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Continuous improvement strategy- lifeblood of organizations

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Abstract

Continuous improvement strategy results improved productivity, better quality, lesser breakdowns, reduced costs, motivating working conditions, reliable deliveries, improved safety and enhanced morale of the employees. Total Quality Management has advocated this strategy for the survival of any of the organizations in the market. The existing processes turn to be a bit more efficient and effective due to continuous improvements. These more efficient and effective processes take the processes and the products to higher levels of quality leading to the customer satisfaction resulting in company survival. An attempt has been made in this paper to present the concept through the literature survey and also different sophisticated continuous improvement techniques recommended by several researchers and managers in the area of Continuous improvement are summarized here for all those who are interested in carrying research in this area, managers and others concerned with improvement. Certainly the research paper will be beneficial for them as it presents the overview of the strategy and the different application tools established by manufacturing organizations globally

Keywords: Quality, Continuous improvement, continuous improvement techniques, Total Quality Management, Lean manufacturing, Kaizen, PDSA cycle, six sigma and problem solving technique.

1. Introduction

Perfection is rare. One must race towards attaining it on continuous basis. It is the basics of an important principle of Total Quality Management. Continuous Improvement denotes management attitude of putting efforts for organizations improvement through unwavering focus on customer satisfaction as a function of its efficiency and effectiveness [1]). Continuous improvement is an important part of ISO 9000 norms and its models. Continuous improvement brings change to Taylor's model of division of labor. It means that everybody in the organization, in addition to routine work, will devote some time in solving the problems or looking for opportunities to improve. Experience and scientific method of diagnosis will facilitate the process. Simple to realize but difficult

to implement on routine basis Continuous Improvement -as the term suggests—has no end. Hence it is very much essential to bring the concept into the organization as a change in culture for its effectiveness. If no formalized program exists, the improvement efforts will be discontinuous and hinge on related pressures and individual attitudes. In a broader way CI is a culture of persistent improvement directing towards the removal of waste in all systems and processes of an organization. CI usually does not believe in huge capital investments but concentrates on evolutionary improvement involving incremental improvements or fundamental changes through innovative idea or new technology. Mostly all the continuous

improvement tools and techniques are dedicated to search sources of problems, waste, and variation, and finding ways to minimize them.

2. Approaches to continuous improvement

As per Bessant et al [2] continuous improvement is “a company-wide process of focused and continuous incremental innovation “Deming termed merely as comprising of “Improvement initiatives that increase successes and reduce failures” [3]. It is possible to realize total quality by continuously following CI through the association of people at all levels of organization [4]. Unending determination to improve something is Continuous improvement. Such efforts appear as insignificant now will have huge impact later. Quality based companies must focus on this TQM technique to realize excellence. Those improvements can be realized by following some basic principles. Considering any work in production or business activities as process and then striving to make them efficient, adaptable and effective is the key element. Scrap reduction, cycle time and waste minimization etc. can be used as measures to control in process performance and improve. Improvements can also be achieved by anticipating changing customer needs and by maintaining positive displeasure with current level of performance. Focusing on non-conformities in all stages of every one’s work and eliminating them through technical tools like quality function deployment, statistical process control, bench marking, six sigma and others will also bring about the improvements. Continuous improvement is intended to utilize the assets of the organization to accomplish a quality focused culture. A culture wherein everybody will think, speak and act quality & the management will strive to educate them to endlessly investigate and improve their individual work, the processes and their team work.

3. Tools and techniques of continuous improvement (CI)

In order for any organizations to stay competitive, maintain their market share in this global economy, and please both external and internal customers, CI of manufacturing system processes has become necessary [5]. Contemporary CI traces its origins to the contributions of Shewhart in the 1920’s in controls and statistical analysis of systems [6]. Actually Deming and his

work with Japanese industry in the 1950s centered on lower costs and higher quality brought importance to CI [7]. Still more lately, CI techniques for example Total Quality Management (TQM) (1980s), Six Sigma (1980s), International Organization for Standardization (ISO) 9000 (1980s), Just-in-Time (1970s), Agile (1990s) and Lean (1990s), are still now being implemented and adapted across all industries [8]. Many CI methodologies have been established based on a basic theory of quality or process improvement, or both, in order to reduce waste, simplify the production line and improve quality. The earlier initiatives were connected with work improvement; present day CI tools are related with planned and broad methodologies wherein the overall organization, or a large part of it, is involved in change, are also associated with the TQM movement, which also gained influence in Japan. The top well-known of them are: Juran’ Trilogy, PDSA Cycle, Reengineering, six -sigma, and lean six -sigma

3.1. Six-sigma

Six-sigma was introduced first at Motorola Inc. as a means of measuring process quality using statistical process control. Later it became popular in the USA in 1986. Now it is practiced in many organizations worldwide. Six Sigma is a quality improvement program with a goal to reduce the number of defects as low as 3.4 parts per million. Six sigma has been defined as “an organized and systematic method for strategic process improvement and new product and service development that relies on statistical methods and the scientific method to make dramatic reductions in the customer defined defect rates” [9]. The six sigma methodology focuses on reducing defects to the level of accepting close to zero and reducing variation in all the processes of the organization is its core activity. DMAIC model i.e. define opportunities, measure performance, analyze opportunities, improve performance, and control performance facilitates this process. Six sigma principles can be applied to all the activities of an organization and just not the manufacturing process but also service areas, design and administration as well. The goal of six-sigma is to improve customer satisfaction through reducing and eliminating defects on continuous basis. It is a structured Implementation approach based on a

DMAIC cycle and certified experts. Champions/Sponsors, Master Black Belts, Black Belts, Green Belts, Team Members are the key players in the execution of DMAIC steps. Motorola attained astonishing results through the application of six-sigma, achieving a total savings of \$US14 billion while sales enjoyed a fivefold growth during the same period [10]. Top companies like Ford, Honeywell, Honda, GE, ABB, and Sony have followed Motorola's concept and are using six-sigma to attain business excellence.

3.2 Reengineering

"Re-engineering is the fundamental rethinking and radical design of business processes to achieve dramatic improvements in critical, contemporary

measures of performance, such as cost, quality, service and speed" [11] When the process turns out to be too difficult or inefficient, and optimization is not yielding the desired output Re-engineering is followed to achieve efficiency and productivity at work. It pulls out any organization from dangerous situation if it is in deep trouble or if the management foresees trouble in future or the management has the vision to grow as the leader in the specific sector. Hammer and Champy have given seven steps model for reengineering which focuses on elimination of inefficient or obsolete process and wastes & results in substantial reduction in cost and time. Re-engineering is a fundamental new process or organizational change that many companies are adapting to renew their assurance to customer satisfaction.

3.3 PDSA Cycle

Shewart developed Plan-Do-Study-Act cycle for continuous improvement.

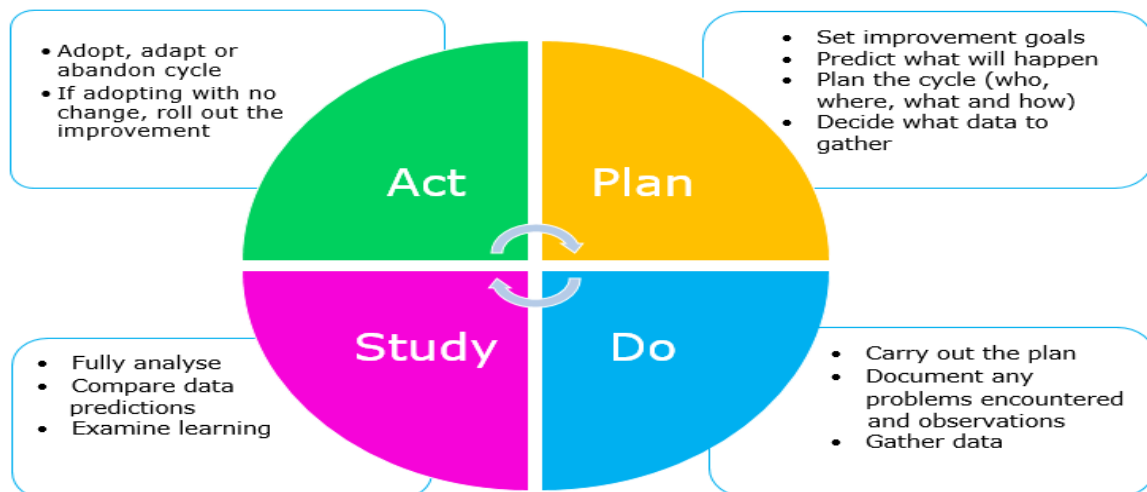


Fig.1. PDSA Cycle

It is a simple version of more comprehensive problem solving method for improvement and very useful for small problem solving.

3.4 Problem solving method

It is a systematic method for continuous improvement which yields better results than other methods. If the solutions are apparent and an individual is gifted, usually speedy results are achieved. On the other hand, for complex problems and in long run, this method works better. It is also called as scientific method and involves seven steps in it. The steps are

1. Identify the opportunity

The objective of this phase is to recognize and rank opportunities for improvement. It consists of

three parts: identify the problem, form the team (if one is not in presence) and describe the scope.

2. Analyze the current process

The objective of this phase is to know the process and how it is presently executed.

3. Develop the optimal solution(s)

This phase has the objective of establishing probable and feasible solutions and recommending the best solution to improve the process.

4. Implement changes

This phase has the objective of formulating the execution plan, getting approval, and implementing the process improvements.

5. Study the results

This phase has the objective of observing and assessing the change by tracking and studying the usefulness of the improvement efforts through data collection and evaluation of progress.

6. Standardize the solution

Once the team is happy with the change, it must be established by positive control of the process, process certification, and operator certification.

7. Plan for the future.

This phase has the objective of accomplishing better-quality levels of process performance. Irrespective of how successful initial improvement efforts are, the improvement process continues.

As such success is not always guaranteed but as this method is highly systematic, definitely success probability will be high.

3.5 Juran trilogy

The Juran Trilogy, also termed Quality Trilogy, was advocated by Dr. Joseph M. Juran in 1986 as a means to achieve quality. The old-style method to quality just then was centered on quality control, but currently, the Trilogy has turned out to be the foundation for most quality management best practices round the world. Basically, the Juran Trilogy is a general way of thinking about quality—it covers all functions, all levels, and all product and service lines. The principal notion is that managing for quality comprises of three common processes:

Quality Planning

Recognize the customer and their needs, Develop product characteristics that respond to customer needs. Establish quality goals that meet the needs of customers and suppliers, Develop a process that can yield the needed product characteristics.

Quality Control

Decide what to control. Form measurement system and standards of performance; take corrective action based on the difference between the actual performance and the set standards.

Quality Improvement

Improve based on any strategy- Repair, Refinement, Renovation and Reinvention by forming the project teams and identifying the causes.

3.6 Bench Marking

Bench marking is another tool for continuous improvement. Benchmarking is a systematic method by which organizations can measure

themselves against the best industry practices and improve. It avoids the necessity to reinvent the wheel. The core of the techniques is to be modest enough to acknowledge that someone is superior at something and being prudent enough to try to learn how to match and even beat them. Benchmarking is not the process of copying or stealing from others. It is basically a continuous improvement strategy by learning from others. As the current market conditions are very volatile traditional improvement techniques are not going to be adequate to match the highly liquid customer expectations. Bench marking accelerates innovation and change to bring the breakthrough improvements. Managers need not have to follow the trial and error method for improvements and also will be in a solid state to set realistic goals for improvements. It also cautions the organization whether it has fallen behind the competition in the market and facilitates to identify their weak areas for improvements. . It has six core activities in as follows and some organizations can have some other additional steps as well.

1. Decide what to benchmark

Any primary or supportive activity of the organization can be considered for bench marking. But proper selection is important for the success of the bench marking process

2. Understand current performance

It involves a though rough knowledge about the ongoing process, forming the bench marking team and establishing the measurement system.

3. Plan

This step comprises of deciding upon the bench marking partner, type of bench marking, data to be collected and the method of data collection.

4. Study others

It involves a though rough knowledge about the ongoing process there in the bench marking partner's area.

5. Learn from the data

This step results in proper identification of the gap between the two parties which can later be focused on for improvement.

6. Use the findings

During this step improvements can be realized by addressing the identified negative gap in a systematic way. If results are not satisfactory, the entire process must be repeated and the process will be continuous irrespective of the results.

4. Discussions

Continuous improvement strategies have progressed from old-fashioned manufacturing engrossed methods that focus on the production line to cut waste and increase the product quality, into widespread, methodical systems that focus on the total organization, from top management to the workers on the shop floor. Nowadays, most companies are following some specific methods to suit their exact needs by including the various tools and techniques of individual methodologies. One cannot imagine staying competitive in a global market without any process being continuously improving [12]. Literature is having number of improvement methodologies but all will yield good results only when they are followed properly. And the essential element required therein is the cultural change. It is the duty of management to bring about that change.

Conclusions

In this paper, an attempt has been made to understand the traditional continuous improvement methods and the more sophisticated approaches that can be adapted in any organization. The current work will be of value to general practitioner by providing assistance in executing any continuous improvement strategy. They will find valuable methods, tools, principles, and techniques used in CI programs. Definitely the continuous improvement techniques will yield some better results no doubt but realizing the anticipated results pretty challenging as it includes cultural changes at all levels of the organization. Usually quality management programs and the continuous improvement programs go hand in hand as they strive to attain superiority through improvement.

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Biographies



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