

Six Sigma Implementation – Hurdles and More Hurdles

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ABSTRACT *Six Sigma implementation is spreading to many organizations the world over and success stories are increasing every day. In several cases, impressive financial benefits have been recorded, whereas in a few organizations, the implementation of this methodology has not given the expected benefits. In this article, the authors discuss various hurdles faced by the organizations from their experiences, and give a few recommendations for Six Sigma implementation.*

KEY WORDS: Six Sigma, Black Belt, Green Belt, Master Black Belt, project selection, Critical to Quality (CTQ), sigma level

Introduction

In today's growing competitive market environment, customers are always demanding high quality of products or services offered to them. In this situation, quality improvement activities have become a part of the business culture and a way of life.

Six Sigma is described as a methodology to improve business processes by not only confining oneself to quality assurance (QA) or quality control (QC) functions. Six Sigma embodies a systematic, data-driven, analytical approach for reducing variation in any process and thereby eliminating defects (Harry, 2000). It has been said that the Six Sigma is a synergistic mixture of many well-established tools and techniques.

Implementation of Six Sigma

Many organizations worldwide have implemented Six Sigma and achieved remarkable improvements in their market share, customer satisfaction, reliability and performance of products and services with impressive financial savings (Harry & Schroeder, 2000). However, a few organizations could not successfully implement the methodology, due

to several hurdles before, during and after implementation. The hurdles faced by the organizations and a few recommendations are discussed below.

Hurdles in Implementation of Six Sigma

Lack of Constancy of Purpose

In today's dynamic market scenario, customer needs and expectations are changing rapidly. Organizations need to understand the current and future needs of their customers, meet the current customer requirements and strive to exceed their expectations. During this process, the management priorities or objectives are changing frequently and this is thereby leading to failure of Six Sigma implementation. In Dr Deming's words, this can be termed as 'lack of constancy of purpose'.

In a few organizations, the decision to implement Six Sigma is taken at the corporate level, but the top management of the individual division or strategic business unit (SBU) may not be keen on implementation on their own. Similarly, the top management may be interested in implementation, but this is not the case with the process owners or champions of the projects.

Foot in Several Boats

Many organizations take up several quality initiatives simultaneously, namely Kaizen, Quality Circles, TQM, ISO-9000, QS-9000, and Six Sigma. In this case, however, the people within the organization are not able to devote their time and resources to the successful implementation of any one initiative. In other words this is like 'a man on many boats'. Often, 'several initiatives at a time' creates a lot of confusion in the concepts and methodologies and the initiatives are unable to integrate one with another.

Old Wine in a New Bottle

Successful implementation of Six Sigma requires knowledge and skill about the respective processes, in-depth knowledge of all the tools and techniques, namely, Quality Function Deployment (QFD), descriptive and inferential statistics, Design of Experiments and the capability to convince and manage people. The growing demand for implementation of Six Sigma requires a large number of Master Black Belts (MBBs) or consultants. However all MBBs or consultants might not have the above-mentioned qualities. This may lead to closure of the projects with the usual quality circle style (problem-cause & effect diagram-solution) of solving a problem. As a result, people may not find any difference between the earlier methodologies and Six Sigma. People often call this 'old wine in a new bottle'.

Improper Project Selection Criteria

Organizations try to implement a Six Sigma approach in anticipation of market penetration and organizational speed, while simultaneously reducing the cost of doing business. In other words, the projects must be selected in line with the organization's goals and objectives. Some organizations fail to have SMART (Specific, Measurable, Achievable,

Relevant and Time-Bound) goals and objectives and few others might not be able to link their projects to their goals and objectives.

Recently, the authors came across a project, selected in an area in which none of the team members, leaders (belts) had any authority and responsibility, which in turn led to no proper data collection and failure of the project.

Some organizations make it worse by placing rigid expectations on belts, thus forcing them into considering everything as a Six Sigma project, even though it is a 'task'. In some cases, the project scope is too large and the project cannot be completed within the stipulated time frame.

Lack of Resources

Some organizations are unable to spare their people in the mandatory training of Six Sigma methodology and the equipment for trials, such as pilot runs, due to the usual production pressures, like month-end and year-end pressures. At times, the project requires a lot of data gathering and analysis, requiring the availability of proper software and computational facilities. Inadequate training facilities, such as improper training halls, may also hamper the progress of successful implementation.

Lack of Coordination between Functions

Often, Six Sigma projects are cross-functional and require a large amount of coordination between different departments or functions. Lack of proper coordination may lead to improper selection of their Critical-to-Quality (CTQ) characteristics, incorrect data, analysis and solutions. Further, this may lead to resistance to implement solutions.

Concentration on the Trivial Many rather than the Vital Few

A Six Sigma project requires identification of CTQs (Y_i) from the project objective (Y). At times, these CTQs shall be prioritized so as to get the maximum returns in Y . In some cases, the CTQs are very easy to attack, and not much return on Y is selected for the quick closure of the project. This may lead to non-achievement of their targets or goals for the projects. Similarly, the causes that may have the least impact on Y are attacked, sometimes without considering the root causes.

Short Closure of Projects

Sometimes the projects may have been discontinued due to organizational restructuring. In a few cases, the achievement of goals of the team change due to changes in statutory, regulatory requirements, taxation policies, telephone tariffs, and fuel prices. In other words, the improvements are given by God or the Government, but not by the efforts of the team.

Non-availability of Data

Six Sigma is a data-driven approach and it is mandatory to support any conclusion by correct data gathering and its analysis. In some cases, the relevant data are hard to collect and may be expensive. Some processes, such as strategic planning and target

setting, require more cycle time, therefore process cycling is very slow and the quantity of data may be small. The fear and frustration of people to collect data may also hamper the progress of a Six Sigma project.

Impatience to get Results

To observe the effectiveness of any methodology requires time. Some organizations are impatient to get the results, thereby losing faith and confidence in the methodology. This may lead to closure of the projects by short-cut methods, and the implementation may slow down or may even stop.

Selection of Belts

Unlike the other approaches, the Six Sigma methodology assumes the human resources (belts) are assets to the organization. Unfortunately, these belts switch over their jobs so frequently because of the growing market demand. In a few cases, the job responsibility of the belts might change during the course of the projects, which may hamper the progress of a Six Sigma project.

Too often, we spend all our time on the technical side of the change – what has to happen by when. We generally ignore the people side of the change – removing the resistance of people and systems vital to the accomplishment of work. This resistance may be due to the authoritative style of management, such as ‘just do it’.

In Six Sigma methodology, the belts should have the technical and managerial skills, ability to understand and implement the tools, techniques and methodologies and be able to coach the team about the same. In other words, the belts should have a strong will to improve. Selection of these belts plays a vital role in successful Six Sigma implementation.

Conclusions and Recommendations

Any initiative in the organization cannot become successful unless there is whole-hearted top management support. It is also essential to convince the top management about the methodology and get their support. When different systems, namely Six Sigma, ISO-9001, QS-9000 and TPM, are implemented simultaneously, it is always better to have a proper integration of all these methodologies so that the people will not look at these methodologies as separate entities. With careful self-analysis and assessment, commitment from management and a willingness to look at all services and processes, one should find the best Six Sigma Master Black Belt or consultant for any organization. The pricing or cost should not be the sole deciding factor in selection.

During the project selection, the organization needs to ensure that all the projects are selected in line with the goals and objectives and within a manageable scope. Resources such as training facilities and computing software facilities are absolutely essential. Assertive persuasion, participation and trust, negotiation and creating a vision for a common goal can reduce the resistance from the people. The project CTQs (Y_i) must be in line with the objective of the project (Y) and a few scientific methods, such as Quality Function Deployment (QFD), tree diagrams, Pareto diagrams, are useful (Pyzdek, 2001).

Whenever the projects have achieved the goals and targets with some extraneous factors, the targets must be revisited and revised. The project team members shall have a defined authority and responsibility to improve a process, so the team can be augmented with additional members from the respective functions. In projects that have less process cycling, the CTQs must be revised so as to include a few process measures and input measures instead of considering only output measures.

References

- Ehrlich, B.H. (2002) *Transactional Six Sigma and Lean Servicing* (New York: CRC Press LLC).
- Harry, M. (2000) *Six Sigma* (New York: Currency).
- Harry, M. & Schroeder, R. (2000) *Six Sigma: The Breakthrough Management Strategy Revolutionizing the World's Top Corporations* (New York: Currency).
- Pyzdek, T. (2001) *Six Sigma Handbook: A Complete Guide for Green Belts, Black Belts and Managers at all Levels* (New York: McGrawHill).
- Stamatis, D.H. (2004) *Six Sigma Fundamentals: A Complete Guide to the System, Methods and Tools* (New York: Productivity Press).