KEY SUCCESS FACTORS FOR SIX SIGMA IMPLEMENTATION – GREEN BELT PERSPECTIVES

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By

Six Sigma Implementation

- Six Sigma began in 1986 as a statistically-based method to reduce variation in electronic manufacturing processes in Motorola Inc in the USA
- Successful implementation from high profile companies had fueled the popularity of Six Sigma
- Six Sigma is used as an all-encompassing business performance methodology in organizations all over the world.

Not all successful

- Nearly 60% of all corporate Six Sigma initiatives fail to yield the desire results.
- Typically start off well, generating excitement and great progress, but all too often fail to have a lasting impact as participants gradually lose motivation and fall back into old habits.
- Study by Deloitte indicates that fewer than 10 per cent of the companies implementing Six Sigma to the point where it is significantly affecting the balance sheet and the share price.

Case Study

• This study is an in-depth analysis of the critical success factors involving the implementation of a manufacturing company. An electronic manufacturing company in Thailand was selected as a case study to investigate the factors which influence the implementation of Six-Sigma project in a manufacturing environment.

Company background

- Founded in October 1999
- 350,000 square feet of manufacturing and 3,600 employees
- Manufacture of complex optical, mechanical, and electronic components, modules, and subassemblies for a wide range of industries including communications, automotive & aeronautics, consumer electronics, and industrial sensing.
- Introduction of Six Sigma in 2001.
- At the early stage, the results were amazingly good in pilot run projects but could not maintain the momentum over the following years.
- Revitalize the Six Sigma Activity in 2007.

Number of Six Sigma project (FY 2000-2008)



Number of Trained Belts

- 1 Master Black Belt
- 3 full time Black Belts
- 13 certified Black Belts who are project assistance for each department.
- 190 trained Green Belts

Definition of Green Belt status

- "Certified Green Belts" trained and complete successfully at least one project.
- "Non-certified Green Belts" trained but unsuccessful completion of Six Sigma Project.
- "On program"- on-going first project.



Survey findings

Service years of Green Belts

Years of service	Total
<2 years	37
	27.8%
2-4 years	47
	35.4%
> 4 years	49
	36.8%
Total	133
	100.0%

Questions of the study

- What are the critical factors associated with the successful implementation of Six Sigma projects from Green Belts perspectives?
- To what extent, are individual characteristics such as learning style and experience related to the success of Six Sigma project implementation at Green Belt level?

Survey Method

- Literature review
- Selection of Key Success Factors for Six Sigma Implementation sighted from various journals
- Common matrix
- Verify with MBB and BBs
- Finalize questionnaires
- Validity test
- Data gathering

Selected Key Success Factors.

No.	Key Success Factors	Sujar Y., Balachandran P. and Ramasamy N. (2008)	Anbari and Kwak. (2004)	(2004)	Chakrabarty and Tan (2007)	and Banuelas (2002)	Ying-Chin Ho, et, al (2008)
1	Top Management involvement and commitment	Х	Х	Х	Х	Х	Х
2	Linking Six Sigma to business strategy			Х		Х	X
3	Linking Six Sigma to customer	Х	X		Х	Х	
4	Organization infrastructure	Х		Х		Х	
5	Training	Х	Х	Х	Х	Х	Х
6	Communication	Х	Х		Х	Х	X
7	Project prioritization and selection	X	Х	Х		Х	
8	Incentive/ reward system			X			X
9	The use of data analysis with data that is easily obtainable						х

Data Gathering

Questionnaire consists of 2 parts

- Part 1. Personal information.
 - Age
 - Working experience
 - Project experience
- Part 2. Perceived level of Key Success Factors.
 - 45 questions in 9 aspects
 - Responses using a five-point Likert scale
- Response to questionnaires is 70% of all Green Belts.

SURVEY RESULT AND ANALYSIS

Project experience:

- Project not realized 38%
- 44% failed at the first project attempt.
- 23% were able to complete the project within 6 months
- Another 33% completed Six Sigma project after 6 months
- Only 1% have had experience of more than one project completion.

Factors Ranked High by Both

Groups

- 1. Top Management's participation in Six Sigma activity
- 2. Customer focus processes
- 3. Financial benefit of Six sigma project was presented and calculated
- 4. Linkage to corporate/business strategy
- 5. Availability of current data
- 6. Department's Six Sigma quality objective
- 7. Regular reviews
- 8. Direct linkage of department process to customers' needs and satisfaction
- 9. Regular communication and encouragement

Factors Ranked High by "Succeed"

group

- Top Management express a clear vision and aim of six sigma
- Black Belts display ability in advisory and help with project completion
- Understanding in Black Belt instructor's explanation during the training class
- Project duration complies to time and resources available
- Achievement level of the first project
- Management identify potential improvement areas and establish a process to generate, capture, and prioritize project
- The data needed for the analysis are easy to obtain
- Data availability for Six Sigma Project start up
- Assistance for needed data from the IT department or group members

Factors Rated High by "Fail" group

- Cooperation among peers throughout the project life
- Systematic information storage and processing
- Financial benefit was calculated and presented in Six Sigma project
- Adjustment of workload and time for project
- Training
- Extra score for performance review is tied to project completion.

Key Success Factors

- 1. Top Management involvement and commitment : regular reviews, clear vision and aim of six sigma and participates in Six Sigma activity .
- 2. Organization infrastructure : BB's advisory ability, Cooperation among peers throughout the project life and adjustments of workload to ensure that Green Belts have sufficient time to complete Six Sigma projects
- 3. Training : Clear understanding during the training , continuous training, good understanding on statistical tools and techniques and useful training materials
- 4. Project prioritization and selection: suitable project durations, the successful experience with first project and clear project ideas and potential improvements.
- 5. Incentive/reward system : clear linkage to project outcome, attractive tangible rewards, and extra score tided to performance review.

Conclusion

- Potential "Succeed" group tends to have better understanding of the tools and techniques and project scope.
- Technical problems such as availability of data and technical assistant are more important to this group.
- Some may need more assistance and support than others.
- Pay more attention to the start up phase of the project.