

# A Study on Organisational Effectiveness as Inclusive Technology for Sustainability in Service Organizations in India

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*Abstract:* This study focusses on the literature survey and identifying the research gap to frame the objectives of the study, formulate the hypotheses and pursue the research study. In today's globalized economy; competition is becoming even more intense. Many companies are trying very hard not only to satisfy their customer's needs, but where possible, excel them. This can only be achieved through cost reduction, improvement in product performance, increased customer satisfaction and a constant effort towards world class organizations. In order for companies to survive and grow in the future, it is essential that they deliver high quality goods and services. Those that can deliver quality are the ones that will prosper in the next century (Ross, 1994) (1). Companies actually compete on three major issues; Quality, Price and Delivery. However, companies choosing the low cost approach may find themselves losing premium business to competitors while retaining the low-margin business in the long term (Victor, 1995).(2) Many companies have become aware of the need to make quality as the competitive marketing strategy in a global market. Large companies for instance, have started to implement total quality initiative in their products and services. The increasing acceptance of Total Quality Management (TQM) as a philosophy of management and a way of company life has taken place for almost three decades. Many companies understand that TQM is necessary for them to remain competitive, retaining their market share and to be able to respond to changing competitive demand in today's business world. Based on some studies (Ross, 1994,(1) Ghobahdian, (1995) (3), Ahire et al., (1996)(4), Gulbro et al., (2000)(5), not all companies are able to implement TQM successfully. This is because it requires a different implementation approach to cater for the varying needs of the industries in order for effective implementation. Software industries have been slow in adopting TQM when compared to manufacturing companies which necessitated to pursue this thesis. Their involvement has focused primarily on ISO 9000 certification, and very few had advanced beyond that (Yusof, 2000) (6). Therefore, the identification of critical success factors for successful implementation as well as the problems faced by Software Industries in implementing TQM are an important area to be understood. The value of this research is one of the primary steps towards reaching the needs of Indian Software Industries that are trying to implement TQM in their business. With a better understanding of this issues, it can be a groundwork for the development of an appropriate TQM framework for practical implementation by the Software Industries.

*Key words:* TQM, manufacturing companies, software industries, global markets

## STUDY RELATED TO TQM

Idris (1995)(7) found that one third of his respondents claimed to have TQM. This is considered quite low since the sample organizations are registered firms, which were excluded from the survey. However, a majority of TQM initiative (more than 70 per cent of TQM companies) has been only recently implemented in less than five years of adoption. Hence, TQM is obviously still very much in its infancy. What about the current quality awareness among the Software Industries? Feigenbaum (1983) stated that product and service quality can be defined as the total composite product and service characteristics of marketing, engineering, service and maintenance through which the product and service in use will meet the expectations of the

customer. Griffin (1988) defines quality as the 'totality of features and characteristics of products or services that bear on the ability to satisfy stated or implied needs'. Quality is never ending improvement of everything an organisation does. In general, quality has been defined from the following viewpoints: transcendent quality (superiority or excellence), product based quality (quality vis-à-vis price), service based quality conformance to specifications and user-based quality (fitness for intended use). User based definition is a customer focus definition of quality. Quality involves meeting or exceeding customer expectations, Quality is an ever changing state meaning, what is considered enough today may not be good enough to be considered as having quality tomorrow. However, the prominent quality gurus such as Deming, Juran and Crosby were those who

have shaped the dimensions, practices and mechanisms which underpin the concept although none of them actually uses the term (Dale et.al, 1994).(8) Quality has been variously defined as value (Abbott, 1955), conformance to specifications (Gilmore, 1974), excellence (Pirsig, 1974), conformance to requirements (Crosby, 1979), meeting and for exceeding customer’s expectations (Gronroos, 1983), fitness for use (Juran, 1986), loss avoidance (Taguchi, cited in Ross, 1989). Crosby (1980) defined quality as ‘conformance to requirement’, focusing on people and organisational factors, emphasising cultural change, training, management commitments to quality, and the ongoing calculation of quality cost. Garvin (1984,1988)(9) suggested following five co-existing definitions that emerge from certain point of views (Dahlgaard et al., 1998).(10) 1)transcendent (excellence), 2)product-based (amount of desirable attribute), 3) user based (fitness for use) (similar to Juran), 4) manufacturing- based (conformance to specification) (similar to Crosby) and 5)value-based (satisfaction relative to price) (similar to Feigenbaum). Although there are many ways to define quality, there is a worldwide acceptable definition stated in ANSI / ASQ Standard A-3 1987, where: “ quality is the totality of features and characteristics of a product or service that bear on its ability to satisfy implied or stated needs” Despite the divergence of views on what quality is, it may be summed up as “doing things properly” (Dahlgaard et al., 1998)(11) for enhancing competitiveness and profitability within the context of quality culture.

### REAL STANDARDS, NAMELY MEASURES OF DIMENSIONS

The only real standards used were measures of dimensions, weight, and quality (Ross, 1998) (12) .With further industrial advancement, came the second stage of TQM development and quality was controlled through supervised skills, written specification, measurement and standardization. Frederick W. Taylor developed his system of scientific management, which emphasized productivity at the expense of quality such as work-study. Methods of statistical quality control and the development of Shewhart’s control chart, acceptance-sampling methods by Dodge-Roming during the period 1924-1931 helped this era to prosper further from the inspection era (Dahlgaard et.al, 1998)(13). The third stage of quality evolution is an emphasis of the change from detection activities towards prevention of poor quality or defects. In this stage called Quality Assurance, it aims to provide sufficient confidence that a product or service will satisfy customers needs by performing systems audit, Failure Mode and Effect Analysis, design of experiment and similar initiatives. Most of these traditional quality control measures were designed as a defense mechanism to prevent failure or eliminate defects. The pioneers were W. Edwards Deming, Joseph M. Juran, Armand V. Feignbaum, and Philip Crosby. The present study would explore to what extent the above concepts are made use of in the context of software industry. Table shows a summary of their theories and definitions made by these experts as compared to the current ISO 9000 key elements.

### THEORY AND DEFINITION

	Crosby	Deming	Feigenbaum	Ishikawa	Juran	ISO 9000
Quality definition	Conformance To requirements	Three corners of quality: product, user, instructions for use	What the Customer says it is	Satisfactory to the customer	Fitness for use	Conformance to procedures and specifications
Philosophy	Defect Free	Constancy of purpose; Statistical Analysis	Full Customer Satisfaction At economical Cost	Company- Wide quality control	Project approach; in order of importance	Documentation defines and reflects practice
Approach	Motivate the People	Statistical techniques	Systems approach to total quality	Talk with Data	Quality trilogy; planning,	Self audit with independent review

			control		control and improvement	
Mechanics	Fourteen	Fourteen	The nine	Seven	Diagnostic	Three ISO
	Steps	obligations of	“M”s	Statistical	and remedial	9000 standards
		management		Tools	journeys	and two Guidelines

**Comparison of ISO and Quality Gurus Key Elements (Source: Richardson (1997)(15)**

Deming is best known for developing a system of statistical quality control, although his contribution goes substantially beyond those techniques (Saunders, 1995)(16). He introduces statistics as a management tool and relies on statistical process control as a means of managing variations in a process. He developed what is known as the Deming Chain reaction; as quality improves, costs will decrease and productivity will increase, resulting in more jobs, greater market share and long term survival. This study would analyse whether the software industries are taking cognizance of the findings of his study in the implementation of TQM . Juran, introduced the managerial dimensions of planning, organizing, and controlling and focused on the responsibility of management to achieve quality and the need for setting goal (Juran, 1951)(17). Juran defines quality as fitness for use in terms of design, conformance, availability, safety, and field use. Crosby (1979)(18) stresses motivation and planning and does not dwell much on statistical process control and the problem-solving techniques of Deming and Juran. Company Wide Quality Control (CWQC) means that “Quality control consists of developing, designing, producing, marketing and servicing products and services with optimum cost-effectiveness and usefulness, which customers will purchase with satisfaction. To achieve these aims, all the separate parts of a company must work together” (Ishikawa, 1989)(20)

**Comparison of software industry and manufacturing industry**

Software process is a development, rather than a production process, which is not repeated in the same way a production process is repeated. In manufacturing, the production and delivery of products is continuous and ongoing, achieving the same output every time. Software creation is basically the design and development of a unique output often customized to the needs of a single user, through a one-off process (Carroll 1995). The data collected in one particular software project may not be directly comparable to other software projects, whereas the production runs are often comparable and similar (Carroll 1996); · In manufacturing, quality is mostly about ensuring

conformance to specifications, whereas in software quality means certain novel features of the product (e.g. reliability, integrity, usability, maintainability and portability) in addition to conformance to requirements (Pralhad and Krishnan 1999).

**TOTAL QUALITY MANAGEMENT (TQM)**

The ‘total’ in Total Quality Management has four fundamental dimensions. Horizontal, vertical, intellectual and strategic. Horizontal means that it includes all the stages in the organisations activity; Vertical means it encompasses all levels of the organisation. Intellectual means that the ideology and attitude which drive the improvement process are derived from education and training programs and reflect the best managerial, behavioural and technical thinking. Finally, strategic means it makes quality leadership a strategically important goal for the organisation. Total Quality Management is systems approach that considers every interaction between the various elements of the organisation. Thus, the overall effectiveness, of the system is higher than the sum of the individual outputs from the subsystems. Total Quality Management is often described as a journey and not a destination. Besterfield (1995) (21)defined TQM as both a philosophy and a set of guiding principles that represents the foundation of a continuously improving organization. Using a three-word definition, Wilkinson and Wither (1990) defines TQM as (Ho, 1999):-

- Total : every person is involved (its customers and suppliers).
- Quality : customer requirements are met exactly.
- Management : senior executives are fully committed.

Berry (1991)defined TQM process as a total corporate focus on meeting and exceeding customer’s expectations and significantly reducing costs resulting from poor quality by adopting a new management system and corporate culture (Yusof, 1999)(22). Wolkins (1996) (23)outlined TQM as a tool to integrate fundamental management techniques, existing improvement efforts and technical tools under a disciplined approach focused on continuous improvement. All these definitions actually yield to the same conclusion that strong emphasis must be given towards

achieving excellence in organization. However, there are no solid rules on how TQM should be implemented. As Kanji (1990)(24) had described that TQM is: The way of life of an organization committed to customer satisfaction through continuous improvement. This way of life varies from organization to organization and from one country to another but has certain principles, which can be implemented to secure market share, increase profits and reduce costs. TQM calls for a cultural transformation that requires employee involvement at all levels and a spirit of teamwork among customers, suppliers, employees, and managers. Employee involvement, participation and empowerment form the cornerstones of TQM (Saylor, 1992)(25).

There are six essential TQM principles, which can be implemented to secure greater market share, increase profits and reduce cost. These six principles to guarantee success are:

**Management leadership and commitment:** Some principles and practices of TQM may differ among firms and industries, but there is unanimous agreement as to the importance of leadership by top management when implementing TQM. Leadership involves defining the need for change, creating new frameworks to mobilize commitment to those vision- frameworks for thinking about strategy, structure and people. This requires management to actively participate in quality transformation. They have to outline the quality goals, quality policies and quality plans so that employees are constantly reminded that the customer, not the product, is the top priority (Besterfield, 1995)(26).

**Continuous improvement:** Continuous improvement of all systems and processes in an organization is essential for TQM success. A continuous improvement system gears the organization toward attainment of the vision (Richardson, 1997)(27). The improvement system must not only be continuously applied, but also consistently, throughout the organization. This requires a disciplined continuous improvement system based on trust, with everyone in the organization striving to improve the system (Crosby, 1979)(28). Saylor (1992)(29) suggested a continuous system cycle that involves 5 stages. The cycle starts by defining the vision or mission of the organization. The next phase after defining their vision includes listing all improvement opportunities. For the third stage, specific improvement opportunities are selected based on the critical processes that have the greatest impact on customer satisfaction. Finally, similar to Shewhart PDCA cycle, the results for the impact of improvements are evaluated against the overall mission. In this case, a sixth stage can be added as a reminder: Do it again and again and again. The

cycle is never ending in a Kaizen system - continuous improvement system.

**Total customer satisfaction:** If TQM is aimed at anything; it is aimed at winning and keeping customers- keeping them delighted. Increasingly, manufacturing and service organizations are using customer satisfaction as the measure of quality. This fact is reflected in the Malcolm Baldrige National Quality Award, wherein customer satisfaction accounts for 300 out of the 1000 total points.

**Employee involvement:** Unlocking people potential as one of the total quality principles whereby it creates an environment in which people can readily learn, where teamwork can flourish and individuals grow in self-confidence and self-esteem. Employee involvement is a process for empowering members of an organization to make decisions and to solve problems appropriate to their levels in the organization (Richardson, 1997)(30).

**Training and education:** Training and education provide the necessary skills and knowledge- the ability to make it happen (Saylor, 1992) (31). According to Dahlggaard et.al (1994) (32) Japan, Estonia and India are reported to allocate between 65 and 80 hours per year for each educational and training activities per employee. It should be born in mind that training and education are never ending for everyone in the organization.

**Rewards and Recognition:** Rewards are generally considered to be something given for quality work such as money or other tangible things of financial value. Recognition is an act of acknowledgement that is directed at an individual's self-esteem and social needs (Richardson, 1997)(33). Lau and Idris (1999)(34) conducted a study on the soft elements needed to ensure the success of TQM implementation. They identified the major influence that bring changes in TQM tangible effect (Growth, Profitability, Quality, Market competitiveness) from the soft elements of Culture and Trust (12.5%) followed by Teamwork at 11.25%. Different authors have attempted to investigate the Critical Success Factors (CSFs) in TQM with differing purposes and objectives which are also used in this research to find out the extent of effectiveness of TQM on organisation and its growth. Saraph et al's [1989] (35) main objective was to develop an instrument to measure quality management practices. This study would focus on the extent to which the above are being practiced and utilized in Indian Software industry. Black and Porter (1996)(36) developed their factors from the Malcolm Baldrige award criteria, on the basis that it is the best established and recognized framework for measuring TQM. Tamimi and Gershon (1995) (37) developed and instrument to measure quality management practices from

Deming's 14 points s critical factors. This study would also try to develop some additional CSF to enhance effectiveness of TQM in software industry. Ahire et al (1996)(38) proposed a set of 12 implementation constructs (similar to factors) of quality management strategies derived mainly from the literature. Each of them represents a different concept. Critical factors for TQM, s proposed by Saraph et al (1989)(39), were developed because no one at that time had attempted to 'theorise' and 'formalise' TQM. This study would try to make use of these set of critical success factors (CSF) formulated by them to address the problem. Kanji and Malek (1999) (40)and Kanji and Yui (1997)(41) have developed their own set of CSFs based on Kanji's Business Excellence Model. Quazi and Padibjo (1998) (42)conducted a study in Singapore on those SMEs, which were attempting to move towards TQM through a certification route. Their objectives were to help organizations identify their respective training needs for training and consultancy support. Towards that end, they developed a survey instrument to measure quality management practices based on the Malcolm Baldrige/Singapore award criteria. 39 elements were produced from 7 critical factors. However, it could be argued that two of the factors; quality results and customer satisfaction are not appropriate. Porter and Parker (1993)(43) have similarly argued that quality results are a measure of TQM success and customer satisfaction is an implicit goal of the TQM process. Ismail, M. I. & Hashmi, M. S. J. (1997)(46) conducted a study on the implementation and implication of quality management in the Irish service industry to identify an implementation order concerning tools and techniques. Studies on identification of critical elements of TQM practice Saraph, Benson and Schroeder (1989) argued that no systematic attempt had been made in the literature to organise and synthesise the various sets of critical factors for organisations to measure TQM related performance. Saraph et. al., (1989) was the first to group critical factors for TQM and then conducted a study in the United States which led to the proposal of a list of 78 factors.

#### **STUDY AMONG WORLD CLASS SET-UPS**

A study conducted by Flynn B et al., (1995) among world class manufacturers in the US, on the impact of Quality management practices on performance and competitive advantage has suggested that top management support is critical to both infrastructure and core quality management practice. The study proposed that the customers, suppliers, top management and workforce cooperate to form an infrastructure that is supportive of the use of the core quality management practices. A study conducted by (Fisher, T. J. 1992) which retests their model using

a larger and more diverse sample, including service companies, not for-profit organisations, and government institution. This study would analyse the suggestions that visionary leadership, internal and external co-operation, learning and process management causally affect continuous improvement. Youssef and Zairi (1995) used the 22 critical factors developed by Ramirez and Loney (1993)(47) to investigate the firms in the Middle East countries to check whether the level of critical factors is applicable in different countries. The study showed that senior management role, commitment and support and education were considered critical factors in Middle East countries. This proposed study would reaffirm the findings with respect to software industries also. Thiagarajan and Zairi (1998)(48) used the 22 critical factors developed by Ramirez and Loney (1993)(49) to investigate the critical factors of TQM in Malaysian and Singapore companies and found that the senior management role and commitment were considered to be the most critical and also customer satisfaction. Whether this would be applicable to software industries in India also would be studied in this proposed study. Ahire, Golhar, and Waller (1992),(50) through a detailed analysis of the literature identified twelve constructs of integrated quality management strategies. Using a survey of 371 service firms, the constructs are then empirically tested and validated. The critical successful factors in the study include top management commitment, customer focus, supplier quality management, design quality management benchmarking, SPC usage, internal quality information usage, Employee empowerment, employee involvement, employee training, product quality ,supplier performance. Since Software Engineering Institute SEI introduced the SPI approach many organisations take initiative to accommodate those changes there is lot of success stories and critical evaluations about SPI is available in exiting literatures reported. The underling SPI problems and the organization commitment towards SPI and the awareness of maturity model to guide SPI work reaction to change and knowledge barrier." (Borjesson, 2006).(51)

#### **Concepts of Critical Success Factor**

In 1979 a well know researcher, Rockart,(52) introduced the concepts of Critical Success Factor as a phenomenon that is used to provide information to CEOs. A review of SPI literature reveal that some of the factors play crucial role in success of SPI and that these factors have great influence in implementation of the SPI (Niazi et al., 2006 (53); Dyba, 2005(54) ; Abrahamsson, 2001(55) ; Abrahamsson, 2000)(56) and (Abrahamssona, 2002) (57)etc. However, these CSFs concepts neither are well utilized nor have

much more great stand in research. The SPI is an ongoing improvement process and learning phenomena where people learn from their own mistakes. CSFs are identified only after successful implementation of SPI and after finishing certain activities (Niazi et al, 2006)(58). These research studies fail to provide sufficient theoretical and psychometric justification in terms of construction of instrument and their measurement. (Dyba, 2005)(60). The numerous studies had been conducted that investigated the critical factors which influence Software Process Improvement and its positive and negative impact on the implementation. Rainer and Hall (2001)(61) quoted Herbsleb & Goldenson and Pajerek(62) studies that; practitioners look for guidance on how to improve rather than what to improve. Brief extracts of some of the studies that suggested factors necessary for implementing a successful software process programme are given hereafter: Niazi et al. (2006)(63) present finding from the empirical study conducted of the CSFs, this include 34 SPI practitioners from 29 companies and, 5 companies is among those which have been awarded best process achievement by IEEE Computer society. The purpose of this study is to help SPI practitioners, in planning, adopting better strategy and better development of SPI implementation program. Dyba (2005)(64) presents the models from empirical investigation of key factors for success in SPI. The findings of the study reported six factors i.e. Business orientation, involved leadership, employee participation, concern for measurement, exploitation of existing knowledge and exploration of new knowledge. The main contribution of this study is to provide researchers and practitioners with important new insights regarding the critical factors for success in SPI. El-Emam et al. (1999)(65) presents re-analysis of factors that influence the success of SPI. The prior report was based on analyzed univariate and bivariate statistics methods but, their current study is based on multivariate analysis that duplicates the earlier study's results. More in depth analysis and importance about the interactions and comparisons among the factors that formulate process improvements efforts possible to succeed or fail, was considered. Stelzer and Melis (1999)(66) in their study identified ten factors that influence the organizational change in SPI initiatives based on CMM or the ISO 9000 quality standards. The study was based on analysis of experience reports and case studies of 56 software organizations that have implemented ISO 9000 CMM based process improvement initiatives. Badoo and Hall (2002) (67) studies presented empirical findings about analysis of the motivators factor that stimulate practitioners in SPI and gathered information analyzed using classic motivation theory. Rainer and Hall (2002)(68) used multi-strategy approach

for this study: firstly, combining qualitative and quantitative analysis of case studies. Secondly, comparing their case study results with previously conducted survey study results. Bechams et al (2003) study collected qualitative data from 45 focus groups discussions that involved around 200 software staff represented from 12 different software companies having experienced problems in software development. The result of different practitioners groups is represented through using correspondence analysis. The aim of the study is to provide overview of the problem faced by the practitioners and, the approach they adopt to improved the software process. The findings of the study show that there is association between the company's maturity levels and the problem reported. Practitioners who wish to implement the process improvement initiatives require a comprehensive understanding of the factors that influence the success and failure of improvement activities.(Stelzer and Melis, 1999)(69). Service quality is a multi-dimensional construct and it is perceived as the attributes of service delivery system, which pertains on the level of the satisfaction of the customer as well as the connections among the different entities of the service system which describe the service encounter (Chase and Bowen, 1991). Per se, efforts and strategies are aimed in improvement of quality of service, which mainly focus on front- and backend of the overall service operational (Yasin, et al., 2002) (70). Currently, interest in application of TQM in service industry is increasing. The service can help to improve the competitiveness of a company because of the increase satisfaction of the customers, thus, the company can gain competitive advantage, which will help to maintain edge from its competitors (Hasan and Kerr, 2003) (71). TQM is widely accepted in the service industry and setting. However, in the past few years, there are numbers of service companies in different service industries, such as healthcare, tourism and insurance which showing interests in TQM (Hasan and Kerr, 2003)(72). The said interest is because of the advantages and benefits TQM can offer to the strategic and operational aspect of the organizational performance (Augus, Krishnan and Kadir, 2000)(73). Coyle-Shapiro, Jacqueline A-M. (1996) (74) in her thesis has heralded Total Quality Management (TQM) as a new way of managing organizations. Zhang, Zhihai (75) opined that, in the field of TQM, confusion was raised worldwide with the TQM concept and the effects of TQM implementation. Hellsten, Ulrika (76) viewed that, the interest in self-assessment has increased during the last few years. Self-assessment with regards to TQM is often proposed as a tool for measuring the progress of TQM. The thesis presents the results of this research, the

Springboard, which aims at being more appropriate for small organizations than the existing quality award models. The Springboard comprises only four areas: Customer Cooperation, Leadership, Employee Commitment and Management of Processes. These areas are all derived from a set of core values of TQM. Furthermore, the Springboard puts more emphasis on continuous improvement compared to the quality award models presented in the thesis. TQM had been recognized as a source of competitive advantage in the world, particularly in the Western countries, specifically in the service sector (Dean and Bowen, 1994). Different studies, surveys and researches showed that even though TQM offer mixed results in terms of benefits and advantages, in general, TQM help to offer advantages for those organizations which implement it properly (Samson and Terziovski, 1999)(77), TQM incorporates the basic management techniques, current improvements as well as the different technical tools under a disciplined strategy (Talukder and Ghosh, 2004)(78). It also enables leaders who are willing to establish a culture wherein people can describe and define their roles and responsibility pertaining on the quality outputs towards the customers (Moghaddam and Moballeghi, 2008)(79). The concept of total quality is considered as the general viewpoint of management which goes well beyond the marketing customer-perceived view of quality by counting all vital requirements and necessities which help not just towards the perceived quality of the customer but also towards satisfaction of the customers (Price and Chen, 1993)(80). There are three alternative themes of service quality: attribute theory, customer satisfaction theory and interaction theory (Chase and Bowen, 1991)(81). In addition, it also assumes that management has a vital control over the input which defines these attributes (Hasan and Kerr, 2003) (82). The customer satisfaction theory approach pertains to service quality as the difference between the quality of service expectations and the perceptions of reality (Parasuraman, Zeithamal and Berry 1988)(83). Thus, it mainly focuses towards the points-of-view of the customers, while the attribute theory mainly focuses on the significance of the technical aspect of the production process (Hasan and Kerr, 2003)(84). Lastly, the approach of interaction theory considers service quality as the “shared experience of gain” by all participants in the service encounters (Klaus, 1985)(85). Therefore, the quality of service materializes via the experience and the need satisfaction of the customers and the employees (Hasan and Kerr, 2003)(86).

## VITAL DIMENSIONS OF SERVICE QUALITY

According to Gronroos (1978)(87) there are three vital dimensions of service quality, which include the technical quality of the result, the functional quality of the service encounter and the image of the company. On the other hand, Parasuraman, Zeithaml and Berry (1985)(88) identified 5 determinants of service quality: tangibles, reliability, responsiveness, empathy and assurance. Thus, Parasuraman Zeithaml and Berry (1988)(89) enabled to develop an instrument known as SERVQUAL which help to measure the service quality as perceived by the customers.

The study of Mehra, Hoffman and Sirias (2001) (90) showed the importance of customer focus on TQM, and stated that TQM is customer oriented. The study of Chien, Su and Su (2002) (91) shows that for those organizations that are planning to implement TQM, it is vital to focus first towards achievement of customer satisfaction. In addition, the study of Kaynak (2003) (92) suggested that there is a need to do further research in order to study more the relationship of TQM and the customer relations and satisfactions. For this reason, it is reasonable to believe that customer-focused organizations need TQM in order to improve customer focus and their overall performance (Mehra and Ranganathan, 2008)(93). On the other hand, the study of Cronin and Taylor (1992) (94) investigated the conceptualization and measurement of service quality and its connection with service quality, satisfaction of the customers as well as the purchase intentions and behaviors. Longenecker and Scazzero (1996) (95) found an interesting paradox when reviewing managerial perceptions of TQM: managers considered themselves more likely to practice TQM than their peers, yet they reported that leaders were less likely to adopt TQM principles than employees. Previous studies have paid some attention to leadership issues, but have largely ignored the role of key persons identified in the theory of innovation diffusion, namely, opinion leaders who act as change agents promoting the diffusion. According to Hartley et al. (1997)(96), Saka (2003)(97), Massey and Williams (2006)(98), there has been relatively little empirical research on the roles played by internal change agents in the process of developing and managing organizational change. Opinion leaders and change agents in the organization may be able to influence others' attitudes and behavior informally in the desired direction, although this informal guidance and leadership role is not a function of the individual's formal position or status in the system (Rogers, 2003) (99). Extensive previous research has concentrated on the status of TQM and the implementation of relevant tools in organizations

(Longbottom and Zairi, 1996)(100); Zbaracki, 1998(101); Adams and Dale, 2001(102); Chow and Lui, 2001(103); Davig et al., 2003(104); Lagrosen and Lagrosen, 2005)(105), and on its adoption and implementation and subsequent performance improvement (Weech-Maldonado et al., 1999(106); Chin et al., 2002(107); Ehigie and McAndrew, 2005(108); Rungtusanatham et al., 2005)(109). The focus has been on the organization rather than the individual. The implementation of TQM has inspired authors, like Sun (1999)(110), Yusof and Aspinwall (2000)(111), Baidoun and Zairi (2003)(112) and Prajogo and Sohal (2004)(113), who had studied TQM implementation and diffusion, as well as Boiral and Roy (2007)(114) who have studied the success of the implementation process. Quite often studies have concentrated on evaluating the TQM practices against the present situation, and based on the analyses, recommendations or better models have been presented (Terziovski et al., 1999(115). Gunasekaran, 1999)(116). Criticism against the TQM implementation practices has been addressed, because the motives behind its implementation might not be consistent, TQM is not an integral part of the companies' performance management systems (Soltani et al., 2006)(117), and implementing organizations forget the time lag before results can be expected (Sila and Ebrahimpour, 2005)(118) Despite the failures reported in research, TQM is effectively diffused across and within organizations. The diffusion of TQM has been analyzed on the country level, by Viadiu et al. (2006) (119). According to the pioneering work of Terziovski and Samson (1999)(120) on the effects of TQM and despite the long history of TQM, only little rigorous research has been conducted to establish the link between TQM practice and organizational performance, and that which has been conducted is interesting but not conclusive. There is quite extensive quality management research that has concentrated on the status of TQM and the implementation of the relevant tools in organizations (Lagrosen and Lagrosen, 2005)(121). Moreover, the adoption and performance improvement have also been studied (Ehigie and McAndrew, 2005)(122) . Quite often, however, studies have concentrated on evaluating the TQM adoption practices against the present situation, and based on the analyses, recommendations or better models have been filled this research gap with his empirical study. Nevertheless, almost ten years later Ford and Evans (2006)(123) commented that despite the potential benefits, the extent to which TQM procedures, for instance, self-assessments, actually produce improvements is unclear. The concept of total quality is considered as the general viewpoint of management which goes well beyond the marketing customer-perceived view of quality by

counting all vital requirements and necessities which help not just towards the perceived quality of the customer but also towards satisfaction of the customers Pries-Heje, J., Baskerville, R. and Hansen, G. I. (2005)(126).

**SERVQUAL Model:** This research would also theoretically find out to what extent the SERVQUAL model can be applied in the context of software industry and empirically, describe how consumers perceive service quality and whether they are satisfied with services offered by these software industry. According to Johns, (1999), a service could mean an industry, a performance, an output, an offering or a process and it is defined differently in various service industries. The differences in service industries are based on the characteristics of service which include; intangibility, heterogeneity, perishability and inseparability. Intangibility means there is no physical product, nothing to be touched, tasted, smelled or heard before being purchased and this therefore means that it is difficult for consumer to understand the nature of what they receive. An example would be a software industry offering computing services to consumers. it is very difficult to evaluate intangibility because their activities are centered on the physical products. This means that service providers must try to determine the level of intangibility of services and try to include tangible elements that could aid understanding of expectation from the consumer's perspective (Beamish & Ashford, 2007). Heterogeneity means that, difference which comes in at the level of delivery of service due the difference in human behaviour of those offering services and the consumer. This is why it is difficult to determine the quality and level of service provided since consumers and service providers are different, the same consumer could act differently with the same service provider (Beamish & Ashford, 2007). The SERVQUAL model was made of ten dimensions of service quality when created; tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding the customer, and access, Parasuraman et al., (1985) but later on these dimensions were reduced to five because some dimensions were overlapping (communication, credibility, security, competence, courtesy, understanding customers and access) and they included, Tangibles- physical facilities, equipments, and staff appearance. Reliability- ability to perform the promised service dependably and accurately; Responsiveness- willingness to help customers and provide prompt service; Assurance- knowledge and courtesy of employees and their ability to inspire trust and confidence; Empathy- caring, individual attention the firm provides its customers According to study carried out by Ladhari, (2009), it is recommended that the



SERVQUAL model is a good scale to use when measuring service quality in various specific industries but that it is appropriate to choose the most important dimensions of this model that fit to that particular service being measured in order to assure reliable and valid results. In this regard, we will use this model because it takes into account customer's expectation of a service as well as perceptions of the service which is best way to measure service quality in service sector. In this study, the researcher is more interested in service quality and customer satisfaction by using the SERVQUAL model to assess them in software industry. From their suggestion, interaction between consumer and service provider is very important when measuring service quality because through that interaction, the service provider could easily understand the consumer better and identify what he/she exactly wants, which forms the basis of TQM.

### QUALITY REVOLUTION

Sureshchander et al, (2002) state that "The veritable gains of a quality revolution come only from customer delight, which again to a very great extent depends on the customer's perceptions of overall service quality. This is why it is very imperative to understand how consumers perceive service quality and how these perceptions could affect their repurchase behaviour because through this way organisations can be able to identify whether or not gaps exist and do take corrective actions to improve upon their activities. In this way, organisations can implement appropriate quality systems which could result to customer satisfaction. Teas, (1993) developed the evaluated performance model (EP) in order to overcome some of the problems associated with the gap in conceptualization of service This model measures the gap between perceived performance and the ideal amount of a feature not customers expectation. Saravanan & Rao, (2007), outlined six critical factors that customer-perceived service quality is measured from after extensively reviewing literature and they include; (1) Human aspects of service delivery (reliability, responsiveness, assurance, empathy) (2) Core service (content, features) (3) Social responsibility (improving corporate image) (4) Systematization of service delivery (processes, procedures, systems and technology) (5) Tangibles of service (equipments, machinery, signage, employee appearance) (6) Service marketing From their study, they found out that these factors all lead to improved perceived service quality, customer satisfaction and loyalty from the customer's perspective. This study would further delve upon the same and would analyse to what extent TQM could facilitate the software industry in rendering quality services. According to the pioneering work

of Terziovski and Samson (1999) on the effects of TQM and despite the long history of TQM, only little rigorous research has been conducted to establish the link between TQM practice and organizational performance, and that which has been conducted is interesting but not conclusive. Nevertheless, Ford and Evans (2006) commented that despite the potential benefits, the extent to which TQM procedures, for instance, self-assessments, actually produce improvements is unclear. Pradip Kumar Talapatra(2007) (127) thesis is concerned with the study and statistical analysis of Total Quality Management (TQM) adoption practices within the context of Indian manufacturing firms. Despite extensive research carried out in the area of Total Quality Management (TQM) worldwide, the TQM concepts have not yet been very well adopted in developing countries like India. Ibberson(2012) (128) study examines the relationship between organisational culture and TQM implementation barriers to gain a more comprehensive understanding of the factors affecting TQM implementation. The findings of the study showed that group culture, which is believed to be an 'ideal' culture for TQM implementation helps decrease employee barriers, information barriers and customer related barriers as predicted. Kasongo Clement and others(2010) (129) in their thesis tried to identify the factors that lead to a successful TQM implementation on the operational and organizational performance of the Zambian tourism industry. Adediran Oluwatoyin & Adediran Oluseun (2008)(130) had tried to explore in their thesis, The performance of TQM Airlines and Non TQM airlines is measured comparing statistically three major performance indicator Customer satisfaction, Employee satisfaction and Operational effectiveness. Marya L. Wilson (2006)(131) in his thesis Total Quality Management (TQM) submitted to University of Wisconsin had candidly explains that, the University Centers is looking for a quality management system that will ensure the highest level of customer service while providing a process that allows for employee participation with high levels of enthusiasm by the staff. Through TQM, the University Centers will show an increase of participation in their quality management system while improving morale for quality systems and improvement through training of basic quality management systems. MadhuRanjan Kumar,(2005) (132) in his viewed that, the Indians are technically sound as engineers, as doctors, as software experts, but poor managerially and poor in teamwork, it is because the Indian organizations they work in, do not provide an all pervading professional value which can supplant their social value of power laden hierarchy, of sticking to their primordial group. His research showed that the Indian organizations should be able to morph these

socially learned values into professionally acceptable values by using interventions derived from Indian cultural mores. Naseem M. M Twaissi (2008)(133) in his thesis identified three potential impediments to the successful implementation of TQM. These impediments being; the internal cultural characteristics of organisations, the level of employee empowerment and the degree of continuous improvement that takes place. The results also indicate the critical impact that successful TQM implementation has on improving company competitiveness. James F. Wolf, Phu Van Ho, while conducting an Empirical Study (2011)(134) studied the application of TQM in the Information Systems (IS) development processes. The study describes and evaluates TQM concepts and techniques in the IS development processes and interprets sub-organizational elements in the application of TQM in the public sector. Shivaraj, B (2014)(135) states that TQM has become a frequently used term in discussions concerning quality. Vijayagiri Bikshapathi (2001) (136) stated that, the results of the study of the impact of ISO certifications on TQM practices in terms of the seven TQM Constructs; Leadership, Quality Culture, Quality System Improvement, Team-building, Employee's Participation, and Supplier Customer Relations are showing that there is strong relation between the ISO certification and TQM implementation. According to Sohail and Teo (2003)(137), some researchers like Bradley (1994) have pointed out the opinion that the ISO 9000 certification is the first step towards the implementation of TQM while some researchers still prefer to maintain focusing on TQM only.

#### SOME THESIS STUDY

Oswald S. W. Franks(138) in his thesis had clarified that TQM as a management theory is a relatively new concept within organizational theory which may raise management theory up to a new level of understanding, relevance and consciousness. Bani Ismail, Loiy (2012)(139) in his thesis expressed as follows:- 1. Further research might focus on the measurement of TQM implementation in the construction companies in the form of IT software by defining the function of each process within the project. 2. Further research may study changes occurring in the construction business process due to the adoption of the TQM system. Different measurement tools need to be investigated. 3. Further research may investigate the impact of external factors such as government rules and regulations, political relations, lack of equipment and tools in the market, and transportation delays on the TQM implementation etc. 4. Further research may focus on gender division. 5. A longitudinal research study may investigate TQM implementation in a broader sampling frame covering different cultures,

education systems and economic climates. 6. Further research may investigate the perceived importance of other systems for improvement such as continuous improvement, Six Sigma and lean construction, considering the era post TQM implementation. To the extent the scope provides, above stated points would be taken up in this research work on TQM and the organisational effectiveness in the software industry. Niels Brynnum.(140) In his doctoral thesis explains that TQM has become a frequently used term in discussions concerning quality and has brought increased demands on the organizations competitiveness thereby the customers have gained a central role in the organizations focus. Butler, John(2009)(141) in his thesis states that, implementation of TQM is made easier by a positive organisational culture. This research stops with the improvement of the soft aspects i.e. culture, following the implementation of the Excellence Through People Framework thereby leaving a scope for further research on various industries and hence, implementation of TQM in software industry is being taken for research now. K.S. Divakaran Nair (2005) (142) thesis is concerned with the study and statistical analysis of Total Quality Management (TQM) adoption practices within the context of Indian manufacturing firms.

#### CONCLUSIONS

In conclusion, a thorough review on quality and TQM has been made. Each has brought its own philosophy and practice. Deming is famous for his "14 point approach" (Deming 1986, Walton 1986); Juran, his "quality trilogy" (Juran 1988), Ishikawa, his "7 statistical tools" (Ishikawa 1985). Feigenbaum has the "nine M's" (Feigenbaum 1983) and Crosby has "Zero Defects, "14 steps" and his "quality is free" philosophy (Crosby 1979) [Tang, 1995]. Successful implementation of quality in a company requires the combined approach of standards and total quality concepts articulated by the quality gurus (Ciampa, 1992)(44). The current ISO standards are specifically internally focused and lack a customer perspective. It focused on doing the things right, not necessarily doing the right things from a customer point of view (Lamprecht, 1995)(45). Currently, interest in application of TQM in service industry is increasing. The purpose of this study is to: 1. Formulate, on the basis of existent literature, a comprehensive theory of quality management. The framework will include quality management constructs. This theoretical framework will assist quality practitioners in a number of ways such as: optimizing performance through effective resource allocation, and determining those management practices which should be emphasized or promoted in order to improve business results; 2. Develop a

structural or statistical model, on the basis of the above theory. Structural equation modeling would be employed to test the significance and strength of the postulated relationships. 3. Develop and refine measurement scales for each of the model's constructs since such scales are a prerequisite for successful model testing and estimation in the context of enhancing effectiveness of TQM in Indian software Industries. The literature review served to firstly, identify the gap in the existing body of quality management literature, and secondly, to suggest the appropriate research questions addressed by this study. Therefore, the objective of this research is essentially; to identify the general principle requirements for the implementation of TQM in software industry at Bangalore as TQM is a philosophy of organizations which improves organizational and administrative performance.

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