. In an organisational communication process between manager and employees where communication flows from management as the sender, and with employees as the receiver of information is explained by common communicational theories of sender, message, channel, receiver, and noise could be applied to this communication.

Communication during changes: The importance of communication increases with organisations going for changes such as implementing new strategies, improvements. Study “[13]” says that it is important to treat employee communication as a strategic discipline and using effective communications to drive change efforts.

Characteristics of good communication during change: Characteristics of good communication during change is “*managers being able to talk about the change as openly as possible, as early as possible, and as much as they can in order to minimize eliminate resistance*” [26], [11]. Literature suggests that employees' cooperation during change initiatives is key to the success of most planned organizational changes and also points to the importance of providing opportunities for employees to seek input to achieve employees' cooperation. It is also important to know the acceptance of certain communicative activities by low level employees that implementers appear to see as vital to change efforts [11]. If people

should act on others decisions, they must be convinced to do so. To act in the right way, it depends very much on the information they need to take the right course of action and to be motivated to do it. Motivation or the absence of it depends on level of understanding between the two parties and this depends on communications, and its influence on those receiving it. According to “[24]”, managers place more importance on information dissemination than on seeking employee input. In addition, study found that manager’s dissemination activities are related to their own perceptions without employee acceptance. Although it seems clear that access to information is generally critical to employee satisfaction in organizations, it is true that information to be accurate, timely, and useful [11]. It is also important that employees perceive information to be of higher quality with vision clearly understood to reduce resistance to the change.

Barriers to good communication: Even when a good communication system exists there seems to be barriers existing in organisational communication process. Literature suggests common communication barriers that have to be taken care in initiating any communication process are [14]:

- Different status of the sender and the receiver
- Use of proper language – avoiding using specialist language for a non-specialist audience
- Selective reporting - where the reporter gives the recipient incorrect or incomplete information
- Timing - information that is not immediately relevant
- Conflict - where the communicator and recipient are in conflict; information tends to be ignored or distorted

Model for Communication

Theories of communication make it clear that effective communication depends on the receiver interpreting the message as intended by the sender, and the feedback loop enables both sender and receiver to check understanding [23], [27], [14]. Figure 6.5 shows general model for organisational communication; it shows there are two types of communications - an external with customers, suppliers and society, markets and internal between management and employees. During the organisational changes, most important aspect of communication takes place between management and employees. What ever be the model used, and between whom ever the communication takes place, it should ensure that receiver understands the message.

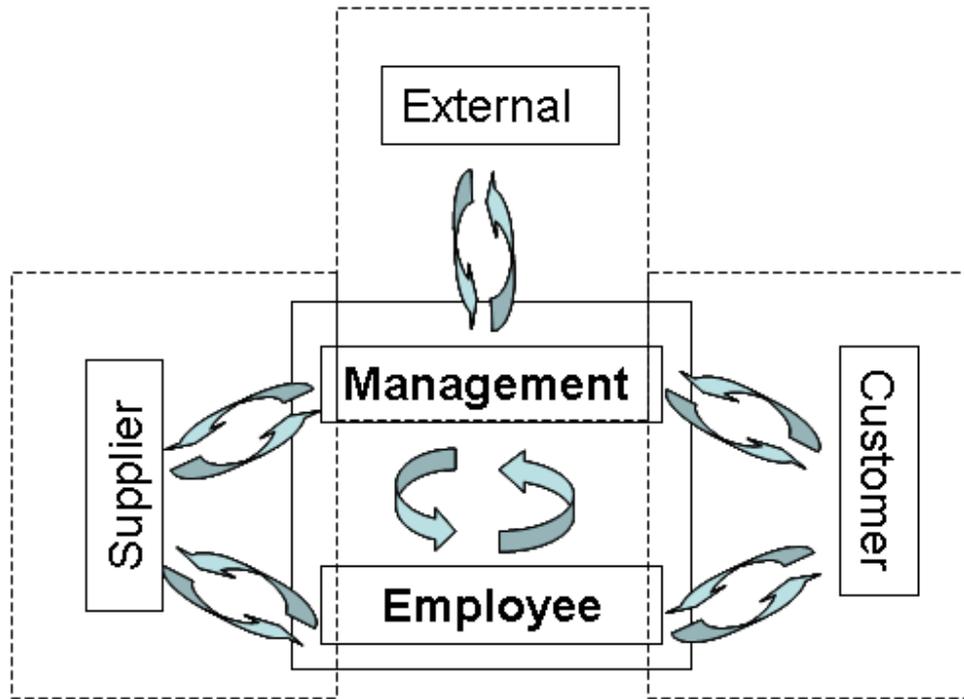


Figure 6.5 Model for organisational communication

During the organisational changes such as implementation of ISO 9001:2000 standards, TQM or general day to day communication, or while communicating with customers, suppliers, it is necessary for organisations to be prepared and follow model such as the proposed one which demands two-way communication. Because, two-way communication not only makes it certain that receiver understands the message, it also develops trust between sender and receiver for maintaining strong relationship. The model emphasises the importance of two-way communication as a necessary tool for successful and effective communication as presented in literature. It is the duty of management to train employees in use of new communications systems if they are implemented, and organisations can model their communication system based on the model presented here and follow the implementation steps as shown in *Figure 6.6* for effective communication.

Content of Communication

The content of communication concerns what information is conveyed to employees before, during and after the change initiative, as well as what information is sought from employees. According to study “[23]”, employees want to know as much information as possible in order to minimize uncertainty. As presented in the study “[38]”, Kitchen and Daly [28] have

identified three types of information that affect employees during change: first, what employees must know; second, what employees should know and, finally, what employees could know. Organisations should categorise all the available information accordingly into three types to make it feasible when finalising the content they want to share with employees.

Channels of Communication

There are different channels being used to communicate across the organisation such as team meetings, formal and informal individual meetings with managers, company newsletters, notice boards, and suggestion schemes. Study “[29]” defines a communication channel as “the means by which messages get from one individual to another”. Whichever channel is chosen, the importance regarding communication, as a two-way process has to be given importance.

Interpersonal channels primarily involve face-to-face communication, and mediated channels make use of some form of mass media or technology. Study “[30]” put forward several suggestions in the use of channel types during planned change implementation. According to them interpersonal channels are best suited to satisfy needs of organizational members in avoiding problems associated with a change. Mediated channels are regarded as more effective in providing general information. Study [24] findings suggest a trend toward use of mixed formal and informal channels for disseminating information and use of more informal channels for soliciting input.

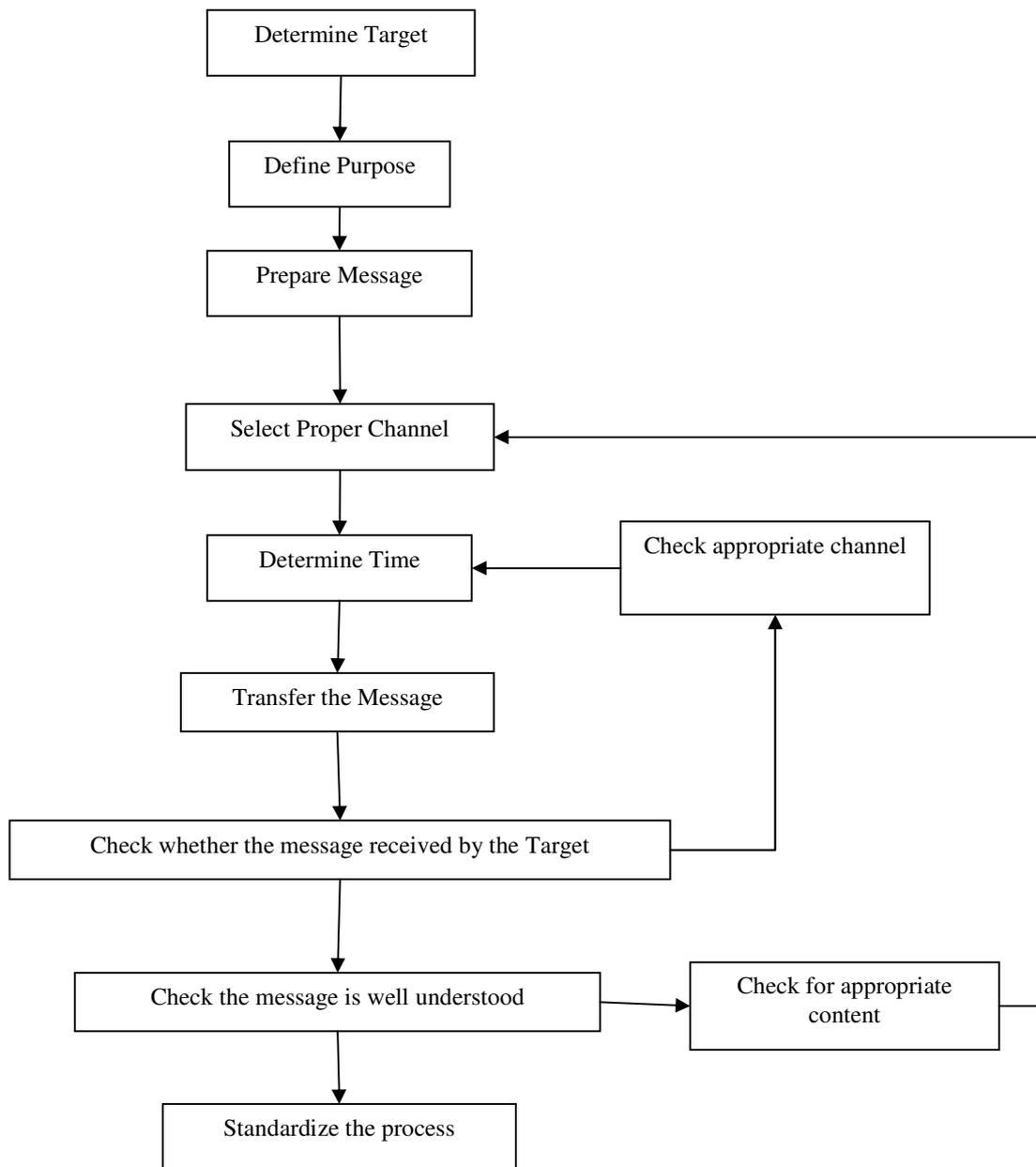


Figure 6.6 Flow Chart for Effective Communication

6.4.4.3 Employee Management

Organisations ability to pursue continuous improvement philosophy depends on how well employee management is practiced. Employee has second most influence after management on organisational success. Though integrating continuous improvement philosophy within the standards is influenced by TQM trend, it is undeniable fact that improvements in organisations ability to provides goods/services must take place for survival and continuous improvement is only way to ensure long-term survival. To achieve this organisation must stress on effective and efficient employee utilization. Employee management means exactly how organisations able to use employees most efficiently and effectively. Organisations can achieve this through a systematic program that motivates, develops, and retain employees more effectively.

Research indicates that such an effective employee management programs leads to a competitive advantage; in the form of a more motivated workforce and, by extension, improved operational and business performance [15].

“In the presence of quality products and services, well-managed people can be the difference between a successful company and one that is not competitive”.

Organisation with workforce having better skills, motivation, education, and experience than competitors, will have an advantage over those competitors regardless of the type of business [15]. Employee growth has direct and indirect benefits. More knowledgeable, skilled, and capable employees directly influence organisations ability to satisfy customers, resolve problems and crises, and adapt to changing market conditions. Research found that the employee management practices are being used in a relatively small though management of smaller organisations this as important, they failed to include it in their business objectives [15].

Employee management gains much needed importance when organisations go for strategic initiatives like ISO certification and total quality management. To the successful adherence to standards and TQM concepts, elements such as customer focus, working closely with suppliers, continuous improvement of process and preventive measures needs to be addressed. All of these measures demands active employee involvement, training, empowerment and motivation. On contrary, when we see actual situation in the certified organisations and organisations that are following QMS this is not the prevalent situation, especially in empowerment and training their scoring is not encouraging, this can be even

worse when seen in a grand scale with in the organisations which are not certified or following QMS. Therefore, it is vital for organisations, which are not yet certified to look at the importance of employee management, and integrate it as a part of strategic competence.

Once organisation decides to integrate employee management as a strategic competence, it must determine which management practices needs to be adopted, and which specific elements needs to be addressed first to achieve objectives. What ever are the short-term goals it is necessary to practice all the elements in the long run to achieve desired performance as presented in the model *Figure 6.7*.

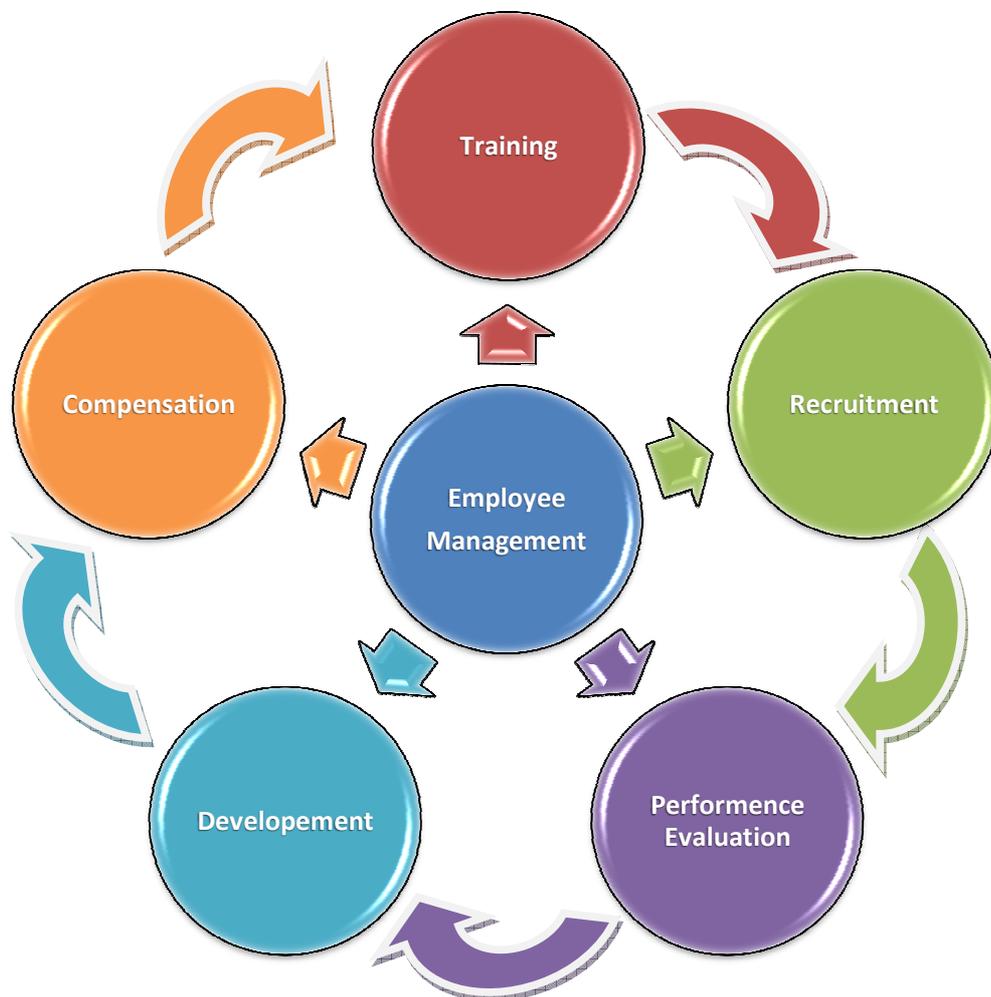


Figure 6.7 Model for Employee Management Practices, (Adopted from [15])

As shown in the model, irrespective of the strategy adopted, in starting the employee management initiative all the elements need to be addressed.

Employee recruitment practices ensure that employees recruited for different positions have the necessary skills and background to be successful in their individual jobs. Assessment practices ensure that the employees are being provided with useful feedback about their performance. Compensation practices provide employees with what they consider fair pay for their work. Training and development practices provide employees with opportunities to grow through job training, job rotation, and promotions. If any organisation can be said to be strictly following these initiatives we can see a great future for those organisations

Conclusion

Models such as this will help organisations to concentrate on important aspects before going for organisational changes such as implementing QMS, and TQM. The presented model is needed to be field-tested. Moreover, the three basic elements (management activities, communication process, and employee management) will help organisation to be prepared for effective changes. The present model is based on deficiencies that are found in implementation of QMS, motivations, and implementation characteristics found in the literature, which are affecting most of the organisations in the present world. As found in the literature, some organisations are going for certifications in a hurry just to satisfy the customers and not for organisational improvements, while some organisations go for internal improvements. The proposed model will enable organisations in both situations to realise the important aspects they should take into consideration before going for such big initiatives such as ISO to realise their full potential.

Chapter 7 Summary and Conclusions

This chapter provides summary and conclusions from this research project. In addition, it presents research evaluation, considering research limitations and future research perspectives.

7.1 Summary

Organizations from the developing countries are facing difficulties in using ISO standards, especially in terms of their purpose, acceptance and benefits of implementation. To date, ISO 9001: 2000 is the most widely implemented framework in introducing quality management systems and winning new customers. Though certification is necessary for organisations to enter new markets, it is essential to approach certification in a way to bring real benefits to organisations. According to the previous studies, organisations are benefiting from adopting standards, but may not be sure if organisation able to perform all the activities to ensure continuous improvement as demanded by standard to realize these benefits. This will be particularly important for organisations from the developing countries because of the prevailing situation in these countries.

As per the previous reports related to QM practices in developing countries / especially India is reviewed, it became evident that no major research has been done in dealing with identifying elements that are to be addressed during ISO standards implementation. Consequently no significant research has been conducted for developing a model that can be used by Indian firms to really benefit from ISO standards implementation and its continuous improvement of their philosophical background.

Thus, the major objectives of this study are:

- To generate knowledge and awareness concerning quality management practices in developing countries (focusing on Indian firms)
- To develop a model that can be used by organisations for introducing quality management concepts.

This study started with an extensive review of literature about development of quality management concepts from teachings of quality gurus and quality management frameworks. Observations from these literature revealed, formulation of different management concepts and their common approaches in practicing the quality management. Further, it is understood

eight quality management principles proposed by ISO addresses significantly large portion of the enabler criteria of quality awards. However, implementation and verification of these principles is ignored while auditing for certification. In addition, obtaining an ISO 9000 registration only requires small changes in an organization and do not ensure these principles being followed. Where as, quality award models needs cultural changes in organisation in managing quality through the involvement of all employees working towards organizational goal. This, extensive review of the QM literature provided a solid foundation for conducting the research, to understand quality management practices in developing countries.

To gain insight about the progress of quality management practices in developing countries, literature review was performed. Review shows interestingly, developing economies often have unique characteristics, notably lack of democracy, instability, corruption, unskilled labour force and others. While not all developing countries suffer from these ills more are less this is valid. Importantly, things such as management structure, roles, accountability, the definition of quality, the supply chain, management ethics, the controls and financial freedoms, learning processes, resources and involvement of employees should be taken consideration in these countries. Taken together these observations, ISO 9000 standard is providing basis to introduce systematic quality management practices, and its certification is allowing them to compete in global markets.

In order to achieve the objectives of research a detailed literature review was done on quality management practices in Indian organisations. According to the literature, ISO certification was source of drive and motivation for many organizations, as a quality related goal and many had positive experiences with certification [Chapter 3.1], such as increased management awareness and involvement in quality improvements. However, once euphoria generation by ISO 9000 certification was over, there found to be a general tendency of complacency. In addition, lack of proper awareness in handling information and decision-making processes among certain Indian firms is hindering the implementing quality management practices. In contrast, successful implementation of TQM seems to be an uphill task to Indian organisations mainly due to lack of understanding of the factors that can collectively affect the TQM. Apparently, this review also highlighted specific group of companies are successfully implementing TQM concepts and recognized by Deming award. Furthermore, organizations with the help of TQM tools understood customers better, achieved financial gains, employees' commitment, customer's loyalty and a big competitive advantage

while entering new markets. However, this review has not thrown light on the small industries practices in comprehensive manner, and not identified the elements or specific activities in managing quality, which are being neglected while pursuing certification. These elements have to be addressed to enable organizations to realize the true benefits of implementing quality management according to ISO 9001:2000. To identify and address these elements in the proposed model, a survey study was carried on a group of companies having established quality management systems. For this reason, a sample framework based on organizations that are export oriented was selected based on review of literature. As per analysis, organizations capable of export were collaborated with companies from developed world are supposed to have established QMS. So sampling such a group provides a great opportunity to identify elements that are being neglected or unable to be pursued by organizations.

As our results from the study [Appendix 3] showed, organizational activities regarding continuous improvement was not being carried out as required, even though the policies was committed to CQI. However, documentation of QMS is done exceedingly well in all organisations. Some other important management activities such as *“reviewing of suitability of quality policies and objectives,” “establishing communication process”* and *“ability of using customer data for designing new products and services”*, along with *“establishing measurable quality objectives for all functions and levels of organization”* and *“education and training of employees for supporting and carrying out quality improvements”* are to be addressed properly.

Based on study findings and reviewing of literature to understand the motives and problems implementing ISO 9001:2000 models were identified. Model identified three most important elements (Management Activities (SQM), Communication Process, and Employee Management) for successful implementation of changes such as ISO certification. These changes demand continuous improvements of all activities that influence quality. To realise the true benefits, organizations should understand and able to address these three elements of the model [Chapter 6.4].

One of the important purposes of this research is also to understand how Indian organizations fared in comparison to developed country (German Organisations) in implementing the QMS frame works. For this purpose the results of the survey 1[Appendix 1] were used to compare with the practices of German organisations. Our observations basing on survey 1 suggested that, there isn't much difference in practices of these two groups except

TQM philosophy seems to be more widely accepted in Indian organisations than German organizations. However, in ISO 9001:2000 certifications both Indian and German organisations are doing well but in sustaining the QMS German organisations are doing better than Indian organisations.

To gain better understanding of small industries, an interview study was conducted in SSIs in Hyderabad. This study indicates factors such as lack of training of managerial people/owners, low product range of these companies, market acquisition, and investment in the technology and relationships with workers is affecting the companies in their way being successful. In general, these organisations seem to lack understanding of quality management concepts other than inspection. Finally, it was discussed about different groups of organisations in Indian industries according to their practices depending on their customer base or potential customer base. This discussion was mainly based on trends identified during literature review and results of the study. Our findings based on their practices suggest that, there are mainly four groups of organisations “*Global green card*”, “*International licence*“, “*National licence*” and “*local organisations*”.

Finally, to address the research questions, “*Development of different quality management concepts, how they complement each other?*” was answered on the basis of the extensive literature review. The understanding of the ISO framework, and TQM models was used throughout this study to understanding practices of organisations and formulating studies, in exact terms it laid a solid foundation for conducting this research.

2) “*How quality management work is organised in India and other developing countries?*” was also answered on the basis of the extensive literature review and discussions. Literature review was has identified mainly two different practice levels and gaps in the literature was addressed with the help of studies conducted by author.

3) “*How export oriented organisations are practising quality management?*” was answered using the data from 32 Indian manufacturing firms having business collaborations with German organisations and data obtained from 21 organisations which are having established quality management systems. The study identified different elements which are not being addressed in the export oriented organisations and management perceptions regarding quality improvement efforts.

4) “*What lessons can be learned from practices of organisations and how can these practises better implemented?*” was answered using the model, which identified important elements that

should be addressed in while organisations work for implementation of ISO or TQM models, based on problems identified from the literature and studies.

To summarise, four research questions were answered and the two research objectives achieved through conducting this study.

7.2 Conclusion

This thesis has attempted to contribute to the understanding the performances of organisations of developing countries and implementation aspects of QMS. More specifically the aims were to generate knowledge of Indian organisations' work in practicing QM. Thus clear understanding of research findings has been reported along with the progress made in QM practices, in the process different levels of practices in implementing TQM, ISO standards were identified in Indian firms.

A number of conclusions have been obtained from this research. Thus, a quality management theory related to developing countries especially Indian manufacturing firms has been developed.

Several conclusions were obtained from studying the organisations according to selected ISO 9001: 2000 requirements instrument and literature review were listed as follows,

1. Export oriented organizations were equipped with QMS certification.
2. Regular review of suitability of quality policies and objectives is not addressed properly.
3. Establishment of measurable quality objectives for all functions and levels within the organization is not pursued to satisfactory level.
4. Data on customer expectations and/or satisfaction is not used properly when designing new services and products.
5. Organizations lack effective communication system
6. Education and training of employees regarding improving job skills and supporting quality improvements is generally neglected.
7. Poor use of statistical tools to monitor and measure product and processes for effectiveness and/or improvement
8. Involvement of suppliers while developing a new product/service is not seen.

Taken together, our results showed, activities in the companies are poorly oriented to continuous improvement, even though management has the policy of CQI, and committed.

This leads to conclusion that organisations concepts and policies are being permitted to the boardroom and not being translated in to true actions for the realisation of benefits of quality management frameworks such as ISO 9000.

Second, the majority of small scale industries which are local oriented have a long way to go in practicing quality management activities, the main problems identified in this companies are lack of management knowledge required for improvements, modernisation of facilities, employee training and involvement.

Third, group of companies are having excellent management practices in India such as *Deming award* winners. There is strong influence of these award winners, on Indian organisations pursuing TQM philosophy as shown in the study.

Fourth, theoretical model was developed in this study may applicable in practice. This model can be used by Indian manufacturing firms to improve their efforts while going for organisational changes such as ISO frame works and other award models. Through using this model, firms can quickly identify which areas urgently need improvement. Thus, the resources can be allocated more wisely and more effective plans can be formulated.

7.3 Research Evaluation

7.3.1 Research Limitations

The research has been completed. As with all research, the present study has certain limitations that need to be taken into account when considering the study and its contributions. Specific limitations of the methodology and method are discussed in [Chapter 4]. There are some other limitations that are to be considered.

First weakness of this study is that, the empirical base consists of organisations belonging to India only and data used to draw conclusions regarding practices of export oriented gathered from only 53 firms in total. One of the potential limitations is that organisations from which data is collected by two samples may represent two different populations. Thus, strictly speaking, the generalization is limited.

Second, the measures of perceived employee satisfaction/ and work-environment used in the survey instrument could be relatively weak, because the respondents are managerial people and their general perception of employee satisfaction may not actually reflect true situation.

Third the results regarding SSIs can't be generalised to all SSIs except to those, which are local oriented.

Fourth, comparisons made with practices of German organisations may not hold strong ground because of differences in survey instruments and sample size. Thus, conclusions might have been biased in some way.

7.3.2 Future Research

There are several investigations that we can pursue for further research based on the developed theory in this dissertation. Based on these findings, future research may start from a relatively higher level of knowledge.

First, a replication of this study using larger sample sizes would be helpful in re-examining the validity of its findings.

Second, the framework and model suggested by this study is the results of an exploratory in nature, not a predictive one. Subsequent research needs to be engaged in the development of valid and reliable operational definitions for the proposed elements. Further

the empirical study based on greater geographical diversity, and firm type diversity of the theoretical model presented will help in validating model.

Third, the results found in this study should be investigated in different developing countries to test whether they coincide in the same manner or different directions.

Fourth, more structured interviews would be necessary in certified small-scale industries (SSI) to get the complete picture of practices of SSIs.

Fifth, an in-depth case study in an Indian manufacturing firm is beneficial to gain more insight into using this QMS implementation model in practice.

Fifth, more structured interviews would be necessary in certified Small Scale Industries to get the complete picture of practices of SSIs.

Sixth, an in-depth case study in an Indian manufacturing firm is beneficial to gain more insight into using this QMS implementation model in practice.

References

Chapter 1: Introduction

- [1] The ISO survey 2005: www.iso.org
- [2] Christian N. Madu (1997), Quality management in developing economies, International Journal of Quality Science, Vol. 2 No. 4,
- [3] Kamran Moosa (ICQI'2000), Case Study- An overview on implementing TQM in developing countries, Pakistan Institute of Quality Control ,Web Site: <http://www.piqc.com.pk>
- [4] Jerry Gosen, Sunil Babbar, Sameer Prasad (2005), Quality and developing countries: The role of international and organizational factors, International Journal of Quality & Reliability Management Vol. 22 No. 5, 2005, pp. 452-464
- [5] Lakhe, R R, Mohanty, R P.(1994), Total quality management - Concepts, evolution, and acceptability in developing economies, The International Journal of Quality & Reliability Management. .Vol.11, Issue. 9; pg. 9, 25 pgs
- [6] Ihtasham ul Haque, Pakistan urged to ensure ISO certification: Export products <http://www.dawn.com/2004/11/27/ibr8.htm>
- [7] Kamran Moosa (ICQI'1999), Quality culture in Pakistani organizations- Basic research findings ,Head Pakistan Institute Of Quality Control Web Site: <http://www.piqc.com.pk>
- [8] Corbett, CJ, Montes, MJ, Kirsch, DA, Alvarez-Gil, MJ (2002), 'Does ISO 9000 certification pay?' ISO Management Systems July-August 2002

Chapter 2 Introduction to Quality Management Concepts

- [1] Industrial revolution: American Society For Quality: <http://www.asq.org/learn-about-quality/history-of-quality/overview/industrial-revolution.html>
- [2] Article: The evolution of quality: http://www.businessballs.com/dtiresources/quality_management_history.pdf
- [3] <http://en.wikipedia.org>
- [4] Frequently asked questions about the Malcolm Baldrige National Quality Award http://www.nist.gov/public_affairs/factsheet/baldfaq.htm
- [5] http://www.quality.nist.gov/PDF_files/2006_Business_Criteria.pdf
- [6] The Malcolm Baldrige National Quality Improvement Act of 1987 - Public Law 100-107: http://www.quality.nist.gov/PDF_files/Improvement_Act.pdf
- [7] The Deming Prize Guide 2005, www.juse.or.jp/e/deming/pdf/03_demingguide2005_01.pdf
- [8] Examination viewpoints for the Deming Application Prize: http://Deming.Ces.Clemson.Edu/Pub/Den/Deming_Prize_2000.Pdf
- [9] ISO in brief International Standards for a sustainable world, ISBN: 92-67-10401-2 © ISO, 2005-03/5 000
- [10] Overview of the ISO system: www.iso.org/iso/en/aboutiso/introduction/index.html
- [11] ISO technical committee ISO/TC 176: <http://www.tc176.org/About176.asp>
- [12] Praveen Gupta (2002). "Six Sigma and ISO 9000:2000", Issue of Circuits Assembly.

- [13] Dr. Uwe H. Kaufmann and Andreas Bieschke, Using the power of ISO 9000 and Six Sigma <http://europe.isixsigma.com/library/content/c040922b.asp>
- [14] Curt Fleming, Understanding the process approach of ISO 9000:2000 <http://www.devicelink.com/mddi/archive/02/10/001.html>
- [15] ISO 9001:2000 Process model source: <http://cgi.qualitas-fennica.fi/artikkelit/qms.html>
- [16] ISO 9000 introduction and support package: Guidance on the concept and use of the process approach for management systems, ISO/TC 176/SC 2/N 544R2(r)
- [17] Juhani Anttila, Good management principles http://qiblog.blogspot.com/2005_03_01_qiblog_archive.html
- [18] Juhani Anttila(2005), Performance excellence models work well with ISO 9000 standards, http://qiblog.blogspot.com/2005_03_01_qiblog_archive.html
- [19] Taran March, The Baldrige: Is it worth? www.ftpi.or.th/kc/tqa/tqa_articles/tqa04.doc
- [20] David W.Hutton, Baldrige to the bottom line, www.dhutton.com/roadmap/contants/introduction.html
- [21] Baldrige award: Criteria for Performance Excellence 2005 http://www.quality.nist.gov/PDF_files/2005_Business_Criteria.pdf
- [22] EQA: Source EFQM Excellence Model Criteria
- [23] Jim Standen (2005) , The EFQM Model-What is it all about? <http://excellenceone.efqm.org/Portals/1/PDF/TheEFQMModelwhatisitalabout.pdf>
- [24] The EFQM European award information brochure 2006-Version I http://www.mik.hu/web/dokumentumok/EEA_2006.pdf
- [25] Introducing Excellence: Using the EFQM excellence model to improve performance
- [26] Committed to Excellence information brochure (2005 V1.2/English), www.efqm.org
- [27] Exploring “The EFQM Excellence Model” Executive summary report (July 2001) <http://excellence.shu.ac.uk/>
- [28] EFQM, The fundamental concepts of excellence ISBN 90-5236-077-4
- [29] Excellence One is EFQM's knowledge, <http://excellenceone.efqm.org>
- [30] V.M. Rao Tummala, and C.L. Tang, Strategic quality management, Malcolm Baldrige and European quality awards and ISO 9000 certification concepts and comparative analysis, Q- Mark Council, TST, Hong Kong
- [31] Assessing for Excellence: A Practical Guide for Self-Assessment. EFQM: Brussels European Award
- [32] A. van der Wiele, B. G. Dale and A. R. T. Williams (2000), ISO 9000 series and excellence models: Fad to fashion to fit, *Journal of General Management* Vol. 25 No. 3
- [33] L.J Porter and S.J Tanner , *Assessing business excellence* 2nd Edition , ISBN: 0750655178
- [34] Selection and Use of the ISO 9000:2000 family of standards, http://www.iso.org/iso/en/iso9000-14000/understand/selection_use/selection_use.html
- [35] Do it like Deming: http://www.bbc.co.uk/radio4/news/inbusiness/inbusiness_20050630.shtml
- [36] Tony Bendell (2000), *W Edwards Deming* : Macpherson publishing

- [37] Deming Myron Tribus, Quality management according to the teachings of Dr. W. Edwards Deming
- [38] J. M. Juran (1989), Juran on leadership for quality, ISBN: 0029166829
- [39] Juran Institute, Article: on quality management http://www.juran.com/lower.cfm?article_id=32
- [40] Article: Philip Crosby – “Zero Defects” and “Right First Time”
<http://www.mftrou.com/philip-crosby.html>
- [41] Philip B. Crosby biography:
<http://www.philipcrosby.com/pca/C.Articles/articles/year.2002/philbio.htm>
- [42] Victor E. Sower (2005), Lesson 2 (13) Quality Management Philosophies,
http://www.shsu.edu/~mgt_ves/mgt481/lesson13/lesson13.htm
- [43] <http://www.juse.or.jp/e/conventions/icq05.html>
- [44] Introduction to Sikhism: http://www.sikhiwiki.org/index.php?title=Introduction_to_Sikhism
- [45] Quality gurus (2003), <http://geekswithblogs.net/srkprasad/archive/2003/10/27/276.aspx>
- [46] Clarke Ching, Chapter 12: Crosby, defects and Nash,
<http://www.rollingrocksdownhill.com/files/RollingRocksDownhillCh12.pdf>
- [47] William Edwards Deming [Original]: www.kac-tutor.co.uk/ess_help/deming.doc
- [48] Quality management principles:
<http://www.iso.org/iso/en/iso9000-14000/understand/qmp.html>

Chapter 3.1: Quality Management in India

- [1] R. Jagadeesh(1999), Total quality management in India – perspective and analysis, Assistant Professor in the Department of Mechanical Engineering, S.J. College of Engineering, Mysore(1999), India.
- [2] Skaria, G. (1995), "The total quality imperative", Business Today, 7-21 January, pp.19-27.
- [3] T.S. Nagabhushana and Janat Shah (1999), Manufacturing priorities and action programmes in the changing environment An empirical study of Indian industries, International Journal of Operations & Production Management. Vol.19, Issue. 4; pg. 389
- [4] G. S. Dangayach and S. G. Deshmukh (2001), Implementation of manufacturing strategy: select study of Indian process companies, Production Planning & Control, VOL. 12, NO. 1, 89-105
- [5] Sarkar, B. (1990), “Status of quality control in Indian industries: a survey”, Total Quality Management, Vol. 1 No.1, pp. 133-46.
- [6] Karunesh Saxena (1997), Book-“Quality management practices in Indian manufacturing organization”, Ess Ess Publications, ISBN: 81-7000-191-9
- [7] Sharad K. Maheshwari and Xiande Zhao (1994), Benchmarking Quality Management Practices in India department of management, Hampton University, Hampton, Virginia, USA
Benchmarking for Quality Management & Technology, Vol. 1 No. 2, 1994, pp. 5-23.
- [8] U.H.Acharya & Sanjit Ray (2000), ISO 9000 certification in Indian Industries: A survey, Total Quality Management; Vol. 11, No.3, 2000, 261-266
- [9] K.N.Anand(1999), Changing phases of Quality Department: An Indian experience, Total Quality Management: Vol. 10, NO.2, 1999, pg 165-171

- [10] Mahadevappa, B. and G. Kotreshwar (2004). "Quality management practices in Indian ISO 9000 certified companies: An empirical evaluation." *Total Quality Management* 15(3):295-305.
- [11] Jaideep G. Motwani, Essam Mahmoud, Gillian Rice(1994), Quality practices of Indian Organizations: An empirical analysis, *International Journal of Quality & Reliability Management*, Year: 1994 Volume: 11 Issue: 1 Page: - 52
- [12] Tannock, J. D. T. & Earl, C. F. (1990), Assessment of quality performance in manufacturing, *Total Quality Management*, 2, pp. 197–206.
- [13] Arun, N.S., Prabhu, S.R., Aruna Kumar and Lokesh Sharma (1998), "Identification of barriers to achieve TQM", Unpublished-Department of Industrial and Production Engineering, SJ College of Engineering, Mysore, India,
- [14] P. Mandal, P.E.D. Love,A.S. Sohal and B. Bhadury (2000), The propagation of quality management concepts in the Indian manufacturing Industry: Some empirical observations: by, *The TQM Magazine* Volume 12 . Number 3 . 2000 . pp. 205-213
- [15] Ferrell, O. LeClair, D. and Ferrell, L. (1998) 'The federal sentencing guidelines for organisations: A framework for ethical compliance', *Journal of Business Ethics*, 17(4): 353–63.
- [16] Sekhar, R.C. (1997), *Ethical Choices in Business*. New Delhi: Sage Publications
- [17] Ayoob A. Wali, S. G. Deshmukh and A. D. Gupta (2003), Critical success factors of TQM: a select study of Indian organizations, *Production Planning & Control*, VOL. 14, NO. 1, 3–14
- [18] Lindsay, W. and Petrick, J.A. (1997), *Total Quality and Organizational Development*. Delray Beach, FL: St. Lucie Press.
- [19] Mendonca, M, Kanungo, R.N. (1990), 'Performance management in developing countries'. In Jaeger, A.M. and Kanungo, R.N. (eds) *Management in Developing Countries*. London: Routledge, pp. 223–51.
- [20] Shenkar, O. (1995), *Global perspectives of human resource management*. Englewood Cliffs, NJ: Prentice Hall.
- [21] Virmani, B. and Guptan, S. (1991) *Indian Management*. New Delhi: Vision Books, Wall Street Journal (1997) 'Firms Find Loosening of India's Business Practices'.
- [22] Venkata Ratnam, C.S. (1995), 'Economic liberalization and the transformation of industrial relations policies in India'. In Verma, A., Kochan, T.A. and Lansbury, R.D. (eds) *Employment Relations in the Growing Asian Economies*. London: Routledge.
- [23] Ramaswamy and F.B. Schiphorst (2000), Human resource management, trade unions and empowerment: two cases from India, *International Journal of Human Resource Management* 11:4 August 664–680
- [24] Budhwar, P.S. and Sparrow, P.R. (1997) 'Evaluating levels of strategic Integration and devolvement of human resource Management in India', *International Journal of Human Resource Management*, 8(4): 476–94.
- [25] Singh, J.P. (1990) 'Managerial culture and work-related values in India', *Organization Studies*, 11(1): 75–101.
- [26] Dutta, S. (1997) *Family Business in India*. New Delhi: Sage publications.

- [27] Piramal, G. (1998) 'India's Business Families: The inside outside view', *Business Today*, 7 January–6 February.
- [28] Kumar, V. (2000) 'Infotech PSUs struggle in competitive terrain', *Hindu–Business Line*, 5 September. Online version. www.hindubusinessline.com/stories/14053920.htm
- [29] S. Dangayach And S. G. Deshmukh (2001), Implementation of manufacturing strategy: a select study of Indian manufacturing companies G., *Production Planning & Control*, Vol. 12, No. 8, 775–786
- [30] Gonsalves, C., Bhat, R. and Mathew, M. (eds) (1995) *Cases on Indian labour laws*, Vol. 1. New Delhi: Friedrich-Ebert-Stiftung.
- [31] Budhwar, P. (2000) 'Indian and British personnel specialists' Understanding of the dynamics of their function: an empirical study', *International Business Review*, 9(6): 727–53.
- [32] Balaji, C., Chandrasekhar, S. and Dutta, R. (eds) (1998), *Leading change through human resources: towards a globally competitive India*. New Delhi: Tata McGraw-Hill.
- [33] Yadapadithaya, P.S. (2000) 'International Briefing 5: Training and development in India', *International Journal of Training and Development*, 4(1): 79–89.
- [34] Sharma, I.J. (1984) 'The culture context of Indian Managers', *Management and Labour Studies*, 9(2): 72–80.
- [35] Kakar, S. (1971) 'Authority pattern and subordinate behaviors in Indian organisation', *Administrative Science Quarterly*, 16(3): 298–307.
- [36] Mankidy, J. (1993) 'Emerging patterns of industrial relations in India', *Management and Labour Studies*, 18(4): 199–206.
- [37] Krishna, A. and Monappa, A. (1994), 'Economic Restructuring and Human Resource Management', *Indian Journal of Industrial Relations*, 29: 490–501.
- [38] R. P. Mohanty And R. R. Lakhe (1998), Factors affecting TQM implementation: an empirical study in Indian industry *Production Planning & Control*, VOL. 9, NO. 5, 511- 520
- [39] Sita C. Amba-Rao, Joseph A. Petrick, Jatinder N.D. Gupta and Thomas J. Von der Embse (2000), Comparative performance appraisal practices and management values among foreign and domestic firms in India, *Int. J. of Human Resource Management* 11:1 , 60-89,
- [40] Pawan S. Budhwar and George Boyne (2004), Human resource management in the Indian public and private sectors: an empirical comparison, *Int. J. of Human Resource Management* 15:2 March 2004 346–370
- [41] Chandra, P., and Sastry, T. (1998), "Competitiveness of Indian manufacturing: Findings of the 1997 manufacturing futures survey" in *Vikalpa the Journal for Decision Makers*, 23 (3, July-September): 25-36
- [42] Article on employee training, <http://www.zeromillion.com/business/personnel/employee-training.html>
- [43] Tayeb, M. (1987) 'Contingency theory and culture: A study of matched English and the Indian manufacturing firms', *Organisation Studies*, 8(3): 241–61.
- [44] Garg, P.K., Parikh, I.J. (1988), "Values, design and development of strategic organizations", in *Khandwalla, P.N. (Eds), Social Development: A New Role for the Organizational Sciences*, Sage, New Delhi, pp.123-39.
- [45] Article on "The benefits of ISO certification", <http://www.isixsigma.com/library/content/c000917b.asp>

- [46] R.Gopalakrishnan, ISO Certification: A must for competitiveness
<http://www.hinduonnet.com/thehindu/features/ssi/stories/2004082800280110.htm>
- [47] Sukumar, R. (1998), "Total quality confusion", Business Today, 7 December, p. 27.
- [48] <http://www.bis.org.in/org/obj.htm>
- [49] Conquering competition, http://www.etmachinist.com/july_aug04/spotlight01.htm
- [50] www.ciionline.org
- [51] http://www.qcin.org/html/about/about_qci.htm

Chapter 3.2: Quality Management in India-Deming Organisations

- [1] Deming Prize winners from India by the IBEF in collaboration with the TQM division of the Confederation of Indian Industry, www.ibef.org
- [2] Venkatachari Jagannathan (2003), No stopping
www.domain-b.com/companies/companies_b/brakes_india/
- [3] SRF press release about winning Deming Prize:
<http://www.srf-limited.com/SRF%20Deming%20Prize%20release.pdf>
- [4] B.Sreekumar, On SRF winning Deming Prize, SRF overseas limited, JAFZA
<http://www.dqg.org/qquill/aug05/aug/srf/article.pdf>
- [5] Deming organisation: <http://www.ranebrakelinings.com/quality.htm>
<http://www.ranebrakelinings.com/about.htm>.
- [6] http://www.srf-limited.com/pro_synthetic.htm
- [7] JUSE, <http://www.juse.or.jp/e/deming/index.html>
- [8] Deming organisation Sundaram-Clayton
<http://www.sundaram-clayton.com/brakes/brakesmi.htm>
- [9] Reading: 'Total Quality Ltd', By R Sridharan, Business Today, 1999.
http://www.themanagementor.com/kuniverse/kmailers_universe/hr_kmailers/Perf_Venu.htm
- [10] Ananth. V. Iyer and Sridhar Seshadri, Transforming an Indian manufacturing company: The Rane Brake Linings Case, http://www.mgmt.purdue.edu/centers/ciber/publications/pdf/Iyer-Indian_Manufacturing_The_Rane_Case.pdf
- [11] Venkatachari Jagannathan (2003), The Deming dash, An interview with S Sundar Ram, president, Rane Brake Linings. <http://www.domain-b.com>
- [12] Venkatachari Jagannathan (2004), The Deming journey
http://www.domain-b.com/management/quality/20041127_journey.html
- [13] Mahindra and Mahindra Limited, Farm equipment sector
http://www.mahindra.com/mahindras/sectors/FES_sectorgatewaypage.htm
- [14] Hi-Tech Carbon Gmpd, <http://www.hitechcarbon.com/about.htm>
- [15] <http://www.sonagroup.com/quality.shtml>

Chapter 3.3: Quality Management in Developing Countries

- [1] Ishrat Husain (2003), Pakistan's export competitiveness in global markets <http://www.sbp.org.pk/about/speech/2003/29-may-03-2.pdf>
- [2] Ihtasham ul Haque(2004), Pakistan urged to ensure ISO certification: Export products, <http://www.dawn.com/2004/11/27/ebr8.htm>
- [3] Case Study- An overview on Implementing TQM in developing countries, Kamran Moosa, Pakistan Institute of Quality Control – (ICQI'2000). Web Site: <http://www.piqc.com.pk>
- [4] Kamran Moosa (1999), Quality culture in Pakistani organizations basic research findings Pakistan Institute Of Quality Control, Web Site: <http://www.piqc.com.pk>
- [5] Kifayah Amar and Zuraidah Mohd Zain (2002), Barriers to implementing TQM in Indonesian manufacturing organizations, The TQM Magazine, Volume 14 . Number 6, pp. 367-372
- [6] Hesham Magd and Adrienne Curry (2003), Analysis of management attitudes towards ISO 9001:2000 in Egypt, The TQM Magazine Volume 15 · Number 6 · 2003 · pp. 381-390
- [7] Salaheldin Ismail Salaheldin(2003), The implementation of TQM strategy in Egypt: a field-force analysis, The TQM Magazine Volume 15 . Number 4. pp. 266-274
- [8] Yemen Yasser Al-Zamany, Stephen E.J. Hoddell and Barbara M. Savage (2002), Understanding the difficulties of implementing quality management in, The TQM Magazine Volume 14 . Number 4 , pp. 240-247
- [9] Christian N. Madu(1997), Quality management in developing economies by, International Journal of Quality Science, Vol. 2 No. 4,
- [10] Hames, R.D. (1991), "Managing the process of cultural change," International Journal of Quality and Reliability Management, Vol. 8, pp. 14-23.
- [11] Madu, C.N. and Kuei, C-H. (1995), Strategic Total Quality Management, Quorum Books, Westport, CT.
- [12] Feigenbaum, A.V.(1990), "Total Quality Developments into the 1990s-An international perspective", TQM, an IFS Executive Briefing, IFS Publications, Stratford-upon-Avon,
- [13] Lakhe, R R, Mohanty, R P (1994), Total quality management - Concepts, evolution, and acceptability in developing economies, The International Journal of Quality & Reliability Management. Vol.11, Issue. 9; pg. 9, 25 pgs
- [14] Jerry Gosen, Sunil Babbar, Sameer Prasad (2005), Quality and developing countries: the role of international and organizational factors International Journal of Quality & Reliability Management Vol. 22 No. 5, pp. 452-464
- [15] S. Subba Rao and T.S. Raghunathan, Luis E. Solis(1999). The best commonly followed practices in the human resource dimension of quality management in new industrializing countries: The case of China, India and Mexico: The International Journal of Quality & Reliability Management. Bradford:Vol.16, Iss. 3; pg. 215
- [16] Erel and Ghosh (1997), "ISO 9000 implementation in Turkish industry," International Journal of Operations & Production Management, Vol. 17 Nos 11/12, pp. 1233-46.
- [17] Madu, C.N. and Kuei, C-H. (1995), Strategic Total Quality Management, Quorum Books, Westport,CT.
- [18] Lakhe, R R, Mohanty, R P.(1994), Total quality management - Concepts, evolution, and acceptability in developing economies, The International Journal of Quality & Reliability Management. Bradford:Vol.11, Iss. 9; pg. 9, 25 pgs

- [19] Barnett, N.S. (1991), "Management and statistical issues affecting quality improvements in Australia", *International Journal of Quality & Reliability Management*, Vol. 8 No. 5, pp. 9-13.
- [20] ISO and IEC developing country assistance efforts,
<http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/Background%20Papers/ISO-IEC%20DC%20Assistance.doc>

Chapter 3.4: Quality Management in German Organisations

- [1] Dr. Raphael Benner (2001), Recent aspects on the implementation of TQM in German enterprises, Speech on the 28th of August, www.qumsult.de
- [2] Quality management in Europe: a cultural perspective, Stefan Lagrosen, *The TQM Magazine*, Volume 14 . Number 5 . 2002 . pp. 275-283
- [3] Grace McCarthy (2005), Leadership practices in German and UK organizations, *Journal of European Industrial Training* Vol. 29 No. 3, 2005, pp. 217-234
- [4] Stewart, R., Barsoux, J.-L., Kieser, A., Ganter, H.-D. and Walgenbach, P. (1994), *Managing in Britain and Germany*, St. Martin's Press, New York, NY.
- [5] Quality in Germany – an overview Klaus J. Zink and Wolfgang Voss, *The TQM Magazine*, Volume 10 · Number 6 · 1998 · pp. 458–463
- [6] **Survey 1:** Qualität in produzierenden Unternehmen Deutschlands (2002), Fraunhofer-Institut für Produktions- technologie IPT, Aachen 2002
- [7] **Survey 2:** Anwendung moderner Managementmethoden in den Unternehmen der Länder Berlin und Brandenburg (2005) by Technische Universität Berlin Fachgebiet Qualitätswissenschaft
- [8] Bob Nelson (2005), Get ideas from your own people
www.bizjournals.com/extraedge/consultants/return_on_people/2005/10/10/column333.html

Chapter 4: Research Methodology

- [1] Research Design: <http://www.socialresearchmethods.net/kb/design.htm>
- [2] Blaxter, L., Hughes, C. and Tight, M. (1996), *How to research*. Open University Press, Buckingham.
- [3] Bourque, L.B. and Fielder, E.P. (1995), *How to conduct self-administered and mail surveys - The Survey Kit 3*, Sage Publications, London.
- [4] Flynn, B.B., Schroeder, R.G. and Sakakibara, S. (1994), A framework for quality management research and an associated measurement instrument, *Journal of Operations Management*, Vol. 11, pp. 339-366.
- [5] Hilton Obenzinger (2005), what can a literature review do for me? How to research, write, and survive a literature review, Stanford University
<http://www.stanford.edu/dept/undergrad/urp/PDFLibrary/writing/LiteratureReviewHandout.pdf>
- [6] Merriam, S. B. (1998), *Case study research in education: A qualitative approach*. Jossey-Bass Publishers, San Francisco, CA.
- [7] Punch, K.F. (2000), *Developing effective research proposals*, SAGE Publications London.

- [8] Yin, R. K. (1994), Case study research: Design and methods. Second ed., Sage Publications, Thousand Oaks, CA.
- [9] Definition of Theory: <http://dictionary.laborlawtalk.com/Theory>
- [10] Descriptive Designs: <http://www.fortunecity.com/greenfield/grizzly/432/rra2.htm#descriptive>
- [11] Characteristics of descriptive research
<http://www2.selu.edu/Academics/Education/EDF600/Mod11/sld002.htm>
- [12] Dr Thomas F Burgess, Guide to the design of questionnaires A general introduction to the design of questionnaires for survey research. University Of Leeds:
www.leeds.ac.uk/iss/documentation/top/top2.pdf
- [13] Earl Babbie (1990), Survey Research Methods , Wadsworth Publishing Company; 2nd edition, ISBN-10: 0534126723
- [14] Joppe, M. (2000). The research process. Retrieved February 25, 1998, from
<http://www.ryerson.ca/~mjoppe/rp.htm>
- [15] Content validity definition: http://en.wikipedia.org/wiki/Content_validity
- [16] Reliability: <http://www.socialresearchmethods.net/kb/reliable.htm>
- [17] Cronbach's Alpha Definition: http://en.wikipedia.org/wiki/Cronbach's_alpha
- [18] Michael Quim Patton(2001), Book; Qualitative Research & Evaluation Methods
- [19] Yvonna S. Lincoln, Egon G. Guba (1985), Book: Naturalistic Inquiry
- [20] Gerald R. Adams and Jay D. Schvaneveldt (1985) ,Book: Understanding Research methods

Chapter 6.1: How ISO Certified Indian organisations are being managed

- [1] What is employee relations: <http://www.lehigh.edu/~inhro/eerelat/whatis.html>
- [2] Caterina C. Bulgarella, Employee satisfaction & customer satisfaction: Is there a relationship?
http://www.guidestarco.com/professional_services/whitepaper_cs_es_relationships.pdf

Chapter 6.4: How organisations can successfully implement ISO ?

- [1] Davies, E.C. (1998), "Towards business excellence: the contribution of quality improvement tools to the development of a quality culture", Management Services, Vol. 42 No. 6, pp. 16-19.
- [2] Lee, T.Y., Leung, H.K.N, Chan, K.C.C. (1999), "Improving quality management on the basis of ISO 9000", The TQM Magazine, Vol. 11 No.2, pp.88-94.
- [3] Dawson, P. (1995), "Implementing quality management: some general lessons on managing change", Asia Pacific Journal of Quality, Vol. 4 No. 1, pp. 35-46.
- [4] Tilo Pfeifer and Robert Schmitt, Thorsten Voigt (2005), Managing change: quality-oriented design of strategic change processes, The TQM Magazine Vol. 17 No. 4, 2005, pp. 297-308
- [5] Efthalia Dimara, Dimitris Skuras and Kostas Tsekouras, Stavros Goutsos (2004), Strategic orientation and financial performance of firms implementing ISO 9000, International Journal of Quality & Reliability Management Vol. 21 No. 1, 2004, pp. 72-89
- [6] Dana M. Johnson (2004), Adaptation of organizational change models to implementation of quality standard requirements, , International Journal of Quality & Reliability Management, Vol. 21 No. 2, pp. 154-174

- [7] Jan Jonker and Stainslav Karapetrovic (2004), Systems thinking for the integration of management systems, *Business Process Management Journal*, Vol. 10, No: 6, pp. 608-615
- [8] M.D. Moreno-Luzón and F.J. Peris (1998), Strategic approaches, organizational design quality management Integration in a fit and contingency model, *International Journal of Quality Science*, Vol. 3 No. 4, pp. 328-347,
- [9] P. Aravindan ,S.R. Devadasan and V. Selladurai (1996), A focused system model for strategic quality management, *International Journal of Quality & Reliability Management*, Vol. 13 No. 8, pp. 79-96,
- [10] V.M. Rao Tummala and C.L. Tang(1996), Strategic quality management, Malcolm Baldrige and European quality awards and ISO 9000 certification Core concepts and comparative analysis, , *International Journal of Quality & Reliability Management*, Vol. 13 No. 4, pp. 8-38,
- [11] Juran on Leadership for Quality, J.M Juran ISBN: 0029166829
- [12] Juran on Quality by Design:, J.M Juran, ISBN: 0029166837
- [13] Myron Tribus, Policy Deployment, http://deming.eng.clemson.edu/pub/den/pol_dep.pdf
- [14] http://www.tutor2u.net/business/people/communication_barriers.asp
- [15] The business impact of effective employee management, a small business guide, http://www.gevityinstitute.com/library/white_papers/employee_impact.pdf
- [16] Cummings, T.G. and Worley, C.G. (1997), Organization development and change, South-Western College Publishing, Cincinnati, OH.
- [17] Dervitsiotis, K.N. (1998), “The challenge of managing organizational change: exploring the relationship of re-engineering and developing a learning organization”, *Total Quality Management*, Vol. 9 No. 1, pp. 109-22.
- [18] Gadd, K.W. and Oakland, J.S. (1996), “Chimera or culture? Business process reengineering for total quality management”, *Quality Management Journal*, Vol. 3 No. 3, pp. 20-38.
- [19] McNabb, D.E. and Sepic, F.T. (1995), “Culture, climate, and total quality management: measuring readiness for change”, *Public Productivity & Management*, Vol. 18 No. 4, pp. 369-85.
- [20] Lee, K.S. and Palmer, E. (1999), “An empirical examination of ISO 9000 registered companies in New Zealand”, *The TQM Magazine*, Vol. 10 No. 6, pp. 887-99.
- [21] Fuentes, C.M., Benavent, F.B., Moreno, M.A.E., Cruz, T.G. and del Val, M.P. (2000), “Analysis of the implementation of ISO 9000 quality assurance systems”, *Work Study*, Vol. 49 No. 6, pp. 229-41.
- [22] Kaye, M.M. and Dyason, M.D. (1998), “Harnessing human resources to achieve business excellence”, *The TQM Magazine*, Vol. 10 No. 5, pp. 387-96.
- [23] Klein, S. M. (1996) a management communication strategy for change, *Journal of Organisational Change Management*, 9(2), pp. 32–46.
- [24] Lewis, L. K. (1999). Disseminating information and soliciting input during planned organizational change: Implementers’ targets, sources and channels for communicating. *Management Communication Quarterly*, 13, 43–75.
- [25] Boxall, P. and Purcell, J. (2003) *Strategy and Human Resource Management*. Basingstoke:Palgrave.
- [26] Fox, S., & Amichai-Hamburger, Y. (2002). The power of emotional appeals in promoting organizational change programs. *Academy of Management Executive*, 15, 84–95.

- [27] Johnson, G. & Scholes, K. (2002) Exploring Corporate Strategy, 6th edn, FT/Prentice Hall, London.
- [28] Kitchen, P. J. & Daly, F. (2002), Internal communication during change management, Corporate Communications: An International Journal, 15(2), pp. 169–83.
- [29] Rogers, E. M. (1995). Diffusion of innovations (4th ed.). New York: Free Press.
- [30] Fidler, L. A., & Johnson, J. D. (1984). Communication and innovation implementation. Academy of Management Review, 9, 704–711.
- [31] Padro´n, V. (1996), “Análisis comparativo de los distintos enfoques en la gestión de la calidadtotal”, Esic Market, July-September, pp. 147-58
- [32] Clara Martínez Fuentes, Francisco Balbastre Benavent, M.A. Escriba´ Moreno, T.F. González Cruz and M. Pardo del Val(2003) ISO 9000-based quality assurance approaches and their relationship with strategic analysis International Journal of Quality & Reliability Management Vol. 20 No. 6, pp. 664-690
- [33] Clare Chow-Chua, Mark Goh and Tan Boon Wan (2003), Does ISO 9000 certification improve business performance? International Journal of Quality & Reliability Management Vol. 20 No. 8, pp. 936-953
- [34] http://en.wikipedia.org/wiki/Strategic_management
- [35] <http://www.ciras.iastate.edu/management/strategicplanning.asp>
- [36] Wim J.L. Elving (2005), The role of communication in organizational change, Corporate Communications: An International Journal, Volume: 10 Issue: 2 Page: 129 – 138
- [37] Joanna Goodman and Catherine Truss (2004), The medium and the message: communicating effectively during a major change initiative, Journal of Change Management, Vol. 4, No. 3, 217–228

Appendix

Appendix 1: Survey report on Quality Management Systems in Indian companies-----	A-I
Appendix 2: Practices of Small Scale Industries in India-An Interview Case study-----	A-29
Appendix 3: Determination of Critical activities for Model-----	A-45
Appendix 4: Survey Questionnaire -----	A-55