

# Need of Lean & Six Sigma to Achieve Business Excellence in SMEs

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**Abstract:** Lean & Six Sigma (LSS) have become frequently used words in any forum related to Quality, Productivity & Waste elimination in order to meet the customer requirements in terms of Quality, Delivery & Cost (QDC). LSS initiatives play a major role in any operational situation, Since the OEMs enjoyed the benefits of LSS initiatives, and they demand the same from their suppliers (Tier 1-3). Moreover National and International competitiveness, High Quality expectation to the level of Zero Defect, Just-in-Time & Cost Competitiveness demand the Small & Medium Suppliers to practice and demonstrate their Operational Excellency to get sustained business with their Customers on a long term basis. LSS plays a vital role in equipping Small & Medium Enterprises (SMEs) to get their edge, provided, it is practiced and implemented strategically.

**Keywords:** Global Demand on Quality, Competitiveness, Impact of LSS, Tools for SMEs.

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## I. INTRODUCTION

In an era of uncertainty and tough Competitive Business Scenario, where the Quality, Productivity & Cost Competitiveness are the need of the Nation and Industries, it is an opportune to analyse what critical success factors are essential towards achieving Business Excellence. The identification of these factors is necessary for organizations, mainly SMEs to forge ahead in sustaining and increasing the Market share in Local/Global Economy.

All developing countries in the world are now getting geared to meet the Global Competition and concepts such as Total Quality Management (TQM), Total Productive Maintenance (TPM) are getting implemented in Manufacturing & Service related industries. It is bit difficult for SMEs to afford the cost & effort to implement and get certified on TPM & TQM, however they can get the Essence of TQM & TPM through the relentless practice of Lean & Six Sigma without much investment with least effort & time.

## II. NEED OF LEAN SIX SIGMA

### A. Global Demand on Quality :

Managing quality is crucial for small businesses. Quality products help to maintain customer satisfaction and loyalty and reduce the risk and cost of replacing faulty goods. Companies can build a reputation for quality by gaining accreditation with a recognized quality standard, such as ISO 9001, published by the International Organization for Standardization. But failing supply of defect free products consistently to the customers, it is just possession of Certification and will not retain the supplier's image for quality with Customers.

Your customers expect you to deliver quality products. If you do not, they will quickly look for alternatives. Quality is critical to satisfying your customers and retaining their loyalty so that they continue to buy from you in the future. Quality products make an important contribution to long-term revenue and profitability. They also enable you to charge and maintain higher prices.

Quality influences your company's reputation. The growing importance of social media means that customers and prospects can easily share both favourable opinions and criticism of your product quality on forums, product review sites and social networking sites, such as Facebook and Twitter. A strong reputation for quality can be an important differentiator in markets that are very competitive. Poor quality or a product failure that results in a product recall campaign can create negative publicity and damage your reputation.

#### **B. Costs Competitiveness:**

Poor quality increases costs. If you do not have an effective quality & process control system in place, you may incur the cost of analysing non-conforming goods or services to determine the root causes and retesting products after reworking them. In some cases, you may have to scrap defective products and incur additional production costs to replace them. If defective products reach customers, you will have to pay for returns and replacements and, in serious cases, you could incur legal costs for failure to comply with customer or industry standards.

In order to eliminate and prevent COPQ (Cost of Poor Quality), the process should be built in with quality or to be redesigned to deliver consistent quality with less variation to meet the requirements of customer specification, so that the supplier can produce and deliver products to customer on competitive cost and will get the edge in business.

#### **C. Impact of Lean Six Sigma:**

It is estimated that one could expect a minimum return on investment of three or four times. The costs of implementing LSS in around one year and a half (Brue & Howes, 2006).

Company	Impact of Lean Six Sigma
General Electric	<ul style="list-style-type: none"> <li>added \$2 billion in 1999 and \$2,4 billion in 2000 to the bottom line</li> </ul>
Motorola	<ul style="list-style-type: none"> <li>saved \$1,5 billion in the first ten years of SS Honeywell (former Allied Signal)</li> <li>reduced costs by % 1,4 billion from 1992 through 1996;</li> <li>reduced new product introduction time by 16%.</li> </ul>
DuPont	<ul style="list-style-type: none"> <li>saved \$1,6 billion in four years;</li> <li>reduced environmental impact.</li> </ul>
Johnson Controls	<p>For the Ohio manufacturing plant:</p> <ul style="list-style-type: none"> <li>reduced defects by 70%;</li> <li>reduced costs \$800,000 per year.</li> </ul> <p>For the automotive operations in Michigan:</p> <ul style="list-style-type: none"> <li>saved \$943,000 per year through greater engineer productivity.</li> </ul>
Mount Carmel Health System	<ul style="list-style-type: none"> <li>financial return of \$2,4 million after the first year of implementing LSS</li> <li>saved \$35,8 million by early 2004 after investing only \$600,000 in SS training and consulting</li> </ul>
<i>Source: adapted from Brue &amp; Howes (2006)</i>	

Since the financial part is decisive in choosing whether to initiate a project, managers and Shareholders are interested to know the benefits of implementing LSS to their companies. LSS applied to the processes of a company can lead not only to lower costs and increased productivity but also to a better customer satisfaction.

#### **D. LSS Tools & Its Applicability to SMEs:**

The following are the commonly used Lean Six Sigma Tools for process optimization, but based on the need, and process nature of the SMEs, the apt tools should be taken to get the advantage of its effectiveness. The role of a well-trained Green Belt/Black Belts plays a major role in tools selection and application for that organization.

#### **Defining a problem, improvement opportunity, or requirements:**

- Project charter to define the focus, scope, direction, and motivation for the improvement team.
- Voice of the customer to understand feedback from current and future customers indicating offerings that satisfy, delight, and dissatisfy them.

- Value stream map(VSM) to provide an overview of an entire process, starting and finishing at the customer, and analysing what is required to meet customer needs .

**Measuring process performance:**

- Process map for recording the activities performed as part of a process.
- Capability analysis to assess the ability of a process to meet specifications.
- Pareto chart to analyse the frequency of problems or causes.
- Future State Value Stream Map(FSVSM) to provide the Targeted Condition .

**Analysing processes to determine root causes of variation, defects, or poor performance:**

- Root cause analysis to uncover causes.
- Failure mode and effects analysis for identifying possible product, service, and process failures.

**Improving process performance by addressing root causes:**

- Design of experiments (DOE) to solve problems from complex processes or systems where there are many factors influencing the outcome and where it is impossible to isolate one factor or variable from the others.
- Kaizen event to introduce rapid change by focusing on a narrow project and using the ideas and motivation of the people who do the work.
- Just -In -Time (JIT) ,Single Minute Exchange of Dies (SMED) ,Kanban , Load Levelling ,First In –First Out (FIFO) ,
- Multi-vari chart to detect different types of variation within a process.
- Non –Value Added & Real Value Added (NVA & RVA) analysis to surface the Waste through 7 Types of Classification.

**Controlling the improved process and future performance:**

- Control plan to document what is needed to keep an improved process at its current level.
- Statistical process control (SPC) for monitoring process behaviour.
- 5S to create a workplace suited for visual control.
- Mistake proofing (poka-yoke) to make errors impossible or immediately detectable.

**III. CONCLUSION**

It is always better to practice the best proven business excellence model like Lean Six Sigma to get the overall advantages to improve and recreate the processes to deliver high quality at optimum cost with speed in delivery . SMEs are playing major role in economic growth of the nation . It is very difficult to get the competitive edge in Global and Local Market unless they become strong in Product & Service Quality & Productivity . Practicing Lean Six Sigma is always a Value Creation to the Organization and Nation at large.

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