

Lean Six Sigma Briefing

Introduction

Lean Six Sigma at its most effective is a **Management System** and philosophy that permeates all aspects of an organisation. It is much more than a set of metric-based problem solving and process improvement tools. The Lean Six Sigma methodology is a merger of two distinct but complementary methodologies—Lean and Six Sigma. Lean is based on Toyota’s production system and has been developed into a Lean Thinking methodology that has been widely applied in both manufacturing and service businesses. Six Sigma was developed by Motorola in the late 1980’s initially to improve product quality and has also been widely applied in manufacturing and service organisations. The Lean Six Sigma methodology brings the two together to provide the practitioner with a more extensive toolset and variety of approaches to address most eventualities. The table shows the key focus of the two methodologies:

Lean	Six Sigma
Customer Value	Customer Requirements
Time Reduction	Quality — Variability reduction
Cost Reduction	Cost Reduction

What are the benefits?

The reported benefits by Motorola and many others of Six Sigma has been the driver for wide scale adoption by many major, multi-national organisations – General Electric, Honeywell, Black and Decker, Amazon, Starwood Hotels, Bank One, Western Union, Stanford Hospital, City of Fort Wayne, Vodafone and many others. The reported benefits are mouth-watering:

- General Electric cites its increase in margin from c10% to being consistently c15+% in the four years that they have been applying Six Sigma as evidence of its contribution to the business. In 1999 GE saved \$1.5Bn through Six Sigma. “*Six Sigma has forever changed GE*”, Jack Welch.
- At Motorola the benefit of Six Sigma over the decade spanning 1989-99 was \$14Bn. It gave them the muscle to achieve 10X improvement in 5 years, which was then superseded by 10X every 2 years. “*Six Sigma is really a cultural thing—a way of behaviour*”, Motorola consultant .
- Stanford Hospital has reduced material costs by \$25m/year, reduced the cost of cardiac surgery by \$2.6m/year, reduced ICU hours/patient/day from 29.5 hours to 19 hours.
- Starwood Hotels & Resorts have increased rooms revenue by 19% and incremental spend by 11.95%

Toyota have been developing and applying Lean throughout their organisation for over 50 years. They can produce cars to order in 3 weeks and yet they typically only incur £3 warranty costs/car in the first 3 years. Toyota are, by some margin, the world’s most profitable automotive company, the largest by volume, and, consistently, top the JD Power survey for quality and service.

Is it relevant to us?

Is it applicable to my organisation? The answer is undoubtedly, **yes**, Lean Six Sigma’s is equally valid in service and public sector organisations as it is manufacturing. It applies for any process with a customer (internal or external) and hence all processes. Some of the “frightening” realities about the performance of most organisations are:

- The cost of poor quality (rework, checking, mistakes, lost opportunities, etc) in service based businesses and processes can be as high as 50% of revenue/budget—just think about the costs of the poor quality of terminal 5 launch and all of the subsequent advertising to try and recover!
- In manufacturing the cost of poor quality, after years of improvement activities, is estimated as being between 15 and 20% - still a considerable opportunity for further improvement.
- Administrative and service processes typically perform in the range 1.5 to 3 Sigma before improvement, that is yields of 50 to 90% when measured against the customer’s requirement.
- Analysis of service processes often reveal that less than 5% of the elapsed time is devoted to “real value adding work” – the remainder, is waiting, moving, rework, checking and other non-essential, non-value adding activities that the customer won’t pay for given a choice.

Improvement Model

There are different types of lean and six sigma projects that have a different focus and tend to use different tools although the fundamental improvement model is common for all types of projects:



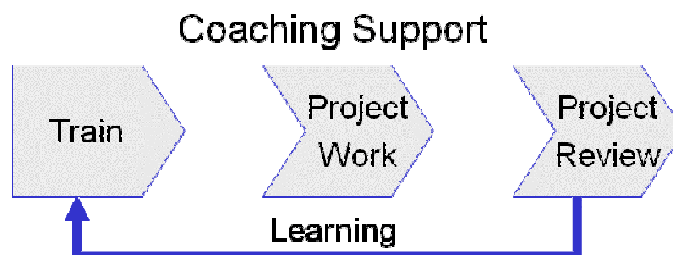
In **Define** we need to clearly define the problem or opportunity boundaries and determine the customer requirements. The focus of **Measure** is to understand the current performance against the customer requirement. In **Analyse** you determine what is wrong and needs to be eliminated or improved. Only when we understand the problem can we determine appropriate solutions and prove that they work in **Improve**. Finally, we need to provide the people who operate the process with effective **Controls** to hold the gains and provide a basis for them to continuously improve the process. The diagram below shows three types of Lean Six Sigma projects, their focus and the typical tools that are used:

	KAIZAN TEAMS	LEAN TEAMS	SIX SIGMA TEAMS
Commonly used tools	<ul style="list-style-type: none"> • Visual observations • Cycle times • Process mapping • 5S's • Basic tracking tools • Standard work 	<ul style="list-style-type: none"> • Value stream maps • Visual controls • One piece flow • Pull systems • Set-up reduction • Cells 	<ul style="list-style-type: none"> • DMAIC • Statistical Tools • Data & Process Analysis • FMEA • SPC
Improvement Focus	<ul style="list-style-type: none"> • Physical observations • Quick fix • In “cell” focus • Reduce hassle factor • Eliminate waste 	<ul style="list-style-type: none"> • Value-added focus • Standardisation • Continuous flow • Cycle time reduction • Inventory & WIP reduction 	<ul style="list-style-type: none"> • Reduce variation • Process capability • Defect prevention • Stabilize processes • Complex problems • New process /product design
	Short duration (1 week), Full time	Medium duration (30 to 120 days), part time	Longer duration (90 to 180 days), part time

The implementation of Lean Six Sigma in an organisation will embrace six themes:

- A genuine focus on the customer.
- Data and fact driven management based on an effective measurement system.
- Process focus, management and improvement as the engine for growth and success.
- Proactive management that anticipates problems and changes.
- Cross functional, business, internal/external cooperation.
- A drive for perfection but a tolerance of failure - to improve you often need to be able to experiment and learn what works and what doesn't.

This last point highlights the “action learning approach” that should be adopted throughout a Lean Six Sigma programme:



Learning Solutions

The skills development for Lean Six Sigma has been structured into different levels that have been augmented with awareness and training for specific groups. We can provide standard or customised training programmes and consultancy services to get an organisation started on their continuous improvement journey:

Introduction and Awareness — provides a basic introduction to the process and concepts and provides a road map for establishing a Lean Six Sigma continuous improvement programme.

Yellow Belt — is for people who are going to be team members and need to have a basic understanding of the improvement model and tools.

Green Belt — is for people who are taking part in or leading improvement projects on a part-time basis. This can be structured as intensive case study based training ideally followed by delegates running a real project; or as a longer hands-on programme that focuses the training around delivering a real project.

Black Belt — is for people who maybe pursuing process improvement as a full time role. This programme can build from the Green Belt or be undertaken as a single integrated programme. At this level learning has to be reinforced by delivering a real business project either during or immediately following the training.

Master Black Belt — is for delegates who have significant experience as a Black Belt and need to develop their skills to lead enterprise wide strategic change transformations.

Champion and Executive — is to ensure senior managers who are sponsoring projects have the skills to direct improvement projects and to establish an improvement infrastructure to delivery a portfolio of projects.

Further information

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