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The Key Success Factors in Choosing and Conducting a Lean Six Sigma Project

Paulo Cesar Franco , São Paulo State University (UNESP), Brazil ,

vf@vfconsultoria.com

Fernando A. S. Marins, São Paulo State University (UNESP), Brazil,

fmarins@feg.unesp.br

Messias Borges Silva , São Paulo State University (UNESP) and University of São

Paulo (USP), Brazil, messias.silva@feg.unesp.br ; messias@dequi.eel.usp.br

Abstract

In this paper was showed that, regardless of the prevailing culture, people, stage of technology, the management model of the organization, the critical factors to provide sustainable gains for business is a small set of management actions, where the majority (> 80%) is managerially controllable (management controllable) and that the most important points to successfully conduct the Lean Six Sigma project are: Business Strategy focus; Business Impact (Financial and/or Qualitative); Metric(s) Key Performance Indicator(s); Goal (reduce, improve), Deadline (4 to 6 months); Contribution to Business Results; Project Charter well defined and completed in early; Team; Management Approval; Discipline; Champion & Management support; Champion follow up; Inspiration and dedication; Project Closure (Control Plan and/or Standard Operation, seriously).

Keywords : Lean Six Sigma, Key success factors,

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Introduction

The Six Sigma methodology at Motorola began in 1986, spread by large organizations by around 1995 to 2000, a global market at around 2000 to 2005 and, finally, created synergy with the Lean Enterprise from 2005. “Six Sigma is a quality movement, a methodology, and a measurement” (Black and Revere, 2006).

Much has been discussed and presented as difficulties in implementation and acceptance by the culture of organizations, competition with other methodologies and management models relevant and necessary (eg, Lean, ISO, TS, TPM, Kaizen, TOC, BPM), loss of gains sustainability (financial and/or qualitative), loss of talent (for internal promotions and competitors), changes in executive focus and many other reasons, whether Lean Six Sigma is fads or real process improvement methods (Naslund, 2008) and comparisons of Six Sigma and Lean organizations (Bendel, 2006) have been made.

Although concepts such as TQM will be practiced and studied, sometimes due to the superposition of tools that confusion is not uncommon to be done. An interesting work addressing similarities and differences between TQM, Lean and Six Sigma is presented by (Andersson et al, 2006). An interesting view of evolution of Lean Six Sigma can be seen in (Pepper and Spedding, 2010), (Miguel and Andrietta, 2009) and (Bhuiyan and Baghel, 2005).

What if you want to make, regardless of the prevailing culture, people, stage technology, the management model of the organization, the critical factors to provide gains for perpetuating the business is a small set of management actions, where the majority (> 80%) is management controllable, as it was presented to the world of right and proper way, by William Edwards Deming way back in 1960 to 1970.

In this work will be presented a set of 14 success factors in the choosing and conducting Lean Six Sigma projects, discuss the simplicity of how this can be achieved in any kind of Business in any organization size and present some success stories companies in Brazil.

Development

The authors, acting as consultants and instructors had the opportunity to experience and discuss excellent, good and not entirely suitable implementations and results of applying Lean Six Sigma at organizations in Brazil (national and multinational) in different market segments.

Whereas is very broad the list of factors that are typically cited as causes of failures of implementation, the authors deliberately decided to focus on those that are considered success factors. The most important points to successfully conduct the Lean Six Sigma project are: 1) Business Strategy focus, 2) Business Impact (Financial and/or Qualitative) 3) Metric (s) = KPI = Key Performance Indicator (s), 4) Goal (reduce improve), 5) Deadline (4 to 6 months), 6) Contribution to Business Results; 7) Project Charter well defined and completed in early; 8) Team; 9) Management Approval , 10) Discipline, 11) Champion & Management support; 12) Champion & Management follow up; 13) Inspiration and dedication. 14) Project Closure (Control Plan and/or Standard Operation, seriously).

Following are 14 success factors in the choice and conducting Lean Six Sigma projects and highlighted some salient points. Are:

1 - Business Strategy Focus

Ideal approach: using the deployment of the Strategic Planning or Business Guidelines

and Goals, considering the short (4 to 6 months) and medium term (6 to 12 months).

Accounts of the budget that are closed or flashing red and Critical Performance Indicators that are not being met are also good candidates to generate improvement projects.

Special attention: it is always recommended that the organization maintains a list of potential projects Lean Six Sigma ("Hopper List") updated (e.g.: quarterly) and collegiate consensus, involving top management, middle management and, where possible, the Master Black and Black Belts. Everyone in the organization must have the correct perception that Lean Six Sigma projects are a thing to be done to improve business performance, and not something more to be done.

2 - Business Impact (Financial and/or Qualitative)

Ideal approach: as a minimum, you should prepare a spreadsheet on the premises and the rational calculation of financial gain (where applicable) for a period of 12 months, considering the evolution of the value of the KPI at the baseline and assuming the achievement of the goal of improvement.

Special attention: a Lean Six Sigma project should be bold in the goal of improving and conservative in quantifying gains. You must pass a realistic expectation of gains for the shareholders and top management of the organization.

3 - Metrics or Key Performance Indicators

Ideal approach: it is required in a good metric (KPI) of a Lean Six Sigma project an unquestionable reliability to represent the project's success (as the baseline vs. after improvements). Where applicable, it is preferable using indicators such as specific cost, specific consumption, specific generation, specific loss, net margin, etc.

Special attention: if the performance indicator (KPI) is influenced by seasonal and/or effect of raising the production of goods or services, it is recommended to use moving average cumulative (ie 6 months, 12 months). It is easier to understand if the improvements are being captured by the KPI. If the organization does not have a KPI is simple to create it and start collecting data. It is strongly recommended to use a good analysis of the KPI Measurement System, to have credibility in the process of measurement and reporting within the organization. Figure 1 shows a behavior of KPI along time.

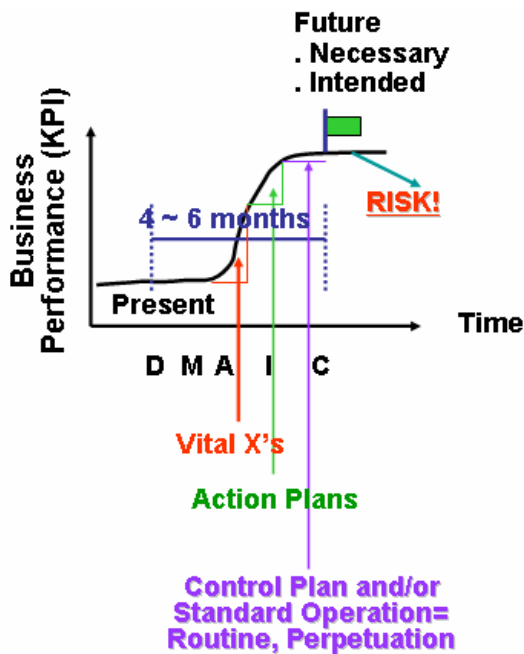


Figure 1: KPI versus Time

4 - Goal (reduce. ..., increase, improve ...)

Ideal approach: it must be clear enough for any organization where the goal of improving each Lean Six Sigma project and must be consistent with the goal of the defined KPI and the period considered as "baseline" (reference for comparison). It is always desirable a quantitative vision of goal (e.g.: reducing the defect XYZ process PSWW from 1.20 to

0.60% by dd/mm/yyyy, increase the net margin product PRXX at 5.00% (baseline: average year 2009) to dd/mm/yyyy).

Special attention: as a rule, a Lean Six Sigma project will require 1 to 3 KPIs. It is always desirable to do a good critical analysis by Belt, Sponsor (Champion) and, Lean Six Sigma Management that these KPIs are adequate to prove in the near future, the success of the project.

5 - Deadline (4 to 6 months)

Ideal approach: a good Lean Six Sigma project should be able to be improved, controlled and have their quality and/or financial gains perpetuated in 6 months. In fact, the average duration of projects can be an excellent KPI of Lean Six Sigma management. May have some tolerance with some projects that already have an initial awareness that are more complex or that it turns out that during the development and implementation.

Special attention: be careful in defining the Project Boundaries (Including and Excluding).

If the scope is too large and is certainly the necessity of whole range, consider the opportunity to turn it into an "Umbrella Project" and to open as many projects as "offspring" (Nestling Project) are required. For all projects "offspring" must have at least one common KPI (KPI "driver") to the "umbrella project".

6 - Contribution to Business Results

Ideal approach: a contribution to the Business results must be beyond doubt, whether in the form of financial and/or qualitative gains and should be explained in the Project Charter. Where it is possible to quantify the financial gains should have a summary of assumptions and rational calculation of gain, so annualized. This financial gain should be

validated by Sponsor of the project (Champion) and approved by an assistant controller (Controller).

Special attention: in projects that are simple to calculate the financial gain (e.g.:, reduction of defects, failures, errors, increased yields, increased net profit, decrease of specific consumptions) the assumptions used should be clear. In projects where it is not possible to quantify the profit (or not used), such as reduced lead time, increased customer satisfaction, improvement of workplace ergonomics, reduced exposure to environmental hazards, improve environmental performance, explain these benefits and always with a vision of Business Management.

7 - Project Charter well defined and completed in early

Ideal approach: most organizations and consultants have good models to formalize a Lean Six Sigma project, a quite common and extremely practical and simple is the Project Charter. It can be done on a single sheet of Word or Excel. The formalization of this project, with the success factors already discussed above, requires only about 45 minutes; you may be missing only one KPI graph during the "baseline" period (reference).

Special attention: if the Project Charter takes longer than 3 days to be fully completed use this as an indicator that this project may not be as important to your organization. There are probably more important projects than this one.

8 - Team

Ideal approach: select professionals, including Belt, interested in making a difference, something more than just routine, truly committed to devote part of their time to do something more impressive in Business results. Encourage professionals that it will be an

excellent learning opportunity, developing new leadership skills and exposure within the organization.

Special attention: ask the professionals who were chosen to participate in the team, if they really want to do that. If someone does not wish to participate and/or is not convinced to participate, respect that decision. If necessary, get one appropriate substitute .

9 - Management Approval

Ideal approach: the approval starts with the selection of the best projects for the moment, from a preliminary list (Hopper List), which should be done in a council. Subsequently, each selected project must have a formal approval. This varies from organization to organization but as a minimum, should be signed by Sponsor (Champion), responsible for Lean Six Sigma management and an assistant controller (or Controller).

Special attention: the formal approval should be quick to allow the team to begin working effectively with the methodology to achieve the results expected and necessary for the business.

10 - Discipline

Ideal approach: provide a good professional training; it could be done internally in the organization or with the support of a consulting organization. It is very important to have a good balance between the use of Lean Six Sigma methodology, use of qualitative & quantitative statistical tools, graphical and statistical improvements proof, implementation of controls to perpetuate the gains in the Business routine and execution speed.

Special attention: "the solution will not fall from sky". It is required of a good Belt, supported by a great Champion, a capacity above average in terms of execution, strong

involvement, knowledge and understanding of the "real world" (Genba), ability to influence people, creative dissatisfaction with the present situation , resiliency, persistence and ability to "hands on".

11 -Champion & Management support

Ideal approach: Champion should systematically monitor the progress of projects under their management. Should devote at least 5 to 10 minutes each week to help managerially the Belt and team in implementation of the methodology, the execution of improvement actions, the provision of resources (financial, people, materials, equipment, etc.) and implementation of controls that will ensure the perpetuation of improvement actions. The management of Lean Six Sigma and top management of the organization should make some sort of monitoring on a monthly basis (e.g.: meetings of general evaluation of the projects, earnings, difficulties, new demands and presentation of ongoing projects and/or completed).

Special attention: Top management must pass a clear message to the Champions that the projects are aligned with business strategy and will help them meet their individual performance goals. And, as a direct result, everyone in the organization will gain from the success of projects.

12 - Champion & Management Follow Up

Ideal approach: report monthly KPI evolution of projects and financial gain (if applicable) for the organization. If it is a multinational organization, also report to the Head Office. Perform monthly meetings that provide information on the evolution of Lean Six Sigma projects, in general, and present some of them (2 to 3) in these meetings (10 to 15 min/

project).

Special attention: considering that project is essential to Business Results, certainly they need to be monitored more closely by Sponsor (or Champion). The focus here is not technical and 5 to 10 minutes by week dedication will help a lot in keeping the project on track, on time, good compliance with the methodology and, certainly, with great probability of success in implementing the desired improvements and, ensuring the perpetuation of financial and/or qualitative gains.

13 - Inspiration and Dedication

Ideal approach: Make more than the routine, overcoming difficulties, consider that nothing is impossible and you can always improve and change when it combines process, methodology, statistical knowledge and, real teamwork.

Special attention: always combine inspiration and dedication with the execution ability, making processes and organization changes and assuring their perpetuation.

14 - Project Closure (Control Plan and/or Standard Operation, seriously).

Ideal approach: consider project closure phase, as one of the most critical of the DMAIC methodology. That is, the quality of closure project is what will ensure the transfer of process improvements to Business routine and, consequently, the perpetuation of financial and/or qualitative gains. The most important tools in this delicate moment are: Control Plan and/or Control Flow and Standard Operation (when strong focus on Lean Enterprise).

Special attention: for each project in conclusion, make a formal transference of improvements and controls to the Process Owner, ensuring the improvements proof, quantification of realised gains (financial and/or quality) - with the approval of Controlling

area and ensuring that the controls (e.g.: Control Plan and/or Control Flow and/or Standard Operation) are effective part of the business processes routine of the organization. One simple view of this last success factor is showed in Figure 2.

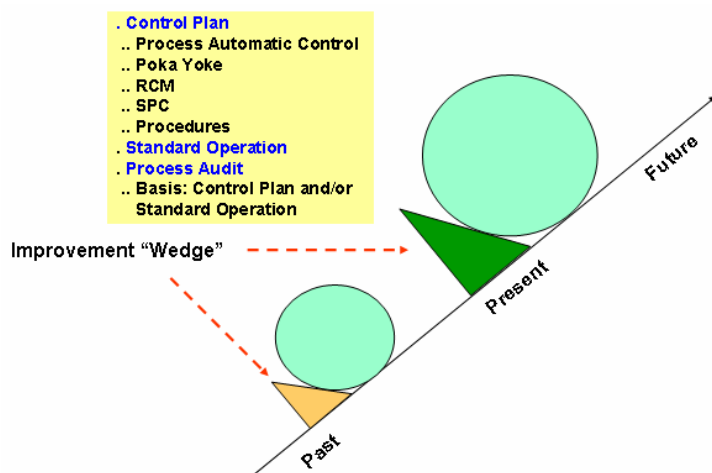


Figure 2: Improvement Wedge

Results and Discussion

In the authors' experience in Brazilian organizations practicing Lean Six Sigma that followed in a good manner these 14 success factors in choosing and conducting projects, the results are very significant. See table 1.

The results in Table 1 are from a sample (5 organizations in Brazil) who obtained a good adherence to 14 points highlighted in this work. The results were quantified after the projects have reached and stabilized within the control phase of DMAIC and were validated by Champions and approved by Controlling area.

Table 1 - Results of projects executed in Brazil (national and multinational) - sample (years 2007 to 2009)

Organization	Business (segment)	Year	Financial gain (US\$)	Projects (#)			Project Leader	Gain 1 (US\$/proj/year)	Gain 2 (US\$/proj/year) Global
				With financial gains	Without financial gains	Total			
A	Mining	2007	9.387.463,33	20	3	23	BB + GB	469.373,17	408.150,58
		2008	5.998.880,00	16	2	18	BB + GB	374.930,00	333.271,11
B	Pharmaceuticals	2008	2.473.653,33	4	NA	4	GB	618.413,33	618.413,33
C	Pharmaceuticals	2008	981.958,33	3	4	7	BB	327.319,44	140.279,76
D	Personal Home Care	2008	2.591.493,89	8	0	8	BB + GB	323.936,74	323.936,74
		2009	1.256.088,89	4	2	6	YB	314.022,22	209.348,15
E	Hospitalar	2009	1.488.547,78	4	0	4	GB	372.136,94	372.136,94
Total			24.178.085,56	59	11	66	BB + GB + YB	409.798,06	366.334,63

Note: considered US\$1.00 = R\$1.80

NA = Not Available

BB = Black Belt Lean Six Sigma; GB = Green Belt Lean Six Sigma; YB = Yellow Belt Lean Six Sigma

These five organizations, still has opportunities for improvement in the systematization of the controls (Control Plan and/or Control Flow and/or Standard Operation). This is attributed to a needed culture evolution in Brazil, in general terms, to implement process controls (transactional and industrial areas) and follow them consistently at all hierarchical levels, as a basic requirement for the perpetuation of gains (financial and/or qualitative) in Business management.

Conclusion

In this paper, was traced part of the evolution of Lean Six Sigma based on literature review.

Our paper will be of value to practitioners by providing 14 guidance points in implementing Lean Six Sigma projects.

In our point of view it should also be useful to academics who are interested in practical results based on real world experiences.

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