Critical Factors for successful Six Sigma Implementation

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Six Sigma approach is one of the most widely discussed topics by business executives for the last few years. It all began when Motorola started talking about Six Sigma and then Jack Welch embraced it for GE when Six Sigma became a hot cake. While Six Sigma was somewhat suddenly known to many, its evolution is not as sudden as it appears.

Like other improvement approaches, there are companies that were immensely benefited by deploying Six Sigma and there are others who were not very excited with their implementation. What factors make the difference? From my experience in Cummins, with suppliers and what I read in many articles, I intend to share the factors that I feel have significant impact on the success of Six Sigma.

	Success factors at a glance	Classification
1	**Management commitment: indicators time and priority for Six Sigma, involvement in project selection and reviews, competent people and resources allocated**	**Critical**
2	**Existence of basic system such as QS-9000, ISO TS 16949, measurement of quality cost**	**Critical**
3	**Implementation partner: Qualification and competence, sufficient time allocation,**	**Major**
4	**Number of black and green belts: Thumb rule is 1 BB for 100 employees. It is important to have critical mass of black and green belts. This is about 30% of engineers/managers**	**Critical**
5	**Project selection and scoping: Projects must be in line with strategic goals of the company. Should not be too big ('boiling the ocean') or too small.**	**Critical**
6	**Software used for analysis. Popular is Minitab. Other softwares is Statistica. Use of Excel is adequate for projects that are less intensive in use of advanced statistical tools**	**Major**
7	**Linkage of successful project leadership and team support to recognition and reward system**	**Critical**

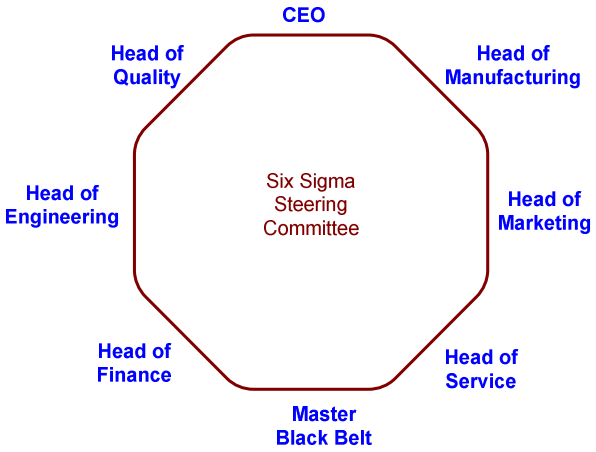
8	**Accountability for sponsors/champions: Organizational support, resources, people support, regular progress reviews**	**Critical**
9	**Co-location of belts: facilitates good interaction between belts to learn from each other and help.**	**Major**
10	**Publishing success stories, special recognition of 'best' Six Sigma project, Extra benefits to extraordinary achievers, visibility of Six Sigma**	**Critical**

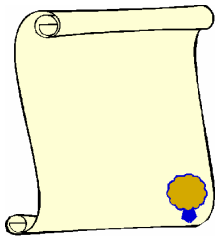
1. Commitment and involvement of top management:

The first and perhaps the most important factor is commitment and involvement of the management in driving Six Sigma. While each management will claim that they are fully committed, there are some clear indicators whether the management means this.

- How much time top management spends for steering committee to drive implementation, review projects selection and closures, extend help realizing the need.
- Leading and or sponsoring Six Sigma projects. This is a very strong message to the organization that the management means Six Sigma.
- Align Six Sigma projects to strategic goals/objectives of the company. This is important to get advantage in business by implementing Six Sigma.

A formal way of driving Six Sigma is through steering committee of senior leadership team: A typical steering committee may look like shown in the figure below:





2. Existence of basic quality system:

It is sometimes forgotten that a company must have done the basic groundwork by implementing quality system such as QS-9000 or ISO TS 16949 or at least ISO 9000. One can't move to graduation without getting through the secondary school exam! Six Sigma methodology helps identification of cause and effects relationships between results ('Y's) and factors ('X's).Some of these relationships are already known through documented wisdom (quality assurance standards). *It is expensive to reinvent these using Six Sigma!* For example, a company obviously needs to have system for drawing and specification control, calibration of measuring and test equipment, training people, adequate work instructions etc. If Six Sigma is deployed to prove that they affect quality, we will be wasting time and money.

3. Selection of implementation partner

A company initiating a Six Sigma programme usually requires implementation partner to train and guide people. This is necessary to upgrade skills and knowledge about Six Sigma tools and methodology. Assessment of capability of the potential implementation partners needs to be done carefully. There are many consultants who claim to be 'experts'. However, following guidelines may be useful for selection:

- Qualification/certification for Six Sigma training and coaching
    - A recent survey publishes by one of the websites is interesting. According to the survey, 55% respondents trust black belt certification by American Society for Quality (ASQ) and about 12 % believe in certification by isixisgma.com. International Quality Federation (IQF) is another independent society that conducts examinations for
    - Experience of the consultants: Proven track record is important. This should be from an organization that is known for successful implementation of Six Sigma.
    - Training skills of the consultants are important. Knowledgeable consultants without sufficient training skills and experience can frustrate belts.

- Hidden costs: Some consultants appear to charge much lower fees. One should carefully review whether there are hidden costs. Sometimes, consultants impose specific softwares that may be beneficial to them.
- Logistics: Obviously, feasibility of location and logistics needs to be assessed.

4. Number of black and green belts:

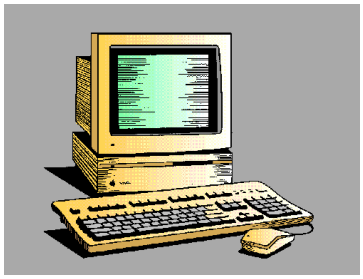
A thumb rule is 1 belt per 100 employees. However, this may vary to significantly across industries depending upon outsourcing, nature of industry, degree of automation etc. Typical norm for a black belt project saving is Rs. 10 million. In India, this can be different (lower). Reason is lower salaries and cost of training. Cost of black belt training could be as high as or more than US$ 10,000. Salary of a black belt could be US $ 75,000 per year. If one black belt completes 4 projects in 2 years, the expense is US $ 160,000 or Rs.680,000 for 4 projects or Rs. 17,00,000 per project. To justify a precious competent resource, savings must be sufficient to justify. This could be calculated with a different logic. Let us assume that the black belt was doing some other important assignment instead. What savings/benefits the company would get? Savings and or benefits through Six Sigma projects must be more. Another important consideration is type of savings. These must be systemic or structural improvements that will improve the level or efficiency of operations rather than one time.

Number of belts must be enough to change the culture of the company. This is sometimes called ‘critical mass’. Also, belts should be from various functions so that all areas of business operations will transition to the Six Sigma culture.

Number of belts must be manageable. Belt being a precious resource, must be fed with projects that are worth their time. Management team that steers Six Sigma can spend limited time on project selection, tracking progress and recognition. Belts without good or no projects can lead to their frustration.

5. Project selection, definition and scoping:

Project selection is easier said than done. Although it may appear that there are many improvement opportunities, identifying and defining the metrics and the process requires critical thinking. Metrics should have strong linkage with strategic goals of the company. Theory of constraints can be very useful for project selection. If the overall strategy, for example, is to improve reliability of products, Six Sigma projects should be taken to achieve this objective. One of the distinct differences between Six Sigma and other approaches is quantifying financial justification for each project. The financial controller endorses these savings. Tools such as cause and effects matrix help selection of projects to maximize benefits for the company. Scope of the projects need to be clearly defined and agreed through project profile that is usually called a charter. The scope should not be too large (boiling the ocean!) or too small. Projects should be challenging enough for the belts. It should be possible to complete the project within about 6 months with good efforts. Scope and financial savings must be documented and approved by the sponsors and the financial controller.



6. Software for analyses:

Six Sigma tools include many statistical techniques. These techniques require performing complex calculations. Most of the companies deploying Six Sigma use softwares for the analysis. One of the most popular ones is Minitab. There are other softwares such as Statistica, Six Sigma Software Suite by Quality America. These softwares are somewhat expensive. The cost could be about US$ 800 to 1000 per user license. If the are 10 belts, company will need 10 licenses costing US $ 40,000.

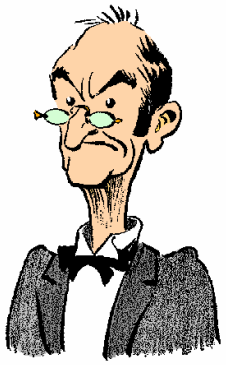
For those who want to implement Six Sigma without such software, it is somewhat feasible with smart use of Microsoft Excel ‘macros’ that perform additional statistical functions. However, limited licenses for the special software is usually necessary. Many of the projects require statistical tools that are mostly available on Excel with such macros. The frequency of usage of advanced statistical tools is relatively less. Thus a company can choose to trade of on the number of licenses of special software. One must remember

that there is a cost for such special software that makes the analyses extremely fast and user friendly.

7. Recognition and reward system:

Six Sigma project benefits can be significantly large and are quantified. It is necessary to give appropriate consideration to the Six Sigma project leadership and benefits in recognition, reward and promotion of employees. It is desirable that the system is formal, structured, transparent and as objective as is possible. Many companies that successfully implemented Six Sigma have performance appraisals, promotions and recognitions linked to its implementation and success. Some of the companies make completion of sis sigma project mandatory for growth in the organization. Recognition needs to be for the leaders, sponsors as well as to the team members. Forms of recognitions can vary significantly in various companies depending on the culture. Primary intention of recognition is 'feel good' and also create a healthy competition. It also helps in making improvements through Six Sigma visible. Promotion of belts after completion of significant number of projects, typically 5 or more, is essential. Black belts are usually high potential managers. Companies need to take conscious efforts to retain them.

8. Accountability of sponsors and champions:



Sponsors are usually from senior management. They own the projects. They must be made accountable to failure or delay of projects. They should report the progress and status of projects sponsored by them in top management reviews. This forces them to schedule periodically reviews with belts. Sponsors can also share the best practices in appropriate forums. Some companies get feedback on support by sponsors. There are number of situations that require intervention by the project sponsor. These may be availability of team members for project work, financial approvals, resources etc.

9. Co-location of belts:

This is an important consideration. Informal interaction between Belts can help solve different problems. Belts can learn from each other and also support easily as their team members informally. Technical library can be used with ease by all the belts without loosing time. Projects summaries and savings can be displayed in the office and conference rooms.
One of the other advantages of co-location is avoiding misuse of these expensive resources for routine work. If the located in the offices of their original departments, this is a major possibility. This can result in delayed projects as belt continues to perform his/her earlier role.

Co-location cannot be however, overemphasized.

10. Internal marketing of Six Sigma:

There are many ways of doing this.

- Publishing success stories and giving special recognition and rewards to extraordinary performers.
- Making Six Sigma visible all over the company.
- Sending teams to best companies in the worlds
- Sending projects to national and international level for public recognition and awards