

Development of a Frame Work for Continuous Improvement for Small Scale Manufacturing Industries: A Review

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Abstract: - Total Quality Management (TQM) is a philosophy mainly applied on large companies. Small businesses are lagging behind larger ones when it comes to introducing and adopting new managerial philosophies and advanced technology. TQM is one of the approaches that contribute towards ensuring the success of small manufacturing industries. The main purpose of this paper is to identify factors that affect the implementation of TQM in small scale manufacturing industries. There are many factors which are effective factors in improving performance of small scale manufacturing industry namely, leadership, customer focus, training, supplier quality management, product design, process management, and team work. The quality improvement plays a fundamental role in determining the performance in small manufacturing industries. The results identify reliable and valid TQM dimensions, namely organization management, communication, training and development, employee involvement and recognition, and culture. The main objective of this study to identify the factors responsible for achieving higher quality & productivity in small scale manufacturing industry.

Keywords: - TQM; Quality; Productivity; Critical Success Factors; Performance Measurement Factors.

I. Introduction

Quality has become one of the most important drivers of today's fierce competition (Almansour, et al.2012).TQM has been accepted throughout the world these days. Many organizations are trying to adopt TQM as a way of life.TQM is an organization wide quality focused culture. It is a system approach to quality management and a journey to achieve excellence in all aspects of organization's activity (Yusof M et al. 2000)

Quality-productivity improvement programs are very important phenomenon's now-a-days used by the companies all over the world and only because of those countries like Japan which though appears small in population, governs the world especially in the industrial sectors.

According to the Israr Mohammad (et al.2014) TQM refers to a management process and set of disciplines that are coordinated to ensure that the organization consistently meets and exceeds customer requirements. TQM engages all divisions, departments and levels of the organization. Top management organizes all of its strategy and operations around customer needs and develops a culture with high employee participation. TQM companies are focused on the systematic management of data of all processes and practices to eliminate waste and pursue continuous improvement.

Moreover the cut throat competition these days has forced the organizations to add an extra effort to maintain their spot

in the technological race Gunasekaran et. al. (1993) elaborated that today most firms are interested in a strategic approach for improving productivity and quality in their organizations. They also stated that, comparison of earlier and present practices of production operation signifies the importance of JIT, TQM, and FMS in improving the integration of various functional areas and alignment between business manufacturing and quality improvement strategies. On the other hand Chin K.S. (et. al. 2001) explained TQM has become increasingly popular as organizations focus more on improving the quality of their products, services and internal operations to increase their competitiveness and value to customers.

Lakhe (no date) through his work found that the quality control systems were initiated in the manufacturing sector as the measurement of quality of products was easier. Subsequently, the TQM movement gained global acceptance; its aim and philosophy were not merely the measurement of quality parameters, but bringing a fundamental transformation in organizational culture. The concepts of TQM are as important to any organization as they are to manufacturing, because competing in the global market more effectively has become an overwhelming concern for almost all contemporary organizations.

Quality improvement is a highly desired objective in a fiercely competitive international business with India being no exception, although global competition and economic liberalization have created opportunities for the industrial

sector in India, it also poses significant challenges, especially in view of quality management issues. India has harsh environment in terms of huge variances that occur in operating conditions. In India, we live by a philosophy where we produce what we want and the market would absorb it. This work is the combined effort of facts and research to analyze and provide an effective solution in meeting the quality & productivity requirements in small scale industries.

TQM is a management philosophy, a paradigm, a continuous improvement approach to doing business through a new management model. The TQM philosophy evolved from the continuous improvement philosophy with a focus on quality as the main dimension of business. Under TQM, emphasizing the quality of the product or service predominates. TQM expands beyond statistical process control to embrace a wider scope of management activities of how we manage people and organizations by focusing on the entire process, not just simple measurements. TQM is a comprehensive management system which: (Israr Mohammad and Gangele Anshul, 2014)

1. Focuses on meeting owners'/customers' needs by providing quality services at a cost that provides value to the owners/customers
2. Is driven by the quest for continuous improvement in all operations
3. Recognizes that everyone in the organization has owners/customers who are either internal or external
4. Views an organization as an internal system with a common aim rather than as individual departments acting to maximize their own performances
5. Focuses on the way tasks are accomplished rather than simply what tasks are accomplished
6. Emphasizes teamwork and a high level of participation by all employees

relation, consumer's focus, process management, improvement of system and involvement of people. Correlation Analysis was done to find out the desired relation. As per results, the above mentioned factors were partially correlated with quality performance

Jolly Sukhwinder Singh (et.al.2013) through his work found a common misconception which Indian entrepreneurs running small scale industry have, that TQM and ISO certification are requirements of only large scale units and for small scale units getting these techniques implemented is an unnecessary expenditure. On the contrary, with increasing liberalization and globalization, implementation of TQM in small scale industry is very much necessary so as to compete with large scale units and multinational companies.

Verma Devendra S. and Rathod Ajit (2014) in their work found TQM is a means for improving personal effectiveness and performance for aligning and focusing all individual efforts throughout an organization. Quality of product is still an important issue for the manufacturing industry. Only a few manufacturers are producing high quality products with higher customer satisfaction. In this paper an attempt has been made to identify the common critical factors of TQM for selected manufacturing industry by measuring the importance of TQM practices as perceived by respondents of the firm in their organizational context. This paper will also measure the implementation level of identified important practices, thus demonstrating the current status of TQM, and will finally identify implementation barrier to practices that are perceived important but not implemented by organizations.

Samuel Olumuyiwa olusanya and Eunice Abimbola Adegbola (2014) in their work found that impact of TQM practices on small and Medium Enterprises in Nigeria and to identify the challenges encountered by the SME in adopting successful quality management program within their organization. Quality management is focused not only on product/service quality, but also the means to achieve it. Quality management, therefore uses quality assurance and control of processes as well as products to achieve more consistent quality. Good quality management program should be in place in the organization to enable all the staffs to learn and undergo the process of quality management in their organization. Also define the concept of TQM is very important.

Bhattacharya Ranjan, Deb Sudip Kr and Chakraborty Abhijit (2011) in their research developed a quality improvement model and found the various internal Obstacles to Quality for Small Scale Enterprises. Basically, the internal obstacles are, thus, factors, which are under the control of the small manufacturing enterprises. The



Fig. 1: TQM elements

II. Literature Review

Irwan Ibrahim, Afizan Amer and Fatimah Omar (2011) worked on finding out the relation between TQM practices and Quality performance in an industry. If an organization practices TQM in order to have quality performance, it should include leadership, information analysis, supplier's

management and the workers can eliminate these internal obstacles. They can adopt several measures to weaken their effects. For example lack of time is one typical internal obstacle. In many small manufacturing enterprises there are nowadays so few employees that nobody has time for planning or even thinking about quality improvement. If there are some employees who could spend time for quality assessment, the situation would be much better. Dearth of knowledge, professionalism, work values and poor methods are also typical internal obstacles. There is not enough knowledge concerning quality improvement, and neither the superiors nor the workers have enough knowledge to recognize the problems in quality or to improve it. This situation has a clear connection to the level and suitability of the production methods and equipment.

Gorantiwar and Shrivastava (2014) in their research work found that the various factor affecting the quality-productivity in different industries. Quality management has been considered an important aspect in service and manufacturing industry. Quality management is strategically and tactically important for gaining a competitive advantage TQM is basically concerned with continuous improvement in all work, from high level strategic planning and decision-making, to detailed execution of work elements on the operational level. In this paper the survey was carried out for small, medium, large-scale manufacturing and the service industry. And The various CSFs identified for industries are top managements' commitment; continuous improvement; working environment; stakeholders' involvement; quality tools; strategy, policy and planning; information and communication management; employee involvement and empowerment; process monitoring and production development; suppliers' involvement and management; customer involvement and satisfaction; training and development; and support to employees.

Powell (et al.1995) carried out study on closer customer relationships; closer supplier relationships, committed leadership; adoption and communication of TQM, benchmarking, open organization, zero-defects mentality, flexible manufacturing, process improvement, and measurement in increased training under employee empowerment.

Youssef (et al.1996) conducted empirical study on customer focus with top management commitment, organizational learning, process and function improvements, learning top management role models, middle management teams, problem solving.

Forker (et al 1997) made study on supplier quality management leadership and quality policy; product/service design; process management; quality data and reporting;

role of the quality department employee relations; training. Easton and Jarrell (1998) studied on customer focus; supplier performance and supplier relationships, process focus; systematic improvement; companywide emphasis; recognition of TQM as critical competitive strategy under employee involvement and development; cross-functional management. Douglas and Judge (2001) focused on the customer management by fact; continuous improvement of process; adoption of quality philosophy; use of TQM methods with top management team involvement; emphasis on TQM orientated training.

Masood ul Hassan, Saad Hassan, Sadia Shaukat and Muhammad Saqib Nawaz (2013) worked on finding out the relationship between TQM elements and organizational performance. This study empirically reveals the influence of the TQM elements comprising leadership, people management, process management, customer focus, information & analysis and strategic planning on the organizational performance in the manufacturing sector. In this paper examines the impact of TQM elements i.e. leadership, people management customer focus, process management, strategic planning and information & analysis on the organizational performance in manufacturing firms of Pakistan.

The implementation of TQM programmers' has been considered by a number of scholars in recent decades Curry and Kadasah (2002), McAdam and Jackson (2002), Curry and Magad (2003), Wiklund et al. (2000), Yang (2004), Juran (1988; 1994), Ramberg (1994), Hill and Wilkinson (1995), Ross (1999), Evan and Lindsay (2001), Powell (1995), Bennett and Kerr (1996), Hermel (1997), Harari (1993) and Eskildson (1994). These authors have studied the issues from different perspective and they explore different points of views among these results. The following factors and related issues are considered as crucial and essential for achieving successful TQM implementation within any organization, therefore the features prominent in them are the key elements that affect the TQM implementation programmed within any organization.

1. Management Commitment & Leadership

Tannenbaum et al. (1961) "defined leadership as: the interpersonal influence, exercised in a situation, and directed, through the communication process, toward the attainment of a specified goal or goals" (Baidoun, 2000) Leadership with the customer focus is the two major elements for the TQM where the customers provide the common focus or target for TQM (Saylor, 1996 and Aune, 1998). Leadership is the ability to inspire confidence and support amongst those needed to achieve organizational goals (Hackett and Spurgeon 1998, Sheety 1994). Anderson et al. (1994) described the concept of leadership as the

ability of top management to establish practice and a long term vision for the organization or firm driven by changing customer requirement.

2. Teamwork

Teamwork is very important for achieve organizational goals; teams are a major part of any TQM effort (Rao et al. 1996). It is widely accepted working in a team or group is generally more effective than working individually (Zairi, et al. 2005, Stough et al. 2000). However, to become successful in business, teamwork is also a key element of TQM. With the use of teams, the business will receive quicker and better solutions to problems. Teams also provide more permanent improvements in processes and operations. In teams, people feel more comfortable bringing up problems that may occur, and can get help from other workers to find a solution and put into place

3. Training and Education

Ahire et al. (1996) consider that empowerment and involvement is not effective unless all employees received formal, systematic training in quality management. Ishikawa (1972), believes that training and education is vital in determining the success of total quality management. Training is an essential factor for any successful quality management programmes (Burati and Oswald 1992, Chase 1993, Oakland 2000, Porter and Parker 1993 and Motwani et al. 1994). Chief executives and quality experts have successfully implemented these in their organizations. Programmers' of training must target all persons in the organization as the quality under the TQM is the responsibility of everyone in the organization. The employees from the top management to the labor-force must understand the philosophies of TQM. Teamwork is very important to improve all the processes in which the approach for TQM is required (Sinan 2004, Millar 1999, Wiley 1997, Zhang et al. 2000 and Rao et al. 1996).

4. Communications

According to Chase (1993), good communication will result in reducing ones fear as this will allow TQM to be more approachable. Deming (1986), advises to "drive out fear" for management to change. Kanji et al. (1993) indicated that the communication is a part of the cement that holds together the bricks of the total quality process. Good communication and a good feedback system are very important in conveying ideas to the management and to incorporate the necessary change required (Sanders, 1994). According to Larkin and Larkin (1994) the best way to communicate is 1. Direct Communication between employees and supervisors.

2. Face-to-face communication.

5. Customer Focus

Customer focus can be defined as the degree to which a firm continuously satisfies customer needs and as can be expected a successful firm will recognize the need to put the customer first in every decision made. The key to the quality management is maintaining a closer relationship with the customer in order to fully determine the customer need, so the customer should be closely involved in the product design and development with valuable input to every stage (Saylor 1996; Powel 1995). The customer allows an organization to exist, for every organization, profit or non profitable, partnerships, departments, functions, groups, or teams therefore the customer's focus is one of the major elements of the framework of TQM and all elements focus on the total customer satisfaction both external and internal.

6. Employees Involvement and Participation

Successful implementation of a TQM environment or culture requires a committed and skilled workforce to fully participate in the activities carried out to improve the quality (Low and Jasmine2002). All the employees at all levels within the organization should be encouraged to take responsibility and communicate effectively toward improving the quality at all production stages. Managers and supervisors must consider the employees as being intelligent and having effective ideas (Prakash and Smith 2004, Sayeh et al. 2005, Yang 2004, Juran 1993, Ross 1999, Ramirez and Loney1993,Evan sand Lindsay 2001, Crosby 1979, Zairi 1999, Flynn et al. 1995, Tan 1997, European Quality Award, Canadian Quality award and Lawler et al. 1992). All employees within the organization are considered as internal customers and should be well satisfied if the organization desires to achieve a full satisfaction for its external customers. This situation indicates to a chain of suppliers and customers relationships involving both internal and external customers.

7. Cultures

Culture within organization is defined by Jeffries et al. (1996), Lewis (1996; 1997), Hofstede (2001), as all the interaction that takes place between employees within an organization along with the relationships engendered by this behavior. In line with this, Schein (2004) states that the culture can be described as the beliefs which pervade the organization regarding the procedures used to conduct the business and how the employees should behave and the way they prefer to be treated. Within the TQM culture a co-operative and open culture has to be created by the organization management in which all the employees have to be made to feel that all of them are responsible for satisfying the organization's customers. They are going to

feel and consider this only if they are involved in the development of the vision, plans and strategies of the organization. It is crucial for the organization to achieve a successful implementation of TQM to encourage the employees to participate in all these activities. However they are unlikely to behave in an acceptable responsible way in the case where they see the management behaving irresponsibly and saying something or acting in opposition of it (Oakland, 2000).

III. Conclusion

Based on the literature review conclusion obtained, the following is the summary of the action plan that small manufacturing industry should implementing TQM programs within their organization.

- 1) Organizations that are committed to improving their productivity and pursuing a TQM program often need to know where to start.
- 2) The foundation of an effective TQM effort is a commitment. For successfully Implement TQM in their organization, they have to believe in it--be committed to it.
- 3) Employees and workers should be a part of quality program for improvement in product and service.
- 4) Satisfied employees help to create satisfied customers.
- 5) the most influential factors for their job satisfaction and TQM program to be successful are mastery of the knowledge and skills essential for doing one's job and development of a positive relationship at work, which can be refined through supportive environment at workplace.
- 6) Based on the results of this study, problem solving techniques and team building types of training were chosen as the two most important types of training that an organization should embark upon, and should be given a higher priority in your organization's TQM journey.
- 7) The pillar of TQM success also involves the development of a quality management system to provide the necessary controls, discipline, and standardization of improvements. It also involves the use of quality Management tools and techniques to make improvements and solve problems for small scale industry.
- 8) In general, all types of training were found to be useful to small scale manufacturing companies. Small scale industry should adopt customer feedback as a continuous improvement tool for effective change.
- 9) Small scale industry should be adopting the new technology for technological advancement.

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