

Critical Success Factors of Total Quality Management

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Abstract. The past decade has seen many firms focusing on Total Quality Management (TQM) as a means of improving profits, market share and competitiveness. Although TQM is a proven approach for success in manufacturing, services and the public sector, several organizations failed in their campaigns because of many reasons like lack of top management commitment, ignoring customers etc. This paper presents a study on certain specific factors that impact the success of the TQM implementation purely based on the secondary research. The research points out that, though most organizations start TQM efforts for their success, they are frequently exposed to the factors which may cause their TQM efforts to delay or even fail. TQM is a sure bet to reverse poor performance, but when it did not yield the expected results, it was deemed a failure. The review has been done to identify the common problems that lead to the failure of TQM implementation in the organization and has pointed out the critical success factors of TQM. Nevertheless, the overall results of this research imply that the understanding of the elements that cause failure to the TQM implementation can provide needed help for companies involved in long-term continuous improvement efforts. If the advanced TQM approach is properly followed, it will help the companies to achieve organizational excellence.

1. Introduction

The concept of managing quality had evolved from individual artisans taking pride in their work to today's approach of managing organizations to achieve continuous improvement in every aspect of its operations. The key stages in this evolution are identified as the inspection approach, quality control, quality assurance and total quality management (Collin, 1996). TQM is a management philosophy which highlights the need to improve the quality of goods and services in order to better utilize the resources of organizations (Collin, 1996). TQM offers each individual the opportunity to participate, contribute and develop a sense of ownership. It is also defined as the strategic commitment to improving quality by

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combining statistical quality control method with a cultural commitment to seeking incremental improvements that increase productivity and lower costs (Stoner and Freeman, 1992). During the last couple of years, the TQM concept is a proven systematic approach to the improvements of the organization's overall business process, including product and services (Lau and Iris, 2001). TQM addresses overall organizational performance and recognizes the importance of processes along with customer-supplier interfaces, both internally and externally. For TQM to be successfully adopted by an organization there need to be a perceived need for change in that organization. In putting TQM in place, senior management must provide a vision by identifying what they want to achieve. This should be communicated throughout the organization. Appropriate planning is necessary and work force will need to undertake appropriate training in the use of the tools and techniques of TQM (Collin, 1996). Figure 1 depicts a favorable structure that shows the core principles and key imperatives in TQM.

Workshop Manual, Department of Industry, Technology and Commerce, Australia, 1992 (Collin R. 1996).

2. Research Problem

Implementation of TQM approach depends on several vital factors like the structure and culture of an organization, employee involvement, and organization communication. The effectiveness of TQM implementation involves defining and deployment of several key elements. They include both the "soft" aspects of leadership, employee empowerment culture and the "hard" aspects which include the systems, improvement tools and techniques (Thiagarajan et al. 2000). The main reason why TQM fails is because of lack of knowledge about the proper TQM implementation.

Essentially, the research problems identified are as follows:

- Lack of management commitment and management understanding on "Quality".
- Lack of awareness on the benefits of TQM implementation in the organization.
- Inadequate knowledge of TQM and improper understanding of the measurement techniques that are used to measure the effectiveness of TQM implementation.
- Lack of clarity in the guideline, implementation plan and implementation methods.
- Lack of understanding about the positive results of continuous improvement.
- Ignoring the importance of customers.

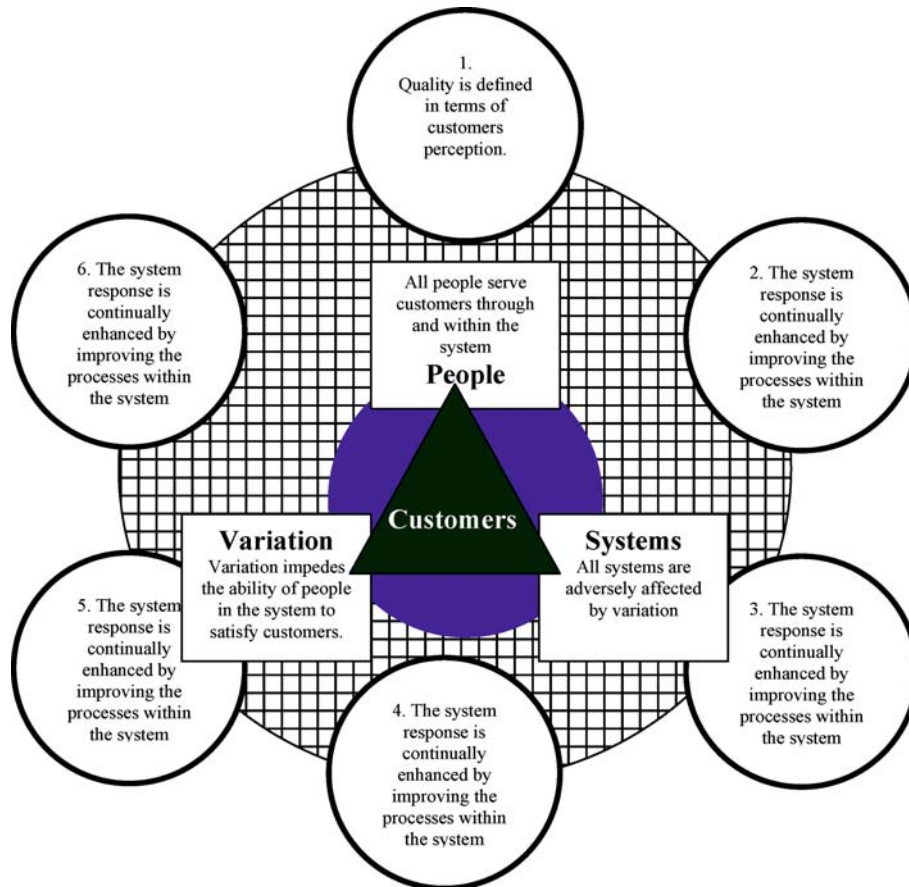


Figure 1. Core Principles and key imperatives in Total Quality Management. Source: National Industry Extension Service (NIES) Total Quality Management Vision Setting, Workshop Manual, Department of Industry, Technology and Commerce, Australia 1992 (Collin R. 1996).

3. Objectives of the Research

The objectives of the research are:

- To study how the management is able to understand "Quality" and provide full commitment to the TQM implementation activities in the organization.
- To identify the benefits of TQM implementation in an organization.
- To provide and analyze the ways to promote the TQM philosophy and on how the TQM measurement techniques can be implemented effectively.
- To explore the proper guidelines, methods and the preparation of the TQM implementation plan. To analyze how continuous improvement, a basic philosophy of TQM brings fortune to the company.
- To gauge how important customers are to the success of organization.

4. Scope of the Study

Quality has always been an important issue in the manufacture of goods and services. With the environment in which organizations operate have becoming more turbulent, organizations are increasingly concerned with obtaining a sustainable competitive edge (Collin, 1996). This study focuses on the understanding of TQM concept, the advantages and disadvantages of the TQM implementation. The study looks into the paradigm shift of the TQM concept, the impact of an effective TQM implementation and also the various TQM measurement techniques. The study also gathers the information on the guidelines and various types of implementation plans that has been established by the Quality Gurus. It also aims at identifying the importance of customers and continuous improvement.

5. Survey of Literature

To place the literature into a framework for understanding and to serve as a launch point to the current article from the previous, the survey of literature is organized into three groups namely cost and finance performance, reasons for TQM failure and benefits of effective TQM.

5.1. COST AND FINANCIAL PERFORMANCE

Sahni and Gartner (1996) reviewed cost or benefit analyses of TQM implementation. The authors highlight that TQM can be a success or failure depending on how well it is planned, implemented, measured and encouraged. They explained that continuous improvement can enable manufactures to meet the competitive pressures of the global economy. This article explores several possible ways that manufactures can use to analyze the value of investing in TQM, and presents the result of one such cost/benefit analysis. They also explained the application and assumption of the approach used. The benefits of the implementation of TQM are reductions in manufacturing costs, reductions in scrap, and reductions in overhead costs. The authors also stated the intangible benefits . One of the biggest benefit considered by the authors is the change in company culture. Secondly, with the TQM training provided, the employees are better prepared to capitalize the opportunities for improvement and prepared to solve problems in the most efficient and effective manner. The limitation of this article is that the authors only explained the management commitment briefly. They did not stress on how important management commitment is to the success of TQM program.

Hendrick and Singhal (1999a,b) conducted an analytical analysis on the financial justification of TQM. Three critical issues were addressed by the

authors in this paper. The authors discussed about TQM's ability to improve financial performance. They presented evidence on the financial results which indicated the organization's achievement after implementing TQM effectively. The financial results were measured using variables such as stock return, operating income, sales, and costs. They have also discussed how the financial results vary by organizational characteristics such as size, capital intensity, extent of diversification, and the maturity of the TQM implementation. The primary focus of this study was to examine the stock price performance of firms that have effectively implemented TQM. The authors have followed four main steps in developing the research methodology i.e., identifying a set of firms, deciding the time period, choosing performance measures and finally choosing the appropriate company for comparison. They are of the opinion that choosing a proper time period for examining the performance is the critical issues in linking TQM to financial performance. The authors concluded that firms that have an effective TQM program do better in terms of stock price performance. The limitation of this article is that the authors did not address the importance of management commitment and there are no further explanation on the application and understanding of the measurement techniques.

Laszlo (1997) discussed the role of quality cost in the TQM. He had highlighted quality cost as one of the most important tool to the success of the quality program implementation. The author further elaborated that this quality cost approach is based on the balancing of the cost of assuring quality against the cost associated with problems attributed to lack of quality. The components of the quality cost are referring to the prevention, appraisal, internal failure and external failures. The author also stated that the focus on the quality improvement is the cost avoidance through quality improvement; this will lead to the increased operation efficiencies, high customer satisfaction, and greater capacity. Effective TQM programs are based on the involvement of the employees in the organization, customers and suppliers and the management leadership to align daily priorities and activities through out the organization. The article described how the role of quality cost and the key element to the overall business success is to do the right things right. The author concluded that quality concept within the framework of TQM provides a framework to monitor and analyze the key performance indicators for the business processes that are related to quality in terms of money. In addition, the four components of quality cost are not explained in detail in this article.

Briscoe and Gryna (1997) reviewed the assessment of the cost of poor quality in a small business sector. The authors stated that the cost of poor quality is the cost that would disappear if no errors or deficiencies existed in the product provided to customers or in any activities conducted by firm. The authors had also provided the detail of the research summary

results in a systematic way. The author highlighted the two themes which forms the basis for all the companies. First is since the firms are small, many of the quality problems are handled by management; this will lead to incurred extra cost. Second is the cost of poor quality that applies but is not being captured. He also explained on the impact of quality on sales revenue. The limitation of this article is that the authors have focused only on the cost and they did not address the tools that can be used to solve the components that contribute to the cost of poor quality. One of the major elements not explained in-depth is the management commitment. The importance of an effective communication and proper planning of the TQM process were also not been addressed in this article.

Domingo (1995) discussed on the strategies in the quality management. He stated that strategies in quality management can be best described using the four categories of quality cost: external failure, internal failure, inspection or appraisal, and prevention cost. He further stated that the cost of poor quality can account for 20–30% of the sales and this is referred to the cost of not doing the right thing right at the first time. He stated external failure costs are incurred by the producer when the defective or non-conforming products is shipped out of the factory and sold to the customer. Internal failure costs are incurred when the company disposes or handles non-conforming products before they sold to the customer. The author explained the various stages of the quality management. The first stage is the “fire fighting” stage where the company receives a lot of customer complaints and product return which is due to inaccurate inspection or low yield. The second stage is the “conventional” stage whereby the product cost is high due to high internal failure. According to the author, all this can be solved if the company practices TQM. The third and ideal stage is the “total quality” stage based on the principle of everybody “doing the right thing the first time”. The limitation of this article is that the author did not state the steps for the TQM implementation; he also did not provide any examples of the companies which had successfully implemented the TQM approach.

Thiagarajan et al. (2000) presented the study in identifying quality factors for effective TQM implementation, which are critical for TQM to flourish in Malaysian industries, and the understanding of the dynamics of TQM implementation in a Malaysian context. The authors had divided the various TQM elements into few critical categories: institute leadership, maximizing internal shareholders’ involvement, and management by customer-driven processes and the adoption of continuous improvement. The authors concluded that although the “key concepts” of the framework represent most of the current philosophical understandings which underpin TQM, it is recommended that organizations complement the guidelines by continually seeking out and studying the best implementation practices.

Although the authors had addressed the implementation guidelines well, they totally neglected the importance of measurement techniques and its application towards the achievement of TQM.

5.2. REASONS FOR TQM FAILURE

Lord and Lawrence discussed on the solutions in the form of removal barriers to successful TQM implementations. The objective of this research is to get a better understanding of why the implementations of TQM in some companies fail so frequently. The elements of the TQM stated include: a focus on customers, continuous improvement of products and processes, employee involvement and management commitment to TQM. The key element of TQM is to involve everyone in the firm in the search for quality. They further stated that not only production systems but also management accounting systems should be continuously improved. Both accounting and quality control people “are likely to have analytical and statistical skills that will be useful” in performance measurement. The limitation of this article is that the authors used only two companies for the research, the data collected may not be sufficient to reflect the actual scenario of the industry. Further more the authors also did not mention about the process of effective TQM implementation.

Fowler (1999) reviewed the management accountant’s role in quality management. The purpose of this article is to determine whether the roles suggested by the literature are performed by management accountants when their firm implements quality management concept and practices. The research found that although management accountants are involved in incorporating TQM concepts into the accounting function, there has been little modification of cost determination methods and limited development and use of related performance measure. The core factors included focus on external and internal customer satisfaction and usage of statistical data and scientific procedures to solve problems and decision making, incorporating TQM into the firm’s strategic plan, empowerment, continuous process improvement and active management commitment. She further stated that the expansion of management accountant’s role will modify three areas of management accounting: Cost determination, performance measurement and implementation of TQM principles.

Youngless (2000) expressed that TQM has been both praised for its ingenuity and criticized for a lack of measurable results. But that lack of results can be due to the fact that TQM is often misunderstood. The author had briefly explained the history of TQM. He had illustrated the four ideas that are involved in the modern TQM, namely the fitness to standard, fitness to use, fitness of cost and fitness to latent requirement. He also outlined the main components that contribute to the success of

the TQM One of the good examples quoted for the improvement is the SDCA (standard, do, check, act). One of the benefits highlighted through the TQM is the standardization of work which will help to reduce the opportunity for variance thus helping to reduce the cost. He concluded that TQM is an effective system because it can be truly integrated at all levels of company. The limitation of this article is, each of the content was only mentioned briefly and not given in detail for actual application. He did not address the effectiveness of the TQM implementation and there is no case study examples provided. Beside this, the author did not explain at all on the measurement of TQM performance.

Ahire et al. (1996) presented the analysis on the comparison for the Quality management in TQM firm vs. non-TQM firms. They had classified firms into four groups: high performance TQM firms, low performance TQM firms, high performance non-TQM firms and low performance non-TQM firms. The authors had discussed and stated the major reasons that caused the failure of TQM efforts. They are: lack of management commitment, unrealistic expectations and time-frame and cost of TQM implementation, under-reliance on statistical methods, and failure to develop and sustain a quality-oriented culture. In order to do the hypothesis testing effectively, the authors had identified and developed the scaling method, using the following for the TQM implementation: top management commitment, customer focus, supplier quality management, design quality management, benchmarking, statistical process control (SPC) usage, internal quality information usage, Employee involvement, employee training and employee empowerment. On the whole, the authors did the research systematically and they concluded that the key factor to an effective quality management is, how well a firm practices the various elements of the TQM philosophy represented by the ten constructs stated above. The limitation of this study is that the author had only focused on limited aspects of quality management strategies.

Marshall-Chapman (1999) explained the approach taken by a typical American company to develop the TQM improvement plan. The author examined the policy of TQM that when things go wrong, the emphasis shifts from "who did it" to "what happened and why?" TQM looks at the process. What are the steps in the process, and at which step did the problem occur? To adopt TQM, you must establish a quality culture, with employee involvement as a key ingredient. This requires more than training employees in mechanical and statistical techniques. It means educating your work force in the new way of doing things. Some quality-enhancing ideas are amazingly simple. L.L. Bean, which sells paraphernalia for outdoors people, found that it could significantly improve the speed and accuracy of its shipping department by stocking high-volume items close to packing stations. One of the steps it took was to group its equipment in clusters of

related operations. The author did not identify the emphasis of the solution and the problems of that organization.

5.3. BENEFITS OF EFFECTIVE TQM

Dr. Fang Zhao focused on the management of inter-organization collaboration. This article illustrated main theme of the current trends of inter-organizational collaboration and explored key issues raised in running the collaborations. The author developed a theoretical framework on the advancement of TQM concepts to achieve the best performance and results in inter-organizational context. The author also explained in detail the pivotal issues confronting inter-organizational collaboration. The bigger challenges are conflict in different cultures and technological and commercial risks involved particularly in collaborative R & D, changing management and organizational structures. He concluded that TQM embodies the fundamental principles for managing collaborative partnerships and can be developed and extended to help inter-organizational collaboration to achieve the best. The limitation of this article is that the author has only briefly discussed about TQM, and he did not explain in detail how to relate the TQM activity to the inter-organizational excellence.

Lau and Idris (2001) have studied the soft foundation of the critical success factors of TQM implementation in Malaysia. The objective of the article is to investigate which of the identified soft elements (culture, trust, team work, employment continuity, education, training, top management leadership for quality and continuous improvement, employee involvement and customer satisfaction) have a significant effect on the tangible effects of TQM (growth, profitability, productivity, quality, finished product inspection, user demerit, market competitiveness, cost production inventory, delivery date, safety, human resource development, development capability and market strength). The findings from the soft foundation of the critical success factors of TQM implementation in Malaysia is useful for assisting organization in the selection and targeting of TQM soft elements to specific problems. Based on the results of analysis, the authors conclude that no single soft element could bring about significant change in all the 16 tangible effects but there is existence of relationship between identified soft elements and tangible effects of TQM. The limitation highlighted is that the organization which lacks information and data on the critical success factors is faced with obstacle in implementing TQM effectively and successfully.

Antony et al. (2002) provided an empirical study on the identification of the critical success factors (CSFs) of TQM implementation in Hong Kong industries. The authors stated through the detailed analysis of the literature, 11 success factors with 72 elements to develop a questionnaire. These

questionnaires were designed based on the company's background and CSFs. In the article the authors explained the research methodology and data collection system in detail. The authors further stated that in order to understand the relationship between the two groups of data, it is necessary to qualify the reliability of the data. Beside this, the authors had stated the strengths and the weakness clearly. The authors also stated that top management commitment was the most important success factor for US and Indian industries; whereas training and education is the most critical factor in Hong Kong industries. The weaknesses identified were lack of awareness of quality at the management level and lack of employee involvement. The limitation of this study is that the scope was limited to large organizational performance and no comparison of data was collected from the small company.

Kasul and Motwani (1995) conducted a review of the TQM in manufacturing industries. The purpose of the article is to identify critical factors and supporting performance measurements to TQM in the manufacturing environment. The authors stated that the critical role of management is to provide the leadership; and the management can support TQM implementation by allocating budget and resources, control through visibility, monitoring progress and planning for change. They further elaborated that lead time reduction is clearly based on the ability to provide quality products, at a low cost, quickly to the customer. In addition to that, the authors further stated that the implementation efforts towards TQM should be focused on the primary factor. The authors concluded that this study can be very useful to an organization attempting to identify those characteristics that may provide an opportunity to implement productivity and cost improvement. The limitation of this model requires a long term perspective and people always resist to change, so it is very difficult to implement at the initial stage. The article also lacks explanation on the importance of proper planning and the step of TQM implementation.

Ho and Fung (1994) examines on the special features about TQM and develops an excellent model based on some proven approaches adopted by the Japanese. The aims of this article is to identify the strengths and weakness of TQM, the logical steps toward TQM, and to develop a model so that firms aiming at using TQM can achieve excellence easily. One of key components stated is 5S, the second component is marketing, production and purchasing control which are more concerned with the effectiveness rather than efficiency. The third one is Quality control concepts (QCC), and the last component is the total productive maintenance, which involves everyone from the top management to the shop floor workers and promoting productive maintenance through morale-building management. The author used the LETQMEX Model for summarizing the overall analysis of the improvement which provides the step-by-step improvement opportunity

for firms which are committed to satisfy customers in a better way through TQM. The limitation of this article is that the authors did not address on the benefits of this improvement model from the financial perspective.

Wood (2001) conducted a review on the TQM in one of the industry leader – Motorola. The author had defined the TQM as the process of engaging all the members of an organization in an attempt to continuously enhance product or service quality to attain customer satisfaction. She also criticized that TQM focuses on internal processes and neglected the external results. One obvious benefit that was highlighted by the author was lower costs. This quality costs are associated to internal failure, external failure, appraisal costs and prevention costs. The author also explained the measurement techniques used to measure the TQM result. She concluded that many of the criticisms associated with TQM were the result of improper implementation. The limitation of this article is that the author did not provide any evidence on the success story of the TQM implementation in Motorola. Beside this there was no quantitative data and real example provided. The author also did not address the importance of an effective communication in the implementation of TQM.

Thiagarajan and Zairi (1998) presented an analysis of the critical factors for effective TQM implementation and examined which approach used were more appropriate. The two types of the approaches explained by the author in this article are descriptive and normative approach. The criteria for this study had been divided into critical, important and minor factors. The authors further explained the data analysis concept in detail. He stated that the result of the investigation suggest that there are 22 critical quality factors. Additional to his explanation, the 22 critical quality factors had been divided into three-tier structures. He had also stated in detail the list of the critical quality factors that shares the values covered by key principles espoused by the Baldrige award. The author recommended a self-assessment tool using total quality factors which will be very useful to assess the TQM implementation within the organization. This also can be used for the benchmarking purposes. The limitation of the article is that the author did not mention about the impact on the tangible cost; majority of the discussion is on the intangible cost.

March's (1998) study represents one of few attempts to estimate realistically the long-term effects of implementing effective TQM programs. The author represents one of few attempts to estimate realistically the long-term effects of implementing effective TQM programs. Their work shows that the link between quality and financial performance is strong. He also indicates that, despite negative publicity to the contrary, TQM does indeed pay-off over the long term. The study shows that quality award winners experienced increased income, sales and total assets during their respective

post-implementation periods as compared with their controls. The study shows that quality award winners experienced increased income, sales and total assets during their respective post-implementation periods as compared with their controls. Taran March did not mention about the possible problems that might arise due to implementing TQM in an organization.

6. Research Methodology

Research methodology is very important as it can guide researchers to identify the steps required to meet the objective of the study. The research was carried out by using the secondary data. The information and data of the research paper were gathered from various sources. The sources of the secondary data includes journals and articles published in magazines, the Internet Websites which includes Emerald-library, International Journal of Quality, Medical Device and Diagnostic Industry Magazine, The TQM Magazine, International Journal of Quality and Reliability Management and Advanced Manufacturing Magazine. One of the best tools used is the internet search engine, such as Goggle, AltaVista, AOL and MSN Search. This method was chosen due to the advantage of offering an excellent access to locate the relevant on-line articles very quickly. Several related books were referred from various libraries. The research framework is developed in Figure 2.

7. Discussion, Analysis and Findings

7.1. THE IMPORTANCE OF MANAGEMENT COMMITMENT AND MANAGEMENT UNDERSTANDING ON QUALITY

The transformation into a TQM organization always depends on the extent to which the firms had successfully implemented quality management practices. The top management has to play a special role to improve the organization's quality performance from the existing level. All type of the organizations, including schools, manufacturing companies, service industries, health care organizations and public organizations, experience low employee participation and interest in their TQM programs mainly because management commitment is not present in any of the departments. This will be quite true if the management is unable to show the commitment towards the TQM activity. Management commitment to the process of continuous improvement, a dedication to empowering people to change, and a periodical desire to raise goals for improvement are seen as the most critical human developmental needs (Kasul and Motwani, 1995). Four major areas where management can show their support on the TQM implementations are as follows:

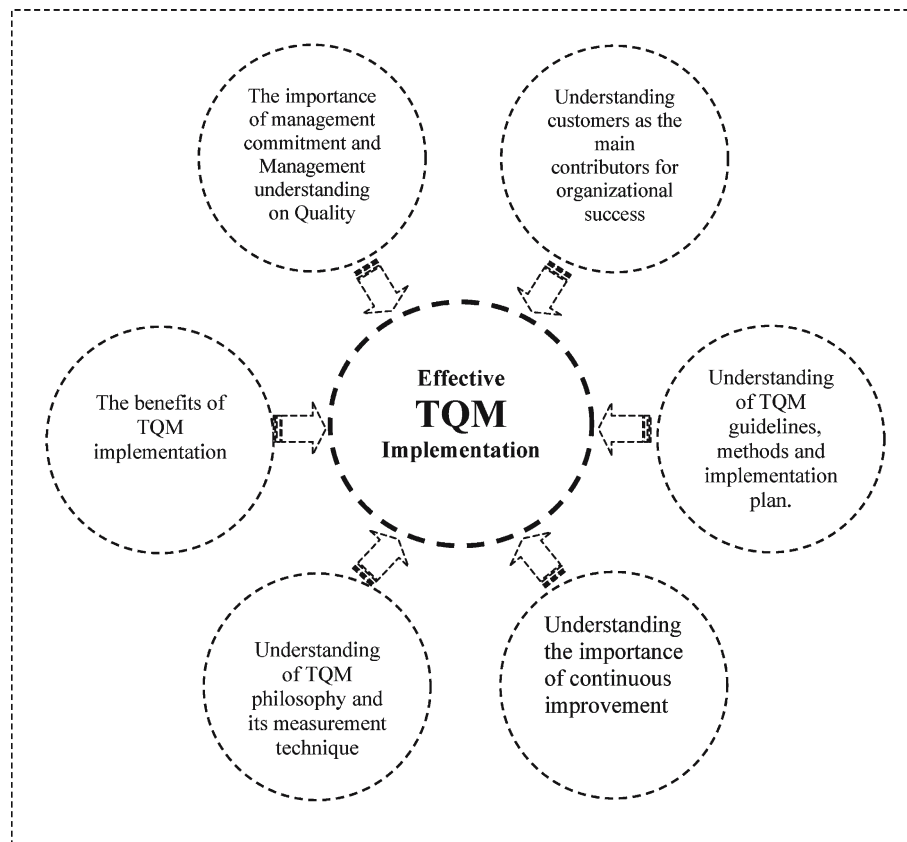


Figure 2. The research frame work is developed in figure 2. Discussion, Analysis and Findings.

7.1.1. Allocation of budgets and resources

The allocation of budget for the employee to go for retraining is always the first step in TQM implementation. The retraining program is needed to carry out throughout the company. The training programs normally include all the QC tools, statistical process control (SPC), quality control, and problem-solving techniques.

7.1.2. Control through visibility

Visual management is considered a major aspect of TQM. This concept involves displaying all the data at the workstation. Examples include SPC data, and equipment preventive maintenance data. Management can show their commitment by attending to the particular machine for the data needed.

7.1.3. *Monitoring progress*

Monitoring the success of TQM implementation might include counting the number of workstations or quality circles that are empowered to implement. The focus should be on the long-term improvement. This includes the development of employee attitude and skills for implementing changes, and it is considered as the cultural change. The management needs to show their involvement by continuously following the progress. The number of team formation and employees trained in the new techniques are the important measures the management can monitor.

7.1.4. *Organizational change*

Beside that, the management also needs to focus on transferring management support to the lower level employees. The successful TQM implementation may require the roles and knowledge not found in the old organization. The understanding of quality concept is very important. Quality must be treated like any other major managerial function, with a clear line of responsibility and command running up to an accountable individual at the top of the management. Reviewing Quality Improvement is another method of showing management commitment. Some of the poor management commitment which are commonly highlighted by some of the management gurus are lack of quality policy, or improper enforcement of the quality policy; Management have no knowledge about the actual cost incurred in doing wrong things. Lack of quality standards, poor documentation about procedures and systems, measurement of quality and poor organizational resources are some of the common elements showing poor management commitment. Since many TQM programs fail due to lack of commitment, the implication is that, management should identify how they will address each of these four key areas before they start. With this, we can conclude management commitment as the first step which is most important for the success of TQM implementation.

7.2. THE BENEFITS OF TQM IMPLEMENTATION

Whenever an organization is implementing any new concept it would like to have a return on investment. Due to this, it is very important for an organization to know the advantages and benefits of TQM implementation. With a proper understanding, the employees can accept the changes required openly. Some of the major benefits of TQM are as follows.

7.2.1. *Reduced operating cost*

Manufacturing a quality product, providing a quality service, or doing a quality job with a high degree of customer satisfaction is alone not enough. The cost of achieving this goal must be carefully managed, so that the long term effect of quality costs on the business or organization is the desirable one. (J. Oakland, 1993) Quality cost is the quantification in terms of money of the various aspects of quality as it relates to the organization. The quality cost approach demonstrates quality as a valuable perspective that can be utilized within the organization to measure, analyze and improve operational efficiency. The examples of the internal failure costs are waste, scrap, rework, re-inspection and failure analysis. External failure costs are the costs that occur when products or services fail to reach design quality standards, but are not detected until they are transferred to the customers. This refers to repair and servicing, warranty claims, complaints, returns, liability and loss of goodwill. (Oakland, 1993) With reduction in all these type of errors and wastages, it will lead to a better productivity and the company profit will also be increased. Quality cost is considered to be a very effective tool to monitor the financial functions of TQM.

7.2.2. *Improved employee involvement*

By practicing TQM, teamwork is improved and employees are motivated and encouraged to control, manage and improve the processes which are within their responsibility.

7.2.3. *Improve company morale*

No organization can succeed without a certain level of commitment and effort from its members (Stoner and Freeman, 1992). Even though the management can do much to design a high performance workplace, the day-to-day management activities which include how employees are selected and developed, how they are motivated at work, and how their performance is evaluated can have a major impact on the success or failure of total quality effort in an organization (Evan and Lindsay, 2002). The empowerment of employees through the use of teamwork, education and by giving people responsibility for the control over the quality of their work will also cultivate a friendly and happy working environment. Indirectly this will improve the morale of the employees, reduce the cost of poor quality and lead to the increase in productivity.

7.2.4. *Establishing a process of continuous improvement and business process Reengineering*

The journey toward excellence is a never-ending road. Some people, because they see no end to their road, never take the first step. Others accept the challenge of the new day and continue down the road, forever improving, and looking forward to tomorrow's challenge (Harrington, 1987). The tools of TQM, provides an environment conducive to improve performance of employees and management alike. It provides focus on aspect of the business that is normally addressed only when it is out of control. TQM is a good management practice which when followed, will change the management characteristics and personality of an organization.

7.3. THE UNDERSTANDING OF TQM PHILOSOPHY AND ITS MEASUREMENT TECHNIQUES

Total Quality Management is far more than shifting the responsibility of detection of problems from the customer to the producer. It is essentially a way of planning, organizing and understanding of each activity, and depends on each individual at each level. The approach must focus on developing a problem-prevention mentality (Oakland, 1993). The central focus of the total quality management approach is the customers, whose expectations must be satisfied by organization seeking to supply them with goods and services. The appropriate TQM philosophy finds its origin in an essentially prior act: the identification or creation of a vision for an organization. Identifying, formulating, specifying and communicating a vision for an organization is very essential. To achieve the desired effect, the organization's vision and TQM philosophy must offer goal, direction and significance. It must define "Quality", allow for specific guidance, and provide a basis for motivating people to appropriate action (Groth, 1995). In the new business environment, companies need to take a more flexible approach to performance measurement within the firm. They should include both financial and non-financial measures and incorporate, into their performance measurement systems, the key factors of quality, customer satisfaction and the productivity. To have an effective TQM implementation, organization must ensure that data are valid and reliable. They measure what they are supposed to consistently, and employees should have access to the data that are needed to carry out the tasks. Beside that, effective analysis capabilities ensure that manager can understand the meaning of data, particularly cause and effect linkages between external lagging results and internal leading indicators for further action. (J Evans and Lindsay, 2002)

7.4. UNDERSTANDING OF TQM GUIDELINE, METHODS AND IMPLEMENTATION PLAN

Successful implementation of TQM on all the projects can be achieved through persistence; positive, hands-on leadership; upfront preparation and continuous maintenance of a sensible plan. The 10 basic steps in the implementation of TQM projects can be identified as follows (Oakland, 1993):

1. Gain commitment to change through the organization of the top management. – This is crucial to success.
2. Develop a shared ‘mission’ or vision of the business or of what change is required. Generate awareness, educate project staff and change attitude.
3. Define the measurable objectives, which must be agreed by the team, as being the quantifiable indicators of success in term of the mission.
4. Develop and document approach to TQM of projects, but do not degenerate into paper bureaucracy.
5. Develop the mission onto its critical success factors (CSFs) to coerce and move it forward.
6. Breakdown the critical success factors into the key or critical process and gain process ownership. Prepare project quality plans for all levels of work.
7. Breakdown the critical success factors into sub-processes, activities and tasks and form improvement teams around these.
8. Monitor and adjust the process alignment in response to difficulties in the change process.
9. Promote staff participation and contribution by quality control circles and initiate motivation program. Communicate all the activities and their progress and result to the related team members and management.
10. Review quality plans and measure performance.

Without a strategy to implement TQM through systems, capability and control, the expended effort will lead to frustration of employee and lead to the failure of the TQM implementation. It is necessary for all project staff to be educated in TQM before the approach initiated or project quality plans are to be implemented. It is very important to understand that making quality happen requires not only commitment but competence in the mechanics of TQM. As a manager they must understand and view ‘Quality’ as the never ending journey. Implementation of TQM takes time as well as effort, and organizations must not regard TQM approaches as quick fixes.

7.5. UNDERSTANDING THE IMPORTANCE OF CONTINUOUS IMPROVEMENT

The world where we live is not a stable one and the successful disciplines and ideas of yesterday will not suit the present needs. Continuous improvement should form the basis of every management approach. The organizations should believe that the strategy of making progress is on the basis of sudden and dramatic improvements in technology and management techniques. Eventually old technology had to be replaced by new technology. This improvement activity is basically an innovation. In Japan, any new technologies adopted on shop floors were continuously upgraded, resulting in rapid advancement. Hence their morale, productivity and quality went up along with the cost reduction. Moreover when new technologies were introduced, the changeover was very smooth.

7.6. UNDERSTANDING THE IMPORTANCE OF CUSTOMERS

Customers have become much more knowledgeable and selective while making their purchasing decisions. They are buying a total solution which goes beyond the mere quality of product or service. It is important to know that by the time a company is recognized as one of the leaders in satisfying customer needs, the whole culture of the company is directed towards a steady and continuous improvement of total quality. Customer's satisfaction is a legitimate management target. In all enterprises, customer satisfaction is the key to earn profit. The organizations must provide value to the customer so that they are satisfied and want to do business with them. It is not enough to sell to a customer one time; they need to repeat business for a long run. This is because unhappy and dissatisfied customers will turn to our competitors or find alternative products or service that fill their needs. To be competitive in today's marketplace, we clearly need to understand customers' expectations and must be capable of providing products and services on target the first time, every time. (Jackson and Frigon, 1998) TQM will help the company to increase customer satisfaction with the various measures taken; indirectly it will ensure that the company is always at the competitive edge.

8. Conclusion

In contrast to the anecdotal and perceptual evidence that have been used by many experts to pass judgment on whether TQM is valuable or not, the review presented in this paper provides a more detailed explanation on the limitation of TQM implementation. From the review, we can conclude that firms that want to implement TQM effectively must have patience because TQM takes a long time to implement, and requires major changes

in cultural aspects as well as employee mindset in an organization. Beside that, the real results of it can only be seen in long run. From the various researches conducted by different quality 'gurus', normally after an effective TQM implementation, it still takes a number of years before financial performance improves. Firms should be realistic about what to expect from TQM. We must always keep in mind that TQM is only a philosophy or foundation to develop a good management system. A management system based on TQM can only improve the probability of making the right decisions; it cannot assure that all the decisions made are right. If TQM is implemented properly, it can be a very powerful vehicle by which the organization can achieve excellence in business performance. As such, TQM framework and its key principles should not be answerable for its failure. Majority of it was due to the insufficient understanding of what TQM means for each of the unique organization and how to implement it effectively. In this paper, several critical issues have been identified and some basic explanation has been provided which may improve the possibility for successful implementation of TQM. From them we have identified six critical issues namely: (a) The importance of management commitment and management understanding of Quality. (b) Understanding of TQM guidelines, methods and implementation plan. (c) The benefits of TQM implementation. (d) Understanding of TQM philosophy and its measurement techniques. (e) Understanding that customers are key to the organizational success. (f) Understanding the importance of continuous improvement and incorporating it into the system. Further more, the success of TQM depends on many type of variables, it can be controllable or uncontrollable, whereby majority of it have a direct relationship to the company's culture, customers, capability, and infrastructure. Therefore, each company should tailor its own approach to develop its distinctive strengths and focus on the specific weaknesses.

References

- Ahire, S. L., Waller, M. A. & Golhar, D. Y. (1996). Quality management in TQM versus non-TQM firms: an empirical investigation. *International Journal of Quality* 13(8): 8–27. URL: <http://pippo.emerald-library.com/vl=32920236/cl=25/nw=1/rpsv/~1079/v13n8/s1/p8>
- Antony, J., Leung, K., Knowles, G. & Gosh, S. (2002). Critical success factors of TQM implementation in Hong Kong industries. *International Journal of Quality and Reliability Management* 19(5): 551–566. URL: <http://elvira.emeraldinsight.com/vl=537775/cl=17/nw=1/fm=html/rpsv/cw/mcb/0265671x/v19n5/s4/p551>
- Bank, J. (1992). *Cutting the Cost of Quality, The Essence of Total Quality Management*. Hertfordshire: Prentice Hall International (UK) Ltd.
- Biscoe, N. R. & Gryna, F. M. (1997). *Assessing the Cost of Poor Quality in a Small Business*. Knowledge Park. URL: http://www.qimpro.com/KnowledgePark/articles/Assessing_Cost_of_Poor_Quality_in_a_

- Collins, R. (1996). *Total Quality Management, Effective Management*. New Zealand: C.C.H. International.
- DeFeo, J. A. (2001). *The Tips of the Iceberg, The Quality Progress*, 30–37. URL: <http://www.juran.com/research/articles/Tip%20of%20Icebergarticle.pdf>
- Domingo, R. T. (1995). *Strategies in Quality Management*. RTDONLINE.COM URL: <http://www.rtdonline.cm/art56.html>
- Evan, J. R. & Lindsay, W. M. (2002). *Performance Measurement and Strategic Information Management, Human Resources Practices, The Management and Control of Quality*. Ohio: South-Western.
- Fowler, C. J. (1996). TQM in NZ: what impact?, *Australia Accountant* December: 53–54.
- Fowler, C. J. (1999). The management accountant's role in quality management: a Queensland perspective. *International Journal of Applied Quality Management*. 2(1): 41–57.
- Groth, J. C. (1995). Total Quality management: perspectives for leaders. *The TQM Magazine* 7(3): 54–59.
- Harrington, J. (1987). *The Improvement Process*. Singapore McGraw-Hill.
- Hendrick, K. B. & Singhal, V. R. (1999a). *The Financial Justification of TQM*. Cambridge: The Center for Quality Management Journal. URL: <http://www.cqmextra.cqm.org/cqm-journal.nsf/reprint/rp09600>
- Hendrick, K. B. & Singhal, V. R. (1999b). New research proves that TQM is alive and well: the link between Total Quality Management and financial performance. *Advanced Manufacturing Magazine*. URL: <http://www.advancedmanufacturing.com/October99/quality.html>
- Ho, S. K. M. & Fung, C. K. H. (1994). Developing a TQM Excellence Model. *The TQM Magazine* 6(6): 24–30. URL: <http://lucia.emerald-library.com/vl=47720610/cl=24/fm=html/nw=1/rpsv/cw/mcb/0954478x/v6n6/s5/p24>
- Jackson, H. K. & Jr., Frigon N. L. (1998). *A Practical Guide to Capacity Management, Fulfilling Customer Needs*. New York: John Wiley & Sons Inc.
- Kasul, R. A. & Motwani, J. G. (1995). Total quality management in manufacturing: thematic factor assessment. *International Journal of Quality & Reliability Management* 12(3): 57–76. URL: <http://dandini.emerald-library.com/vl=83866744/cl=14/fm=html/nw=1/rpsv/cw/mcb/0265671x/v12n3/s5/p57>
- Laszlo, G. P. (1997). The role of quality cost in TQM. *The TQM Magazine* 9(6): 410–413. URL: <http://dandini.emerald-library.com/vl=83866744/cl=14/fm=html/nw=1/rpsv/cw/mcb/0954478x/v9n6/s5/p410>
- Lau, H. G. & Idris, M. A. (2001). *The Soft Foundation of the Critical Success Factors on TQM Implementation in Malaysia*. *The TQM Magazine* 13(1): 51–60 URL: <http://www.emerald-library.com/ft>
- Lord, B. R. & Lawrence, S. *TQM Implementation: A case study of MQT*. New Zealand: Department of Accountancy, Finance and Information Systems, University of Canterbury and University of Waikato. URL: <http://www.commerce.adelaide.edu.au/apira/papers/Lord33.pdf>
- Oakland, J. S. (1993). *Implementation of TQM and Management of Change, Total Quality Management: The Route to Improving Performance* Jordan Hill, Oxford: Butterworth-Heinemann Ltd.
- Oakland, J. (2000). *From Quality to Excellence*. Leeds: European Center of Business Excellence. URL: <http://www.dti.gov.uk/quality>
- Sahni, A. & Gaetner, C. (1996). Quality: conducting cost/benefits analyses of implementing Total Quality Management. *Medical Device & Diagnostic Industry Magazine*. URL: <http://www.devicelink.com/grabber.php3?URL=http://www.devicelink.com/mdd.../024/html>

- Schmidt, S. R., Kiemele, M. J. & Cheek, T. F. Jr. *Don't Let TQM Drain You Dry Without any ROI*. Colorado Springs: Air Academic Associates. URL: <http://www.airacad.com/tqmroi.htm>
- Stoner, J. A. F. & Freeman R. E. (1992). *Operations Management, Management*. New Jersey: Prentice-Hall International.
- Thiagarajan, T. & Zairi, M. (1998). An empirical analysis of critical factors of TQM: a proposed tool for self-assessment and benchmarking purposes. *Journal of Benchmarking for Quality Management and Technology*. 5(4): 291–303. URL: <http://elvira.emerald-insight.com/vl=537775/cl=17/nw=1/rpsv/~1117/v5n4/s4/p291>
- Thiagaragan, T. Zairi, M. & Dale, B.G. (2000). A proposed model of TQM implementation based on an empirical study of Malaysian Industry. *International Journal of Quality & Reliability Management* 18(3): 289–306. URL: <http://www.emerald-library.com/ft>
- Wood, S. (2001). *Total Quality Management at Motorola*. Emporia State University. URL: <http://academic.emporia.edu/smithwil/001fmg456/eja/wood.html>
- Youngless, J. (2000). *Total Quality Misconception, Quality in Manufacturing*. URL: <http://www.manufacturingcenter.com/qm/archives/0200/0200tqm.asp>
- Zhao, F. *Inter-organization Excellence: A TQM Approach*. The Centre for Management Quality Research, RMIT University. URL: <http://www.cmqr.rmit.edu.au/publications/fzinteorrg.pdf>