

Review of lean six sigma implementation

Gopal Buchade¹, Prof. S.N.Teli²

¹PG student of Saraswati college of Engineering, Navi Mumbai, gopal.buchade@gmail.com

² Dean(Admin) Professor of saraswati college of Engineering, Navi Mumbai, shivanandteli@yahoo.com

Abstract: This paper reviews the published literature associated with six –sigma and lean six-sigma. The paper shows that however, the methodology changes with the dynamic trend and competition. Nowadays, the pressure of competition from multi-national firms had raised and among them is the automotive industry. it's the impact when the amount of competition is intensifying because the manufactured vehicles shifts from being national to international. As a part of competition, the necessary of understanding the implementation of LSS thought is really helpful to be a good competitor. The review offers why the industries fail to implement as well however they can overcome it..

Key words: Six sigma, Lean Manufacturing, LSS (Lean Six Sigma), DPMO (Defects Per Million Opportunities)

INTRODUCTION

What is Six Sigma? Imagine yourself as a head of management of a company. raise yourself, what's it that your organization produces using different processes. are the requirements tested? are the shoppers satisfied? Is everything operating as per desired? There are such a lot of queries that may appear but crunching all of them to one single answer isn't simple. For a successful business, it's essential to stay track of all processes concerned associated take adequate actions that satisfy the tip user and helps maintain an everlasting relationship..

REVIEW ON SIX SIGMA AND LEAN

Six Sigma

Six sigma Motorola engineers expanded on the term within the 1980s when they determined that the normal quality levels (measuring defects in thousands of opportunities) were inadequate. Instead, they needed to measure the defects per million opportunities. By using statistical analysis to minimize variation, Six sigma allows data based process improvements but gained momentum after its adoption by General electrical within the mid- 1990s. Motorola developed Six sigma to drive defects to zero but did not expressly address the elimination of unnecessary tasks. Six sigma could be a data-driven method improvement methodology used to reach stable and predictable method results, reducing method variation and defects. Snee (1999) outlined it as: “a business strategy that seeks to identify and eliminate causes of errors or defects or failures in

business processes by focusing on outputs that are critical to customers”. Six sigma methodology is to accelerate the company’s rate of improvement in quality and productivity. Our conclusions are that Six sigma is just a remote second to Lean in terms of popularity. In one research out of the 17 surveys examined, it was attainable to estimate the percentage of organizations implementing Six sigma based on only eight studies. supported the four massive sample studies we tend to might conclude that the uptake of Six letter among organizations has been low, starting from 5.0% to 15.5%. Barriers to implementing six sigma are that it's too complex to use, a problem in grouping information, etc. In recent years, companies have begun using Six sigma Methodology to reduce errors, excessive cycle times, inefficient processes, and cost overruns. The goal of the project was to streamline and standardize the establishment and maintenance of costing and designing for all business activities.

Lean

Lean the primary applications of Lean were recorded within the Michigan plants of Ford in 1913, and were then developed to perfection in Japan (within the Toyota Production System). Lean producing inspects the method by analyzing every task or activity to see whether or not it's added, isn't value-added but necessary, or isn't value-added. A value-added activity is some things that the client is willing to pay. an associate example of a value-added activity is that the maintenance of a satellite operations center. If a contractor was maintaining this center, then associate example of a non-value added however necessary activity is associate invoice payment. Activities that neither add value nor are necessary should be eliminated

METHODOLOGY

DMAIC (Six sigma)

Six Sigma as an entire will perform primarily in 3 completely different mannerisms: As a metric, management system, and methodology. As a metric, Six sigma is a scale of how sensible a company's quality is. to have "Six Sigma" quality standard, an organization should only have 3.4 DPMO. As a management system, Six sigma pulls within the ideas of Six sigma into a company business strategy. As a methodology, Six sigma is represented by the DMAIC model (Goodman, 2012). DMAIC methodology is applicable in each manufacturing and nonmanufacturing industries. DMAIC is defined as follows: Define–To identifies the issues. measure – Gather the proper knowledge to accurately

assess a problem. Analyze – Use statistical tools to properly determine the root causes of a problem. Improve – Correct the problem (not the symptom). control – put a concept in place to make positive problems stay fixed and sustain the gains.

Waste elimination method (Lean)

Lean equally is an approach for improvement in a company specializing in waste elimination. This waste is of seven types: overproduction, Waiting, time in queue, Transportation, Non-value adding processes, Inventory, Motion, and costs of quality: scrap, rework, and inspection (Pande and Holpp, 2002). in brief, it is all concerning maximizing the added value to the client.

RESULTS

Lean is clearly the foremost popular performance improvement program with twelve months to 400th of the respondents implementing this program. Six sigma is the second most popular performance improvement program with simply over 15 August 1945 of the respondents implementing it. As already mentioned within the introduction, Six sigma target reducing the variation in a method, creating them the perfect tools for tackling an incapable but stable method, whereas Lean tools focus additional on the elimination of waste and would be the primary port of call for streamlining an unstable method. Priority should lean to unstable processes, using Lean tools to eliminate the waste and simplify the method. Once it's stabilized, additional advanced statistical tools from the Six sigma toolbox is used to reduce variation and build the method capable. Thus, Lean-Six sigma came to exist so we are able to take the benefits of each of them.

Lean Six sigma

The management of the company can always be probing for opportunities which will enhance the effectiveness of the company's processes. Lean Six sigma is one of the significant methodologies of quality management, this seeks to increase productivity and improve the quality of method outputs. It emphasizes that imperfection is a chance for improvement. Lean Six sigma is rooted within the producing business as well LSS starts with top management. Lean Six sigma (LSS) may be a combination of historical strategies for method improvement that focuses on all-time low line and critical-to-customer needs which take each supplier and customers into account. Lean Six sigma may be a business improvement methodology that aims to maximize shareholders' worth by rising quality, speed, client satisfaction, and costs. it's been widely adopted widely in producing and repair industries. The advantages of Lean Six sigma within the industrial world (both in producing and services) are highlighted extensively within the literature and include the following:

1. Making certain services/products conform to what the client desires („voice of the customer“).
2. Removing non-value adding steps (waste) in essential business processes.
3. Reducing the cost of poor quality.
4. Reducing the incidence of defective products/transactions.
5. Shortening the cycle time.

6. Delivering the right product/service at the proper time in the right place.

Each client expects quality, speed and low price thus LSS offer these by DMAIC (Define, Measure, Analyze, Improve, and Control) project management methodology and varied lean tools square measure used to contour processes and enhance productivity. the companies that are the strongest proponents of LSS include General electrical Co., Sony Corporation, Honeywell, TRW Inc., Bombardier, Johnson and Johnson, The Dow Chemical Company, Exxon Mobil corporation., J.P. Morgan Chase & Co., Citibank, GMAC Mortgage Corporation, and John Deere.

Lean Six sigma combines

the principles of each the reduction of the seven kinds of wastes still because the reduction of defects in producing operations The DMAIC cycle (Design, Measure, Analyze, Implement, and Control) assists the researchers in reducing the varied kinds of waste throughout the corporation being assessed besides the organization playing the assessment. Why has the govt? largely ignore it? Air Force Base, was recently quoted as saying, “I can tell you that in nearly each one of our major programs we have a tendency to are out of control on price and schedule” [2]. LSS is designed for method improvement, but its principles will help maintain each cost and schedule control. a complete of 135 organizations were contacted, of that solely or so 100% reportable the appliance of Lean Six sigma. This can be considered quite a negative phenomenon because the success and prosperity of organizations largely depend on acceptable methods applied for his or her improvement. Lean Six sigma doesn't need the application of recent ways and techniques, but expects the effective application of tested methods, systematically and properly. It will bring dramatic enhancements and building and develop corporate culture. The barriers to health care to implement LSS are

Measurement: it's usually difficult to spot processes, that is required to search out-out defects. Psychology of workforce: it's particularly necessary to not use jargonistic language, as this has a high chance of being rejected or accepted with cynicism by medical professionals. Lean equally is an approach for improvement in a company specializing in waste elimination. This waste is of seven types: overproduction, Waiting, time in queue, Transportation, Non-value adding processes, Inventory, Motion, and costs of quality: scrap, rework, and inspection (Pande and Holpp, 2002). in brief, it is all concerning maximizing the added value to the client.

Important success factors prospering LSS

Important success factors prospering LSS application requires committed leadership, education, and institutionalization. Regardless of future names and enhancements LSS needs every of the subsequent activities:

- (1) That specialize in what's important to the client,
- (2) The action the bottom line,
- (3) Confirming any claims of success.

CONCLUSION

Lean Six sigma is an approach that learns from past failures, one of them is too little support for management. Focus on client, processes, worker characterize the lean Six sigma as a way of building and developing a brand new company culture and providing organizations with a tool for a competitive advantage. the combination of this two principles is logical and practical which may bring dramatic improvements. its impossible to attain lean processes without statistical control of variables, since it's not possible to attain a six sigma method level without optimal flows and elimination of waste. However, there are not any of barriers of LSS in services, like inmate characteristics of services, still as producing origins of LSS that have conditioned service managers to consider them as physical products only.

REFERENCES

(Periodical style)

- [1] Kenneth D. Shere, Ph.D., Lean Six Sigma: How Does It Affect The Government?, The Journal of Defence Software Engineering, March-2003, 8-11.
- [2] A. Ansari, Seattle University, Diane Lockwood, Seattle University, Emil Thies, Zayed University, Batoul Modarress, Zayed University and Jessie Nino, Seattle University, Application of Six-Sigma in finance: a case study, Journal of Case Research in Business and Economics.
- [3] Nabeel Mandahawia, Rami H. Fouad*,a, Suleiman Obeidata, An Application of Customized Lean Six Sigma to Enhance Productivity at a Paper Manufacturing Company, Jordan Journal of Mechanical and Industrial Engineering, 6(1), Feb. 2012, 103-109.
- [4] Boyer, K. K. (1996), An assessment of managerial commitment to lean production, International Journal of Operation Management, 16 (9), 48-59
- [5] Alessandro Laureani, Lean Six Sigma in the service industry, Advanced topic in Applied Operations Mangement
- [6] Elliot Boldt and Matthew Franchetti, Total Sustainability Assesments for Manufacturing Operations Using the Lean Six Sigma Approach, Science Journal of Environmental Engineering Research, ISSN:2276-7495,201