

Lean Six Sigma Exploring Future Potential and Challenges

Rushikesh Patil¹, Ganesh Suryawanshi², Akshay Shinde³

^{1, 2, 3}Mechanical Engineer, Shivaji University, Kolhapur

Abstract: Understanding future potential and challenges of lean six sigma will allow industries and organization for better improvements. This paper examines evolution, key differences, list of potential challenges and key opportunities influencing successful lean six sigma implementations. The combination of six sigma and lean six sigma is most widely accepted methodology and this raises a question: Where does LSS go from here? This paper therefore explores the next steps of LSS and its impact on industries and organization.

Keywords: Lean, Six Sigma, Implementations, Future potential

1. Introduction

LSS is an advanced business strategy and methodology that increases process performances, enhances customer satisfaction and develops leadership skills through DMAIC approach. LSS has acquired wider acceptance as an improvement strategy in a range of industries and sectors. LSS has become one of the most popular approaches among industries all over the world, covering manufacturing, military, government, health care, IT, education and service.

2. Evolution of the Lean Six Sigma Methodology

LSS has evolved during a journey that can be traced back well over a century. Post WWII, Six Sigma and total quality management (TQM) program originated from methodologies and techniques advocated by Americans, Dr. Deming and Dr. Juran and initially adopted by Japanese after World War II. In 1980's, Just-in-time (JIT) was originated and developed in Japan by Toyota. In mid-late 1980's, Motorola started a program modeled after Deming price and TQM methodologies and called it Six sigma. In 1990's, other companies followed, including General Electric, IBM, Texas Instruments, Allied Signals, Kodak and US GAO. In mid 90's, Six Sigma became popular. Lean manufacturing was introduced in 1990's whose management philosophy is derived from Toyota Production System (TPS). In 2000's, American companies increasing embraced lean tools and techniques as lean focused on process throughout and efficiencies.

3. Key Difference Between Lean and Six Sigma

Basis For Comparison	Lean	Six Sigma
Meaning	A methodical way of elimination of waste, in the production system is known as Lean.	Six Sigma is a process of maintaining the desired quality in the products and processes by taking necessary steps.
Propounded in	1990's	1980's
Theme	Waste removal	Removal of variability

	Flow	Problem
Focus	Flow	Problem
Tools	Based on visuals	Based on mathematics and statistics
Consequence	Flow time will get reduced	Uniformity in process output
Aim	To improve production by increasing efficiency in the process	satisfy the client's requirements



Figure: Difference between Lean and Six Sigma

4. List of Potential Challenges in Organization

Challenges Consistent With Private Sector	Challenges Unique To The Private Sector
<ul style="list-style-type: none"> Inconsistent leadership motivation Management competency in process improvement Culture that considers time devoted to improvement less valuable than time devoted to "real work" Union rules and relations Technical skill of employees 	<ul style="list-style-type: none"> Unique human resource practices The election cycle and term limits Attitude of employees regarding stability and job security Legislative control Competing special Interest Revenue not directly linked to value provided

Several additional challenges particularly unique to the public sector include distinctive human resource practices; the election cycle and term limits; stability and job security concerns; legislative controls; and competing special

interests. Additionally, revenue is typically not directly linked to value, since most of the funding of services derives from tax revenue paid by citizens, who traditionally have low expectations, making them relatively apathetic and therefore not likely to routinely complain or offer suggestions for improvement.

5. Key Opportunities

LSS is considered as one of the key initiatives to improve management processes. The future of Lean Six Sigma is bright and includes the following trends:

Continued Use of Lean Techniques in Conjunction with Six Sigma

Simply stated, there are an endless amount of processes, situations, and process improvement project opportunities facing business leaders. Every situation is different and there is no "one size fits all" approach that will work every time.

A Six Sigma practitioner, such as a Green Belt or Black Belt, needs to use the tools and techniques which are appropriate for that particular situation. Thus, focusing on just Lean concepts or sticking with traditional Six Sigma techniques is a mistake. The Six Sigma project leader should utilize both sets of tools; use the right tool for the job at hand.

Smaller Projects and Daily Usage of Lean Six Sigma Techniques

The cornerstone of improving processes is a solid three to six-month project following the DMAIC (Define, Measure, Analyze, Improve, and Control) roadmap; this will not change.

However, including smaller "rapid improvement events" into the mix of projects will help Lean Six Sigma and process thinking to become part of daily operations. Not every process improvement effort needs to be a huge project. Making process improvement efforts simple and accessible to everyone will help transform company thinking.

6. Conclusion

LSS has been developed and utilized in various sectors across globe due to its process performances, customer satisfaction and DMAIC approach. Due it's improvement strategy, it has it's unique place in most of industries in future. We believe continuous improvement will continue to evolve and become more important in all sectors .We can be certain however about the improving technologies will continue to play an increasing part of the LSS evolution .

References

- [1] Antony, J., Escamilla, J.L., Caine, .P., 2003. Lean Sigma. *Manufacturing Engineer* 80(4), 40-42
- [2] Womack, J., & Jones, D.D.(1990). *The machine that changed the world*.
- [3] Michael, G.(2000). *Lean Six Sigma: Combining six sigma with lean speed*.

- [4] McClellan, J 2004, *The Benefit of Using Simulation to Improve the Implementation of Lean Manufacturing – Case Study: Quick Changeovers to Allow Level Loading of the Assembly Line*, Master of Science Thesis, School of Technology, Brigham Young University.
- [5] Lazarus, I.R. ,Butler, K., 2001. *The promise of six sigma*. *Managed health care executive* 11(9),22-26
- [6] .Snyder, K & Peters, N 2004, 'Lean Six Sigma in the public sector: Applying proven methodologies to improve quality, remove waste, and uncover hidden opportunities in state and local government', White Paper, Xerox Global Services Inc., September 2004.
- [7] Wiesenfelder, H 2009, *Advantages and disadvantages of Six Sigma*, eHow.com Feb. 05 2009 http://www.ehow.com/facts_4760705_advantages-disadvantages-six-sigma.html
- [8] Womack, JP & Jones, DT 1996, *Lean Thinking*, CPI, Great Britain, pp29-90.
- [9] Peter, SP., Robert, PN., & Roland RC 2002, *The Six Sigma Way*, The McGraw-Hill Companies, Inc., USA.