**A STUDY ON IMPLEMENTATION OF TQM PRACTICES IN**

**SMALL & MEDIUM ENTERPRISES (SMEs) OF NORTH KARNATAKA**

**REGION IN INDIA – SELECT CASE STUDY**

**Giridhari Tiwari 1**

*Research Scholar, KBCNMU, Jalgaon, India,* [gptiwari.mba@gmail.com](mailto:gptiwari.mba@gmail.com)

**Dr. P.T. Chaudhari 2**

*Professor, MJ College, Jalgaon, India,* [ptc.jalasri@gmail.com](mailto:ptc.jalasri@gmail.com)

**ABSTRACT**: TQM is an approach to management for an enterprise focused on quality, based on the involvement of all the employees with an intend of achieving enduring success through customer satisfaction and benefits to all stakeholders of organization. There is little research work has been carried on effect of TQM implementation in performance of small & medium enterprises in India. Literature review attract the importance of quality management practices for SMEs in order to improve their current business practices as well as quality of products and services to ensure long-term survival in increasing global competition. On the other hand, there are several constraints to successful implementation of TQM practices for example lack of awareness & training program relating to TQM, commitment by top management, customer focus, financial and human resources in SMEs. In particular, the study reveals the results of questionnaire survey of 1030 small & medium enterprises of north Karnataka region of India This research work is an extensive empirical research study on implementation of total quality management practices that examine the rationale of TQM implementation and impact on organizational performance. The present research study focused on examining TQM implementation practices that are most appropriate to the small and medium enterprises in India.

**KEY WORDS**: Total quality management, Small & medium Enterprises, Companywide quality control, Organization performance, TQM factors, Customer focus, Continuous quality improvement, Employee involvement & teamwork.

1. **INTRODUCTION**

In the early 20th century, Fredrick Winslow Taylor, the father of scientific management emphasized on quality by including product inspection and quality control process listed as the primary areas of shop floor management. In 1924, W. Shewhart introduced statistical control charts to monitor production process. World War II caused a dramatic increase in emphasis on quality control and use of statistical sampling techniques. During 1950s, quality movement evolved into quality assurance. By 1970s & 1980s, the idea of total quality started surfacing. In this approach, all the employees (from topmost level to lowest level) were supposed to take responsibility of implementing quality processes for their respective functional areas. Accordingly, methods of quality management were developed and utilized to encourage the design, production, marketing, sales & service of quality products/services. This integrated approach involves all departments in an organization in providing a quality product/service became known as total quality management. Thus, TQM is a management approach that places emphasis on continuous system improvement as a means of achieving customer satisfaction to ensure long-term success of an organization. Although many researchers have made substantial contributions to the theory & practice of quality management. The key contributors of total quality management, are regarded as quality gurus, W. Edwards Deming (1986){8}, Dr. Joseph M. Juan (1989){14} , Philip B. Crosby (1979){5}, Armand Feigenbaum (1991){9} and Kaoru Ishikawa (1985){13} in the quality revolution. They have led the development of the current set management tools within the total quality management, which have accepted significantly by the corporate throughout the world. Their contributions and propositions have provided a good understanding of the total quality management philosophy, approach, fundamental principles and tools. After analysis of their work, it was found that there are some of the similarities and few differences in the viewpoints about total quality management. A number of quality awards are given by various agencies to encourage companywide quality control systems throughout the world. There are various award models, such as the Deming’s Prize in Japan given by JUSE, the European Quality Award (EQA) in Europe conferred by the European Foundation for Quality Managment, the Malcolm Baldrige National Quality Award (MBANQA) govern by USA Government, and the Rajiv Gandhi National Quality Award (RGNQA) in India by Bureau of Indian Standards. These models help organization to stimulate and improve quality through self- assessment, and are helpful in defining TQM in a way that management can more easily understand.

1. **REVIEW OF LITERATURE**

The TQM concept is still gradually evolving concept and it has developed in different propositions by different researchers. Companies in almost all the countries across the world have adopted quality management concept & practices globally. In present scenario, companies are confident that effective implementation of quality management can gain sustainable competitive advantage and improve abilities to achieve market superiority in the marketplace. (Anderson et al.,1994) {2} Many of the research studies have concluded that the implementation of quality management practices can permit companies to compete effectively across the globe and contribute to the success of the business. Various researchers have found that the implementation of total quality management approach has led in enhanced quality, profitability, competitive position, productivity in about one fourth of the organizations who have implemented it (Benson 1993{3}{23}; Schonberger, 1994{26}) Another research study conducted by Rahman S. (2001){21} confirmed that a higher level of improvement rate in satisfaction of customers, relationship with employees, procedures of operations, and financial performance is accomplished by implementation of TQM practices. However, some of the studies have shown that negative impact on organization performance and higher failure rate while initiated TQM practices & activities in the companies (Taylor & Wright, 2003){27}. (Mahadevappa & Kotreshwar, 2004){17} indicated that Top management commitment & support play vital role in achieving high product quality and success of the implementation of TQM programs. In contrast to this research study, (Motwani Jaideep, 2001){18} revealed that no relationship exists between top level management commitment on quality and the high achievement of product quality level. Many of the researchers recommended that good and systematic product design can direct to the achievement of improved product quality (Joseph Juran, 1989){14}. However, (Motwani et al. 2001){18} found that no association be present between good product design system and product quality level is achieved. Likewise, there are conflicting researches findings have been reported in the recent research studies done on the effect of implementation of quality management practices on overall business performance in organizations located in various countries. It was exciting to find that the results of the research between the two similar kinds of replication studies conducted are considerably different. Such illusory conflicting results were reported in one of the recent study conducted by the researcher for the Indian companies with respect to effects of TQM implementation in the small & medium enterprises. Therefore, it can be said that the rate of implementation of practices of quality management and techniques in the manufacturing organizations is gradually increasing in India. Nevertheless, Yosuf et al. (2000){30} confirmed that the effectiveness of the deployment of quality management policy in manufacturing organizations is a challenging and risky job. Due to the lack of awareness and expertise knowledge, some of the principles of quality management and recent techniques have not been widely used by Indian organizations. It can be concluded that, based on the observation and quality inspection, the quality of the Indian products are at low level in comparison to the high standards of world class products produced by the TQM organizations. According to the review of existing literature, no empirical study has been scientifically conducted on the implementation of quality management practices and their effects on overall organizational performance in Indian small & medium enterprises. In accordance with bridging the research gap, a research study on the quality management factors contributing to the organization success and the impact of implementation of quality management practices in small and medium enterprises is required to stimulate organizations to increase quality efforts and find out solutions to the problem related issues raised during the implementation. Total quality management is a philosophy gradually evolved from the traditional management theories such as scientific management, management by objectives, quality circle movement, strategic management etc. After review of literature based on the total quality management era, it has been understood that much research has been conducted in the field of TQM implementation throughout world. In addition, it has been found that different researchers have defined TQM in their unique ways and its frameworks were based on their own understanding of TQM and research objectives. Total quality management is a management system for a customer driven organization that involves all employees in continuous improvement of the organization. In the late 1980s, customer satisfaction has became the definite objective of all the business organizations. At the end of 20th century, business organizations were involved in various quality management practices that later called as quality revolution. It has initiated in Japan and extended over to other countries of the world. It involves an entirely new thinking about quality and dealing with quality that cover throughout the organization. TQM can be defined as a set of techniques and procedures used to reduce or eliminate variation from a production process or service-delivery system in order to improve efficiency, reliability and quality. TQM is a philosophy that involves everyone in an organization in a continual effort to improve quality and achieve customer satisfaction. There are two key philosophies in TQM. One is a continual effort to quality improvement and other is an customer satisfaction, which involves meeting or greater than customer expectations. As per Kanji and Asher (1996){15}, TQM is a process of continuous improvement for every employee, groups of employees and organization as a whole, it focus on four principles (delighting the customer, management by fact & figures, people-orientation and continuous process improvement) and eight core concepts (customer satisfaction, employee satisfaction, process management, measurement & feedback, teamwork, recognition & reward for quality, continuous improvement and prevention better than cure). According to ISO 8402-1994, TQM is defined as a approach to management of an organization, focused on achieving quality, based on the involvement of all organizational members and intend to achieve long lasting success through customer satisfaction and benefits to all it’s stakeholders. Flynn et al. (1994){10} defined TQM as an integrated approach to management for accomplishing and sustaining high quality production, stressing on the continuous improvement of processes and defect free output from all the depart ments of the organization, in order to conform customer requirements and specifications. Hackman and Wageman (1995){12} comprehensively reviewed the philosophies TQM three quality guru’s about TQM.(i.e. W. E. Deming, Joseph Juran, and Kaoru Ishikawa). According to their assessment and analysis results, the five core concepts of TQM have been identified : recognition and dimensions of customer needs & specifications; supplier relationship management; cross-functional approach to discover and solve quality related problems; use of statistical methods & techniques to appraise performance and attempt for performance improvement; strong and increased teamwork. According to Dean and Bowen (1994){7}, TQM is defined as a philosophy of management that is characterized by its principles, practices, tools and techniques. Its three principles are customer orientation, continuous quality improvement and dedicated teamwork. Each principle is implemented through a set of tools and practices; a wide range of techniques in turn, supports these practices. Black and Porter (1996){25} have proposed ten significant factors of TQM: Internal & external customer management, supplier relationship management, Internal communication of improvement, customer satisfaction, external public relationship management, strategic management, cross functional teamwork structure, operational planning process, continuous improvement of quality, measurement & feedback system, and quality culture. According to Powell‘s (1995){19} study, various elements have been recognized for TQM framework: Top management commitment, quality philosophy consideration, customers relationship, suppliers relationship, benchmarking, quality education and training, open internal communication, employee participation and empowerment, zero-defects, flexible manufacturing system, continuous quality improvement, and measurement & feedback system. Waldman (1994){29} stated eight TQM elements such as top management commitment to set quality as a top priority, a broader definition of quality as delighting customers by meeting or exceeding customer expectations, TQM values, mission and vision statement, quality culture development, involvement and empowerment of all employees in achieving continuous quality improvements, management based on facts and figures, educating and training to improve employee skills and abilities and process benchmarking, building strong relationship with customers and suppliers in executing quality efforts. Mann R et al. (1994){16} categorized ten elements of TQM. They are supplier partnership, quality control and improvement, internal and external customer orientation, measurement and feedback, leadership style, quality management system, employee participation, recognition & reward system, and education & training of employees. However, much research has been conducted in the field of TQM implementation throughout the world, no universally accepted TQM definition presently exists. Actually, different researchers have different ideas about TQM concept and practices. However, many of the researchers and practitioners have the same opinion that TQM is a modern philosophy or approach or new way of thinking to management, which requires a set of practices mainly stressing on continuous quality improvement, customer orientation, process management system, supplier relationship management, employee involvement and teamwork. In the era of total quality management, three authors such as Saraph et al. (1989){23}, Flynn et al. (1994){10}, and Ahire et al. (1996){1}, respectively. Ahire et al. (1996){1}  have strongly suggested that a combination of their TQM frameworks be considered for conducting future research study in the field of TQM implementation. The present research study is based on case study approach to investigate implementation of TQM in some of the popular and successful medium scale enterprises in north Karnataka. Each case study is a unit of analysis. Therefore, within case analysis is performed based on data collected through structured interview, questionnaire, company’s published data and personal observation.

##### RESEARCH METHODOLOGY

##### 3.1 Main objectives of the case study are

1. To identify facilitators and constraints in TQM implementation.
2. To assess benefits of TQM in the selected enterprises.
3. To examine the similarities and differences in approaches to TQM implementation in the selected enterprises.
4. To suggest the quality improvement techniques/practices suitable to the NK region.

**3.2 Scope of the study**

The following four enterprises have been selected for case study/research to assess the similarities and differences in approach to quality improvement practices are being implemented in their enterprises for achieving benefits of the quality and to ensure the success of total quality management implementation program. The selection of the enterprises has been done based on certain criteria; TQM orientation, quality certification, product characteristics and willingness of participation of the company managers for this research study.

1. Case A - Surana Industries Ltd., Raichur
2. Case B - Janki Corporation Ltd., Ballari
3. Case C - NSL Sugars Ltd.,Aland /Sirugoppa
4. Case D – Apex Auto Ltd., Dharwad

There are different and variety of opinions regarding what research consists of, and many significant differences in actual practices as to what researcher do research study and how they do it. The purpose of research is to gather & explore knowledge. The research, and how it is carried out, is influenced by the researcher‘s point of view. There are various theoretical paradigms and perspectives of research that the researcher believes in, prepare the structure to how the researcher looks at the world and acts in it. The choice of research approach is not only dependent on the researcher‘s viewpoints, but should also be based on the type of research questions are set to get insights of the research topic. The objective to gather and explore knowledge regarding TQM implementation, by studying, examining, evaluating and explaining such implementation methodology, contains research questions of descriptive nature. Therefore, the research design chosen is based on social, non- experimental, empirical and qualitative study. A case study is a research method used when attempting to understand complexity of the problems of an organization; in essence permitting one to focus on predetermined area of the subject, which is manageable adequately and can be understood its complexities. The specific characteristic of the case study means that it focuses on a particular contingency/situation, occurrence of events or person. The case study approach is especially appropriate when researcher is trying to obtain answers of the ―Why and ―How questions of research study. As the main objective of this research was to answer some of the How ? and Why ? questions in TQM implementation practices, the case study approach was believed to be the most suitable one to use for obtaining answers for such questions. The main criterion for selecting the enterprises cases was that the enterprise should have implemented or in the process of implementing TQM and they must have obtained ISO or any other quality certification for excellence. This resulted that the selected cases have come from different contexts and no efforts was made to form a homogenous group for research study. Four enterprises were selected for the study based on the opinion sought from the key managers for their willingness to participate in the research study, the task of convincing them to participate in this research/case study was challenging and difficult. There are three different data collection methods were adopted; structured interviews, published data of the company and personal observation through industrial visits. The type of interview used in this study was in the form of structured i.e. questionnaire method while face-to-face individual interview was also conducted with the key manager, who is responsible for implementation of TQM activities in each enterprise. Two types of questionnaires were prepared for the interview. One of them was used in the interview with the key managers of the enterprise. The other questionnaire was prepared and it was to be completed by middle level managers and supervisors from various departments to elicit information and answer questions with regard to their perceptions and practices on TQM implementation, the benefits achieved and problems encountered as well as the factors that contribute to the successful implementation of total quality management. For each enterprise, five questionnaires were distributed. The key managers completed two of them and the department level manager/assistant manager, senior employee and supervisor completed the remaining three questionnaires. In total, twenty questionnaires were completed in all the four enterprise cases.

##### 3.3 Limitations of the Study

1. There are some limitations in case study as a research method. The degree of involvement of the researcher with the situations under research study, confidentiality of the data supplied by enterprise, the appropriate usage of collected data, issues of unacknowledged published data and the need to clarify what data is collected for research study and what the researcher's interpretation of data is carried out.
2. Case studies are not generally designed to examine the proper or improper handling of business related matters but to familiarize the researcher to the prevailing management situations. There are no two-business management situations are exactly same due to change in the environmental trends & other factors and these changes makes one situation different from another.
3. The personal integrity, sensitivity and possible prejudices or biases of the researcher are to be taken into consideration for analyzing the case study.
4. The present research study was limited to the four enterprises in north Karnataka region, which have either implemented or in the process of implementing quality management practices and obtained quality certification for the excellence.

##### Table 1: Case Study – Enterprise profile

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Case** | **Name of Enterprise** | **Product profile** | **Number of Employees** | **Year Started TQM** |
| A | Surana Industries Ltd., Raichur | Special & alloy steel for mechanical & automotive  Applications | 180 | 2006 |
| B | Janki Corporation Ltd., Ballari | Iron ore pellets and Sponge iron ore (Steel) | 214 | 2003 |
| C | NSL Sugars Ltd., Aland/Sirugoppa | White Sugar, Ethanol, Power and organic manure  products | 230 | 2004 |
| D | Apex Auto Ltd., Dharwad | Fabricated structures to the Earth-moving and Construction equipment  industry | 250 | 1994 |

## 3.4 Enterprise case profile & analysis

**3.4.1 Case A**

Surana Industries Limited (SIL) was established as a Public Limited Company in the year 1991. Surana Industries Limited is listed in Mumbai, National and Chennai Stock Exchanges. In the year 2004-2005 the company embarked upon an expansion program for establishing an Integrated Steel Plant. The entire expansion program was completed at a total cost of Rs.650 Cr. The company was allotted 300 acres of land by Karnataka Industrial Area development Board for this project. The company was also sanctioned water supply from the nearby Krishna River. The company has access to nearby Yermerus Railway station for getting iron ore and coal supply. Surana Industries Limited started in 2006 the ambitious project to set up an integrated steel complex (ISC) of 4,00,000 TPA capacity in KIADB Growth Centre, Raichur, the industrially backward area in Karnataka, in two phases. The phase - 1 of 2,00,000 TPA with an investment of about Rs 750 crore is commissioned & the plant is in operation. The Plant produces special & alloy steels mainly for automotive & engineering application. In addition to the steel products the plant produces sponge iron & generates 35 MW of power. SIL is currently into manufacturing of long products out of its facility at Raichur & Gummidipoondi. In its endeavor to bring economies of scale and product diversification, the Company intends to set up new facilities through a expansion plan in phases, envisaged at Raichur adjacent to the existing plant. As a part of this strategy, the Company intends to set up iron ore beneficiation & pelletization facilities of capacities 1.3 MTPA & 1.2 MTPA respectively. The company has plans to setup an integrated steel plant of one million tonne capacity in Raichur. SIL is ISO 9000-2000 certified company and received national level awards for EMS and QMS.

**3.4.2 Finding & Observations of CASE A**

It is found that the most important facilitators for the successful implementation of TQM in this company have been top management commitment and involvement, employee participation in decision making, improving quality of product, fostering teamwork, use of statistical quality control tools, training and education to employees, identifying customer needs and expectations, increasing customer focus, cooperation among functional departments, Improving internal communication, fast decision making, achieving positive image, attracting FDI, increase in productivity & efficiency. Role of the quality control department and promoting exports have less important for the successful implementation of TQM in this enterprise. Resistance to change, inadequate knowledge of TQM, improper planning and lack of quality training are the major constraints that company faced during the implementation of TQM. Long-term study & costly process, Lack of top management support, Lack of competent management, Difficulty in designing organization specific model, Inadequate resources, Lack of skilled workers have been identified as minor constraints during the implementation of TQM in this enterprise. While talking about the benefits that the enterprise has gained after implementing TQM, most of the respondents agreed that the company has achieved major benefits such as : increase in customer satisfaction, meeting delivery commitment, decrease in quality defects, decrease in work accidents, decrease in WIP inventory, increase in employee satisfaction, achieving teamwork and coordination, increase in efficiency of operations and product quality improvement, enhancement in morale & productivity. Some of the minor benefits the organization have achieved like developed new products, decrease in internal failure costs, decrease in external failure costs, decrease in appraisal costs, decrease in cost of production, increase in organization profitability, increase in sales & market share and improvement in employee safety.

**3.4.3 Case B**:

Janki Corp Limited (JCL) was originally incorporated in the year 1993 as a public limited company under the name Janki Processors Limited. It was set up for carrying out the business of a textile process house in Bhilwara, Rajasthan. Later the name of the Company was changed to Janki Corp Ltd. w.e.f. December 31, 2003. Since inception, the company has been growing by leaps and bounds and now enjoys the reputation of being one of the biggest processing houses in India. JCL is a multi divisional company having our Textile division at Bhilwara, Rajasthan and Steel division at Bellary, Karnataka. Enterprise strongly believes that each person involved directly or indirectly contributes to the success of organization. Even as the industry is enduring a period of lull, the company is striving hard to deliver. It is essential to move ahead with time and be mindful of possible threats. Our business is dynamic and the complexities are growing but I am confident that we will be able to achieve our business objectives. With the world‘s population projected to surpass 9 billion by 2050, we understand the growing need for textiles in sturdy quality. Today‘s businesses require the ability to adapt, the capacity to expand, and most importantly the culture to innovate. There is no doubt that the future of Indian Steel industry is bright. The per capita steel consumption is (in) India is significantly lower than the developed countries. We see a big shift in the demand of steel in the country. The goal-oriented approach of the team ensured the effective pursuance of the company‘s objectives. The senior management of the company is collectively responsible for implementation of the company strategy and all operational decisions. JCL believes in always creating a positive influence in the environment they operate in and improving the future of our community. In order to achieve our objectives we have a great vision for our organization.

**3.4.4 Finding & Observations of CASE B**

The facilitators for successful implementation of TQM in this enterprise are, top management commitment and involvement, employee participation, employee empowerment, improving internal communication, fast decision making process, cooperation among functional departments, achieving positive image, improving product quality, adequate quality training, use of quality tools & techniques, use of statistical methods, teamwork and coordination, increasing customer orientation, identifying customer needs & expectations, prompt response to customer complaints and increase in productivity & efficiency. Role of QC dept, promoting exports and attracting FDI are less important facilitators for this enterprise. Resistance to change, long-term study and costly process, inadequate knowledge about TQM, improper quality planning has been the major constraints for this enterprise. This organization has encountered other difficulties during the implementation of TQM such as lack of top management support, lack of competent management, designing company specific models, inadequate resources, lack of skilled workers and lack of quality training. This enterprise has achieved certain major benefits after implementation of TQM are, increase in customer satisfaction, meeting delivery commitments, decrease in quality defects, teamwork & coordination, increase in efficiency, product quality improvement, increase in organization profitability and improvement in morale and productivity. From the above table, the company has achieved some other minor benefits like decrease in work accidents, decrease in work in progress inventory, increase in employee satisfaction, developed new products, decrease in internal failure costs, decrease in external failure costs, decrease in appraisal costs, decrease in cost of production, increase in sales & market share and improvement in employee safety etc.

**3.4.5 Case C**

The NSL (Nuziveedu Seeds Limited) group is an epitome of a man and his vision. Consistent hard work and imagination have transformed his vision into an institution that has contributed significantly to Indian agricultural and rural development. Nuziveedu Seeds started its journey in 1973, as a brain child of Sri Venkata Ramaiah, in an extremely challenging environment. Nuziveedu Seeds produces high quality hybrid seeds and cotton seeds, which are the most preferred & trusted in the cotton plantation areas in India. With tremendous success in seeds business, the NSL Group has widened its reach and diversified into other agro based and allied industry verticals like Textiles, Sugars, Cotton, Power and Infra businesses by setting up units across the country. NSL Sugars Limited (NSL) is one of the most efficient integrated sugar companies in south India and a sugar arm of ‗NSL‘ group. NSL Group entered the ‗sugar‘ industry as part of their diversified interests in agro- commercial crop business. NSL Sugars Ltd was established as an associate company of NSL group in the year of 2003-04 with the vision that the real scope for economic activity lies in agro-based Industry in rural India. Today, NSL Sugars is amongst the top ten sugar companies in India with five integrated sugar complexes across Karnataka, Telangana & Maharashtra states producing sugar (27000 TCD), Cogeneration power (152MW), Distillery (280 KLPD) and organic manure products & Bio fertilizer products (300 MTPA). All plants are located in south India with proximity to air / sea ports to support refining operations during off-season. All these five integrated plants are strategically located with better cane availability prospects, higher yields & recovery rates and relatively easier regulatory environment. This would be an important value/profitability driver for the growth prospects of the company. Strong farmer relationships of the Group are another key lever in the cane development potential of the Company.

**3.4.6 Finding & Observations of CASE C**

The most important facilitators during the implementation of TQM in this enterprise were, top management commitment and involvement, employee participation, employee empowerment, improving internal communication, fast decision making process, cooperation among functional departments, achieving positive image, improving product quality, adequate quality training, use of quality tools & techniques, teamwork and coordination, increasing customer focus, identifying customer requirements and needs , prompt response to customer complaints and increase in productivity & efficiency. There are less important factors like use of statistical methods, promoting exports and attracting more foreign direct investments as facilitators for the successful implementation of TQM. The major constraints in implementing TQM in this enterprise have been identified as resistance to change, costly and long-term process study, lack of quality training, lack of skilled workers and inadequate knowledge of TQM. Other minor factors that have also acted, as barriers are lack of top management support, lack of competent management, improper planning, designing company specific model, adequate resources, employee participation in the decision-making process, employee unresponsiveness and lack of coordination between functional departments. As for as the concern of major benefits achieved as result after implementation of TQM are increase in customer satisfaction, product quality improvement, increase in productivity & efficiency, achieving teamwork & coordination, meeting delivery commitments, decrease in quality defects and work accidents, decrease in work-in- progress inventory, increase in employee satisfaction, increase in organization profitability, decrease in sales price, decrease in internal and external quality failure costs, improvement in morale & productivity, increase in quality improvement, decrease in appraisal costs and cost of production. Whereas the there were minor benefits such as increase in sales & market share and improvement in employee safety in this enterprise after implementing TQM.

##### 3.4.7 Case D

##### Apex Auto Ltd, Dharwad is the largest Indian manufacturer of finished fabricated structures to the earth-moving and construction equipment industry in India. Apex has witnessed exponential growth since its inception in 1994. The journey was started with a small team and facility in Jamshedpur dedicated to one customer – TATA- Hitachi. Today, Apex boasts of 5 facilities across India catering to the requirements of over 10 major construction equipment giants as well as metro and rail transportation companies like the Indian railways. Apex is presently manufacturing components for top selling excavators, back hoe loaders, cranes, compactors, transit mixers, underground drilling, crushing & screening equipments for the domestic and international market. Apex also caters to the structural requirements of defense, metro and rail transportation companies. It has five plants located across India in Jamshedpur, Dharwad, Bangalore and Kharagpur with a capacity to process over 40,000 tons of steel per annum and a team of over 1200 driven employees. The Apex growth story is largely on account of strong partnerships with our OEM customers and our commitment to support their growth through

* On time delivery and capabilities to ramp up during peak volumes
* Total solutions - One stop shop for all requirements
* Pan India manufacturing presence to better cater to OEMs
* Fast product development and mass production of components

**3.4.8 Finding & Observations of CASE D**

The most important facilitating factors that influenced for the successful implementation of TQM in this enterprise are top management commitment and involvement, employee participation, employee empowerment, improving internal communication, fast decision making process, cooperation among functional departments, achieving positive image, improving product quality and adequate quality training, use of quality control tools & techniques, teamwork and coordination, increasing customer focus, identifying customer requirements and needs, prompt response to customer complaints, increase in productivity & efficiency and role of the quality control department. The less important facilitators are use of statistical methods, promoting exports and attracting foreign direct investments. The major constraints of this enterprise has faced during implementing TQM are resistance to change, long-term study and costly process and inadequate knowledge about TQM. Other minor constraints hampered the enterprise during implementation of TQM were improper quality planning, lack of competent management, lack of top management support, difficulty in designing company specific models and lack of quality training. It is observed that the enterprise has achieved major benefits after implementation of TQM such as increase in customer satisfaction, meeting delivery commitments, decrease in quality defects, decrease in work accidents, decrease in work in progress inventory, increase in employee satisfaction, achieving teamwork and coordination, increase in efficiency in operation, developed new products, product quality improvement, increase in sales & market share and increase in morale & productivity. The enterprise has some other minor benefits like decrease in internal failure costs, decrease in external failure costs, decrease in appraisal costs, decrease in cost of production, increase in organization profitability and improvement in employee safety levels.

## ANALYSIS AND SUMMARY OF FINDINGS OF CASE STUDY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 2: Company-wise mean scores for facilitators to TQM** | | | | |
| **Facilitators / Case** | **A** | **B** | **C** | **D** |
| Top management commitment | 1.85 | 1.70 | 1.80 | 1.80 |
| Employee participation | 1.80 | 1.85 | 1.95 | 1.80 |
| Employee empowerment | 1.45 | 1.30 | 1.70 | 1.15 |
| Improving internal communication | 1.55 | 1.40 | 1.60 | 1.50 |
| Fast decision making | 1.25 | 1.15 | 1.10 | 1.35 |
| Cooperation among departments | 1.65 | 1.30 | 1.20 | 1.35 |
| Achieving a positive image | 1.25 | 1.65 | 1.25 | 1.90 |
| Improving product quality | 1.80 | 1.50 | 1.90 | 1.80 |
| Quality & adequate training | 1.65 | 1.30 | 1.50 | 1.60 |
| Use of quality tools & techniques | 1.90 | 1.60 | 1.25 | 1.70 |
| Use of statistical methods | 0.70 | 0.75 | 1.15 | 1.40 |
| Role of the QC department | 0.65 | 0.70 | 1.15 | 1.30 |
| Teamwork & coordination | 1.80 | 1.75 | 1.70 | 1.90 |
| Customer focus | 1.75 | 1.70 | 1.90 | 1.90 |
| Identifying customer expectations | 1.85 | 1.60 | 1.70 | 1.80 |
| Prompt response to customer complaints | 1.55 | 1.40 | 1.75 | 1.80 |
| Increasing productivity | 1.30 | 1.25 | 1.90 | 1.40 |
| Promoting exports | 0.70 | 0.90 | 0.90 | 0.70 |
| Attracting FDI | 0.25 | 0.55 | 0.40 | 0.30 |

The above table indicates that top management commitment, employee participation & empowerment, improving internal communication, fast decision making, cooperation among functional departments, achieving a positive image, improving product quality, quality & adequate training, use of quality tools & techniques, teamwork & coordination, customer focus, identifying customer expectations prompt response to customer complaints and increasing productivity are the most important facilitating factors considered for successful implementation of total quality management in all the four case enterprises. While use of statistical methods and role of quality control department are less important in case enterprises A & B but most important in the case enterprises C & D for successful implementation of total quality management practices. Promoting exports and attracting foreign direct investment are the less important factors considered for successful implementation of total quality management in all the four case enterprises. Top management commitment & support is one of the most important part of quality improvement program because it brings quality awareness throughout organization and it is essential to achieve the quality objectives of the organization. In the absence of top management support, no organization would be successful in implementing total quality management practices. Employee participation and empowerment in the decision making, effective implementation of quality circles concept, cross functional approach in problem solving, suggestion schemes, use of quality control tools and techniques are the main reasons of the success organizations in achieving step by step improvements of quality in all the case enterprises. Education and training program is integral part of the overall development of the employees and essence of effective implementation of quality improvement programs in an organization. Customer driven strategy is the most important for identifying and satisfying the customer needs & expectations and prompt response to the customer complaints is the need of the hour in all case enterprises and applicable to all the organizations who are dealing with quality improvement activities. Sound internal communication would ensure the high degree of cooperation and coordination among employees by establishing good interrelationship and thus fostering teamwork in an organization. Employee performance evaluation & feedback can serve input for understanding present level of performance and further scope of improvement in performance requirement. Use of statistical methods and role of quality control play a crucial role in successful implementation of total quality management in an organization. Attracting foreign direct investment and export promotion activities are less important in successful implementation total quality management program.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 3 :Company-wise mean scores for constraints to TQM implementation** | | | | |
| **Constraints/ Case** | **A** | **B** | **C** | **D** |
| Resistance to change | 1.25 | 1.70 | 1.80 | 1.25 |
| Long-term & costly process | 1.20 | 1.70 | 1.60 | 1.25 |
| Lack of government support | -0.70 | -0.50 | -0.40 | -0.65 |
| Lack of top management involvement | 0.60 | 0.95 | 0.25 | 0.60 |
| Lack of competent management | 0.30 | 0.75 | 0.25 | 0.80 |
| Lack of quality experts | -0.25 | -0.20 | -0.15 | -0.35 |
| Inadequate knowledge of TQM | 1.70 | 1.40 | 1.25 | 1.55 |
| Improper planning | 1.10 | 1.30 | 0.95 | 0.95 |
| Difficulty in designing specific model | 0.40 | 0.20 | 0.70 | 0.10 |
| Insufficient resources | 0.45 | 0.20 | 0.75 | -0.35 |
| Lack of adequate quality training | 1.00 | -0.20 | 1.40 | 0.15 |
| Lack of skilled workers | 0.75 | 0.35 | 1.30 | -0.35 |
| Worker participation in decision making | 0.10 | 0.10 | 0.60 | -0.60 |
| Employee unresponsiveness | -0.35 | -0.20 | -0.20 | -0.35 |
| Lack of coordination among depts. | 0.10 | -0.30 | 0.50 | 0.60 |
| Inefficient maintenance activities | -0.60 | -0.20 | 0.15 | -1.45 |
| Bad condition of machines & equipments | -0.80 | -0.30 | -0.45 | -0.70 |

Resistance to change, long term and costly process of implementation of TQM, inadequate knowledge of TQM and improper planning for TQM implementation are the most important constraints in all the case enterprises. The government support, guidance from quality experts, employee‘s unresponsiveness and attitudes, worker participation in decision-making, inefficient maintenance activities and the bad conditions of machines and equipments are the more severe problems in failure of the total quality management efforts. Lack of top management involvement and competence, difficulty in designing specific model, insufficient resources in quality improvement programs causes the main constraints in effective implementation of total quality management practices. Adequate quality training and lack of skilled workers has been observed that as important constraint in the enterprises A, B & D.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 3 : Company-wise mean scores for enterprise benefits** | | | | |
| **Benefits / Case** | **A** | **B** | **C** | **D** |
| Increase in customer satisfaction | 1.70 | 1.50 | 1.70 | 1.90 |
| Meeting delivery commitments | 1.30 | 1.35 | 1.60 | 1.85 |
| Decrease in quality defects | 1.55 | 1.25 | 1.65 | 1.40 |
| Decrease in accidents | 1.25 | 0.90 | 1.60 | 1.25 |
| Decrease in WIP inventory | 1.30 | 0.80 | 1.45 | 1.30 |
| Increase in employee satisfaction | 1.25 | 0.90 | 1.60 | 1.45 |
| Achieving teamwork & coordination | 1.75 | 1.55 | 1.65 | 1.90 |
| Increase in productivity & efficiency | 1.40 | 1.25 | 1.85 | 1.80 |
| Developing new products | 0.40 | 0.60 | -0.40 | 0.10 |
| Improvement in product quality | 1.60 | 1.60 | 1.90 | 1.25 |
| Decrease in internal failure costs | 0.70 | 0.90 | 1.25 | 0.75 |
| Decrease in external failure costs | 0.70 | 0.85 | 1.25 | 0.90 |
| Decrease in appraisal quality costs | 0.50 | 0.70 | 1.10 | 0.80 |
| Decrease in cost of production | 0.45 | 0.60 | 1.50 | 0.25 |
| Increase in profitability of organization | 0.60 | 1.25 | 1.35 | 0.25 |
| Increase in sales & market share | 0.45 | 0.80 | 0.80 | 1.20 |
| Improvement in employee safety | 0.40 | 0.70 | 0.60 | 0.80 |
| Enhancement of morale | 1.25 | 1.25 | 1.20 | 1.20 |

From above table it is revealed that increase in customer satisfaction, meting delivery commitments, decrease in quality defects, decrease in work accidents, increase in employee satisfaction, achieving teamwork and coordination, achievement in increase of productivity & efficiency in operations, product quality improvement and enhancement of morale are the important benefits experienced by all the case enterprises after the successful implementation of TQM in their organizations. Developing and generating new product have been seen as no achievement after implementing TQM in all the enterprises. Decrease in quality costs like internal failure, appraisal & external failure and cost of production has been not achieved after implementing total quality management in the case enterprises A, B and D. In all the case enterprises, except enterprise B, decrease in work-in-progress inventory has been an important benefit. Improvement in employee safety has not been achieved in the case enterprises A, B & C but in enterprise D it was an important benefit. Enterprises have conducted the survey, counted number of the customer complaints received and customer‘s direct feedback received on the customer after sales services to know the extent of customer satisfaction on regular basis. The result shows in all the case enterprises that there is an achievement of increase in customer satisfaction. Increase in profitability, sales and market share has been achieved by the enterprises B, C & D to a great extent and in the enterprise A to a little extent after implementation of total quality management practices. Majority of the respondents from all case enterprises have viewed that they have achieved increase in teamwork and coordination during implementation of TQM programs by implementing quality circle concept, clarity in their duties & responsibilities, common quality objective and cross-functional approach in problem solving etc.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 4 : Company-wise mean scores for adverse effects of TQM** | | | | |
| **Adverse Effects/ Case** | **A** | **B** | **C** | **D** |
| Decrease in efficiency in operation | -1.20 | -1.10 | -1.90 | -1.25 |
| Increase in cost of production | -0.90 | -1.20 | -1.90 | -1.20 |
| Increase in paperwork & labour | -0.30 | -0.40 | -0.70 | 0.40 |
| Decrease in sales & market Share | -1.10 | -1.45 | -1.75 | -1.50 |
| Increase in safety stocks | -1.10 | -1.30 | -1.45 | -1.50 |
| Increase in employee turnover | -0.80 | -1.10 | -1.65 | -1.35 |
| Increase in no. of employees | -0.85 | -1.05 | -1.70 | -1.20 |
| Poor morale and productivity | -1.30 | -1.25 | -1.65 | -1.55 |

In all the case enterprises, adverse effects have not been realized because of the implementation of TQM. More paper work and labour has been felt some extent as an adverse effect in enterprise D. Employees who have been interviewed in all case enterprises responded that there has been an increase in efficiency in operations, decrease in cost of production, increase in sales & market share, decrease in safety stocks, decrease in employee turnover, decrease in number of employees, high morale and productivity after the implementation of TQM. Furthermore, they have opined that organization is successfully implementing total quality management practices throughout organization and will yield excellent results in terms of profit, sales, ROI and productivity in near future.

1. **RECOMMENDATIONS FROM CASE STUDY**

Research study reveals that the majority of the small size enterprises of the north Karnataka region are still confused with the implementation of quality practices due to the lack of awareness and fear of more cost involved in the implementation of quality improvement techniques. But since from the few years, they have realized that quality can be achieved with less cost or even no additional cost rather it will have many benefits like increase in sales, cost reduction, less cost of quality, increase in future potentiality of profitability, increased ability of work force, decreased machine breakdown, reduction in process errors, strengthening in competitive position in market, increase in market share, customer satisfaction and building company image etc. Presently they are involved in the main practices which includes customer focused processes, quality inspection & control, on-job training of employees, two bin system, teamwork & employee participation, reward system and just in time techniques etc. Further research can be carried out to know how much extent the quality practices being implemented would help the small & medium enterprises of north Karnataka region. This research study have been conducted with an extensive literature review, survey and case study in select enterprises to understand about implementation of quality management practices, philosophies of quality gurus, quality management framework, dimensions/factors of TQM and quality award models in the field of TQM. The survey questionnaire was designed to identify the important facilitators and constraints in implementation of TQM and benefits achieved & adverse effects experienced because of implementation of TQM as professed by respondents from the select enterprises. The qualitative research involved interviews with key managers and data collected from the enterprises, which offered more insights concerning to the tools and techniques to implement TQM based on experiences of case study enterprises. Nevertheless, based on the result of analyzing case study regarding to the major facilitators and constraints, which have to be more focused for the successful implementation of total quality management practices in small & medium enterprises of north Karnataka region are summarized as follows:

* *Top Management Commitment & Support*

It is one of the fore most important prerequisite before implementation of TQM in all enterprises. Top management must give untiring support to achieve quality objective and dramatic continuous quality improvement and must encourage the efforts uncompromisingly in order to ensure support from all the members of organization. Top management executives should ensure proper and adequate basic resources are allocated to implement quality efforts throughout organization.

* *Long-Term Orientation and Perseverance*

TQM is a long-term-oriented process, which demands perseverance and persistence. One of the constraints in implementation of TQM for all enterprises was that TQM is a long-term process and requires a lot of patience. It is not an instant and short-range solution and it requires an extensive work and long time to realize its effects on successful TQM implementation.

* *Customer Focus*

Customer needs and specifications must be identified, well understood and then examined before designing the product & process and organization must be prepared not just to satisfy their requirements but delighting them by providing customer driven support services. Increase in customer (internal & external) satisfaction must be the main aim of the all quality efforts put by enterprise.

* *Employee Involvement & Empowerment*

Employees of all levels should involve actively and participate in the quality management process. Without the involvement of all the employees in the continuous quality improvement process the organization cannot achieve the predetermined quality goals. At the same time, employees need to be empowered by proper delegation of authority process to make decisions in specific matters. In order to to ensure employee involvement they must be encouraged to participate in the quality circles, small group activity and suggestion schemes.

* *Employee Education & Training*

In order to succeed TQM efforts, employee education & training on continuous basis is must. Employees should be imparted training in problem solving methodology, use of statistical methods, group dynamics, enhancement of specific skills and latest trends in industrial practices etc.

* *Teamwork & Coordination*

Organization must stress on fostering teamwork and achieving high degree of coordination between the employees of different functional departments instead of individual effort. Co-operation between functional departments and employees is a necessary constituent for achieving success in implementation of TQM efforts.

* *Reward and Recognition System*

Reward and recognition system in the organization will ensure high lelvel of motivation in entire organization. Appropriate performance appraisal system for assessing both individual & team performance should be established so that it will have great important effect in the implementation of TQM efforts and integrate with overall organizational effectiveness and quality training programs.

* *Internal Communication*

Internal communication is very important to build teamwork and increase the degree of coordination between employees and departments. Employees will understand the short-term & long-term goals through the sound internal communication system enabling them to discharge their duties and responsibilities in a proper way and contribute in best manner for accomplishing goals. Acceptance for change, trusting others and building self-confidence among them would become the part of the TQM culture with an effective communication system within organization.

* *Measurement of Performance & Feedback*

Measurement of individual and team performance is essential to track the progress of TQM implementation. Performance measurements of various parameters such as product quality, productivity, efficiency, profitability, waste reduction, cost of quality, customer satisfaction and employee involvement should be done on periodic basis and employees should be provided feedback on their performance as an individual and team. Suitable performance feedback system will ensure the continuous improvement in the process, product and people in the future course of time.

1. **SUMMARY & CONCLUSION**

This research has involved extensive research including reviews of literature, reports, surveys and case studies regarding SMEs and their implementation of TQM. The review of previous work indicated that there was little published literature on TQM implementation in small & medium enterprise sector in India. There were many researches dealing with the importance of TQM, its achievements and the factors responsible to its success but there were few research studies dealing with the problems encountered with TQM implementation and quality improvement practices. Thus, this research study contributes to the body of research in this aspect of TQM, which has not yet been studied in detail in the SME sector of India. The present research study contributes to the understanding and development of implementation of total quality management principles and practices in the small & medium enterprises of north Karnataka region and impact of its practices on organization performance. Based on the relevant literature review, questionnaire survey based empirical study and interviews with the key managers in the case analysis it was concluded that the implementation of Total Quality Management practices have positive impact on the performance parameters of the small & medium enterprises and it has been adopted as functional approach in a many enterprises of the north Karnataka region but still it has been observed that it has not been established as long term oriented integrated management approach in their business strategic management process as suggested by the many previous researchers. In order to achieve success in the business, customer focus, top management support and employee involvement & empowerment, cross functional approach and stress on maximizing efficiency & productivity, employee training, teamwork & coordination, continuous quality improvement and establishing a new quality culture need to be built in organizational processes and systems. The top management executives must realize the significance of total quality management philosophies and play a crucial role in leadership and commitment. Quality education & training, sound internal communication and needs satisfaction of internal customers should be emphasized to increase employee participation in decision-making and coordination between functional departments of the organization. They must pay attention to needs & expectations of in order to satisfy external customer's requirements, which is one of the most important aspect of the successful organization. All the techniques stated above are valuable considering the amount of evidence in contributing to attain high-level organizational performance after successful implementation of total quality management practices. From the case analysis and survey results it was indicated that there are two types of SMEs with and without ISO 9000 certification, one with ISO certification has specific advantageous over the non ISO certified enterprises in terms of total quality process. It is due to the practices developed and encouratged in such enterprises promote them towards effective implementation of TQM practices. Using the questionnaire survey method, analyzing case study of selected enterprises and data gathered on tangible & intangible benefits could reveal the scope of total quality management implementation in north Karnataka region and effects of TQM practices on small & medium enterprise performance. By means of TQM process in place, the enterprises shows better performance than before implement TQM. In addition, there are observations that if the degree of TQM implementation is widespread, the performance would be still improved. As a result, it can be concluded that total quality management have a direct impact on organization performance. Although some of these results may not be directly comparable, they have undoubtedly provided some indications on the extent of achievements for SMEs in their journey towards excellence. To conclude, though this research study successfully achieves the set research objectives, there is further scope of carrying out research in this area. Additional in-depth exploration needed to investigate the relationship between TQM and SMEs culture and its performance. Future research should concentrate on identifying a systematic approach towards TQM so that SMEs can sustain the changes in the new era of the global business environment. This would expect fully surface the way towards making a better understanding of TQM implementation practices and help to get better success rates of TQM implementation in the small & medium sector of north Karnataka region. For future research, the study could focus on small and medium sized enterprises (SMEs) and investigate the implementation of TQM in SMEs and compare with large scale companies. The study could focus on quality aspects and firm‘s performance in TQM and Non-TQM Small & Medium Enterprises. Future study may seek to validate the research by collecting more data across all over India. Time dimension of QM implementation may be incorporated in future study, which will indicate short term and long-term effect of QM program. Future study may take consideration influence of the external environment in order to explore how the external environment affects the style of management and QM implementation.

# REFERENCES

[1] Ahire, S.L., Golhar, D.Y. & Waller, M.A. (1996). Development and validation of TQM implementation factors. *Decision Sciences*, 27(1), 23- 56.

[2] Antony, J. (2009). Six Sigma vs TQM: some perspectives from leading practitioners and academics. *International Journal of Productivity and Performance Mgmt.*, Vol. 58, No. 3, 274–279.

[3] Benson, P.G., Saraph, J.V. & Shroeder, R.G. (1993). The effects of organizational context on quality management an empirical investigation. *Management Sciences*, 17(4) : 11071124.

[4] Black, S.E. & Porter, L.J. (1996). Identification of the Critical Factors of TQM. *Decision Sciences*, 27 (1), 1-21.

[5] Crosby, P.B., (1979). *Quality is Free*, New York : Mc Graw-Hill Publishers

[6] Dale, B. G., R. J. Boaden and D. M. Lascelles. (1994). Total quality management : an overview, *Managing quality*, Prentice Hall International, pp 3-40.

[7] Dean, J.W. and Bowen, D.E., (1994). Management theory and total quality. *Academy of Management Review,* 392-418.

[8] Deming, W. E., (1986). *Out of the Crisis*. Cambridge, MA: MIT, Center for Advanced Educational Services

[9] Feigenbaum, Armond V. (1983). *Total Quality Control (3rd edition),* New York.:

Mc Graw- Hill Publishcations

[10] Flynn, B. B., R. G. Schroeder and S. Sakakibara. (1994). A framework for quality management research and an associated measurement instrument, *Journal of Operations Management*, 11 (4), 339-366.

[11] Garvin, D.A. (1987). Competing on the Eight Dimensions of Quality, *Harvard Business Review*, Nov-Dec. 1987, 101-109.

[12] Hackman, J. R. and Wageman, R. (1995). Total quality management: Empirical, conceptual and practical issues. *Administrative Science Quarterly Journal*, Vol. 40, 309-342.

[13] Ishikawa, Kaoru., (1985). *What is total quality control? The Japanese way.* New York: Prentice Hall International publications

[14] Juan, J. M. (1989). *Juran on Leadership for Quality*, New York : Free Press Publishers

[15] Kanji, G.K. (1996). Implementation and pitfalls of total quality management, *Total Quality Management*, Vol. 7, 331–343.

[16] Kureshi, N., Mann, R., Khan, M. and Qureshi, F. (2009) .Quality management practices of SMEs in developing countries: a survey of manufacturing SMEs in India. *Journal of Quality and Technology Management,* 5(2), 63-89.

[17] Mahadevappa, B. and G. Kotreshwar. (2004). Quality Management Practices in Indian ISO 9000 Certified Companies: An Empirical Evaluation. *Total Quality Management*, Vol. 15, No.3, 295-305.

[18] Motwani, Jaideep. (2001). Measuring Critical Factor of TQM. *Measuring business excellence,* 5 (2), 27-30.

[19] Powell, Thomas C. (1995).Total Quality Management As competitive advantage : A Review and Empirical Study, *Strategic Management Journal*, 16, 15-37.

[20] Quazi, H.A & Padibjo, S.R. (1998). A journey towards total quality management through ISO 9000 certification: a study on a SMEs in Singapore, *International Journal of Quality & Reliability Management,* 15 (5), 489-508.

[21] Rahman, S. (2001). A comparative study of TQM practice and organizational performance of SMEs with and without ISO 9000 certification. *International Journal of Quality and Reliability Management*, Vol.18, No. 1, 35-49.

[22] S. B. Mallur & N.L.Hiregoudar. (2010). A survey of TQM practices in north Karnataka manufacturing small & medium enterprises (SMEs) : an empirical evaluation, *World Congress on Engineering , WCE 2010,* Vol . 3, June 30 - July 2, 2010, London U.K.

[23] Saraph, Jayant V., Benson, George P., & Schroeder, Roger G. (1989). An instrument for measuring the critical factors of quality management, *Decision Sciences*, 20, 810-829.

[24] Sarkar, B. (1990). Status of quality control in Indian industries: a survey. *Total Quality Management,*  1(1), 133-146.

[25] S. A. Black and L. J. Porter. (2008). Identification of the critical factors of TQM, *Decision Sciences,* Vol. 27, No. 1, 1-21.

[26] Schonberger, R.J. (1986). World Class Manufacturing: The lessons of simplicity applied. New York: Free Press publishers

[27]Taylor, W.A., & G.H. Wright. (2003). A longitudinal study of TQM implementation: Factors influencing success and failure, *Omega*, Vol. 31, 97-111.

[28] V. Kumar, F. Choisne, D. D. Grosbois, and U. Kumar. (2009). Impact of TQM on company‘s performance. *International Journal of Quality & Reliability Management,* Vol. 26, No. 1, 23-37.

[29] Waldman, D.A., and Gopalakrishnan, M. (1996). Operational, organizational, and human resource factors predictive of customer perceptions of service quality. *Journal of Quality Management,* 1(1), 91-108.

[30] Yusof, S.M. and Aspinwall, E. (2000). A conceptual framework for TQM implementation for SMEs. *The TQM Magazine*, Vol.12, No.1, 31-60.