Six Sigma Thinking for Cultural Change

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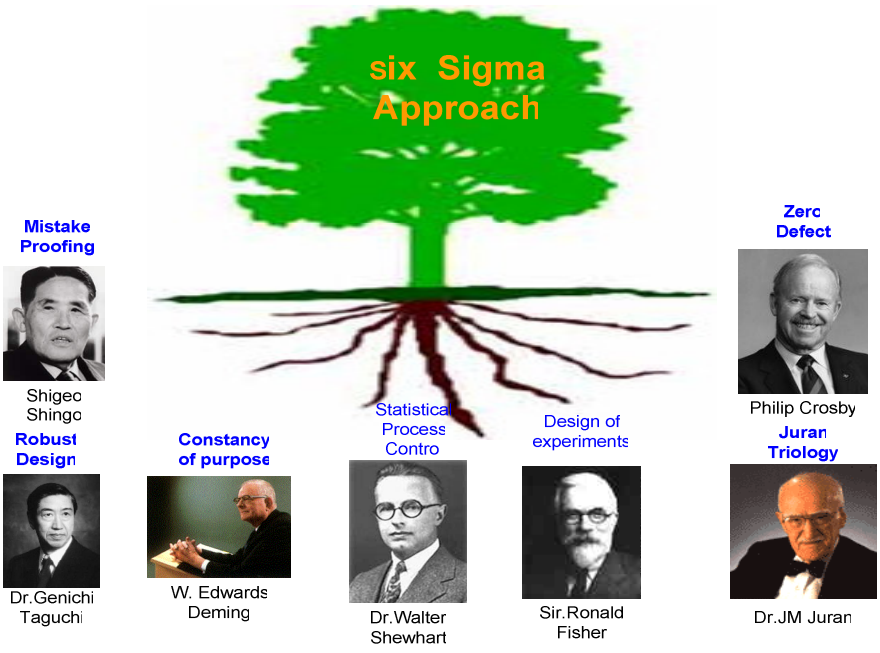
Is six sigma philosophy new? If we want to answer this question, we should try to remember the contribution of many great quality gurus in the quality journey. Principles and tools of six sigma are not new. Some champions of the progress in the journey of quality and six sigma are shown here.



Tools	Six Sigma Roadmap: Define	Measure	Analyze	Improve	Control
Charter	●				
Gantt Chart	●				
Pareto Analysis	●				
Process Mapping		●			
Value Stream Mapping		●			
FMEA		●	●		●
Cause and Effects Matrix		●	●		
MSA		●			●
Process Capability		●		●	
Exploratory Data Analysis	●		●	●	
Life Data Analysis		●		●	
Multi-Vari Analysis			●		
Hypothesis Testing			●	●	
Confidence Intervals			●	●	
Power and Sample Size			●	●	
Analysis of Variance		●	●	●	
Correlation and Regression			●		
Multiple Regression			●	●	
Design of Experiments				●	
Response Surface Methods				●	
Evolutionary Operation				●	
Statistical Process Control	●	●		●	●
PPAP					●

Shewhart did not propose theory of control charts for implementing six sigma projects! Fisher did not invent the statistical procedures to support six sigma approach. Similarly, Crosby's zero defect approach was meant to be implemented across the organization in everything that is being done in the company. Shingo's Poka Yoke (mistake proofing) was to prevent defects from being produced! He *did not call it six sigma*. Thus the philosophies and concepts were meant for application wherever appropriate, generally

across the company. As a matter of fact, if there was a “copyright” on some of these concepts, six sigma would not have taken its form the way we see it. As such the phrase ”six sigma” came in to existence much later during the 1980s when Bill Smith coined it and Bob Galvin, the CEO of Motorola embraced it. (Interestingly, it is said that it took quite a bit of effort to sell the six sigma concept to Bob!).

If the philosophy and tools are not new, why should we restrict its application to only identified projects? We should constantly look for potential applications to improve performance to our customers. Most six sigma training programs require belts to take up a project before start of the program. This is an excellent idea as it forces belts in applying the concepts and tools immediately after the training before the tools are forgotten! However, this does not mean that the concepts and tools are useful only for projects where benefits are quantified in financial terms. I have observed in many organizations that after barely completing one project, the belts neither undertake the next project, nor do they apply the superb tools in their regular work. If we know for sure that there is an urgent need to improve and we see an application of some of the tools, we need not wait till the project charter is signed off and approved. Most organizations implementing six sigma require approvals of sponsors, master black belts (MBB), champions and financial controllers. The approval cycle time may be few days. There is also some cost associated with approval process! There are many opportunities where waiting for a week may not be acceptable. The other consideration for belts would be after completion of their projects. They should not stop applying the concepts and tools just because their projects are over! Six sigma belts are considered as future leaders of the organization and usually take important business positions after completion of their tenures as black belts. Thus they must inculcate the fact based decision making process as a part of work culture.

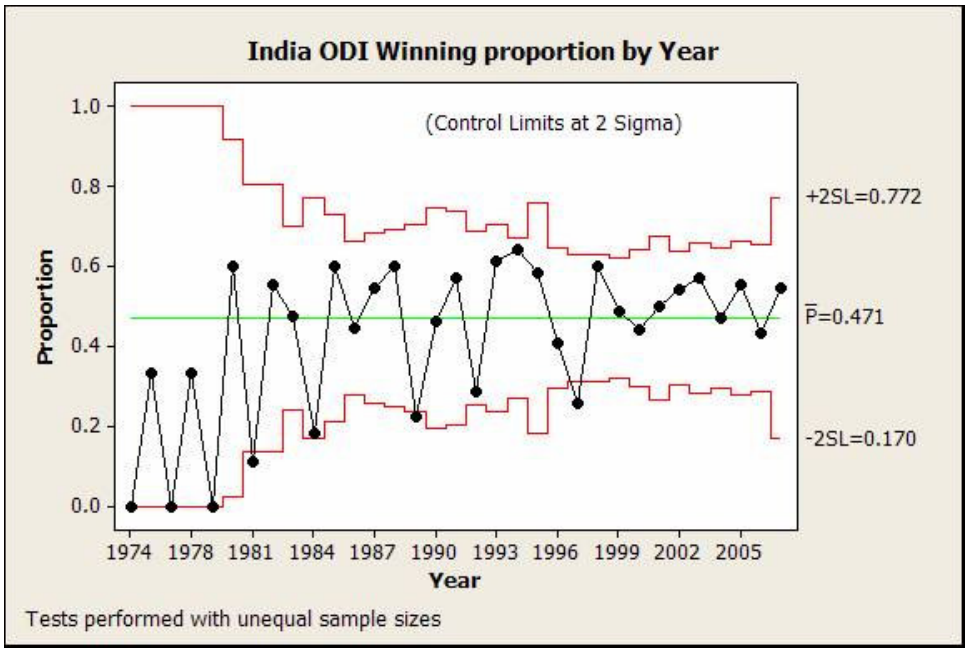
Till 1980s, the statistical tools were primarily used by statisticians. These required lot of manual calculations. Few DOS based softwares were available but these were not very user friendly and required statisticians to manage input and interpret output. With user-friendly softwares and large number of managers, engineers and professionals trained for six sigma, many of tools could be applied by these trained professionals. If the tools can be easily applied, these must be used. If the trained belts do not use these, there will be waste of “underutilized people” according to Masaki Imai, the great Kaizen Guru.

Some examples to illustrate “cultural change” examples are showed here. These are not six sigma projects but part of regular work of engineers and managers.

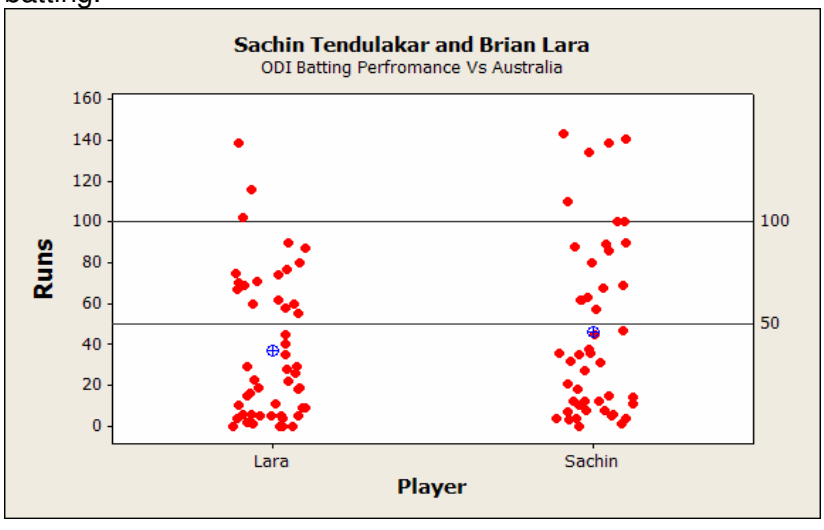
- Parts for a new source are being tested for comparing wear with that on parts from current source. The new source may save a lot of money for the company. The decision can be taken using hypothesis tests ensuring adequate power in the test.
- We want to confirm whether corrective action is effective or not. Compare performance of before and after corrective action
- We want to establish process parameters for a process. We can map the process and optimize the parameters using designed experiments
- Historical data of process is available for process parameters and performance. We can analyze the data using regression or other tools to find opportunities for improving the process.
- Performance data of various call centers is available. We may use some of the tools to compare the performance to conclude whether some centers are better or worse.

- Sales team wants to develop a forecasting model based on past data.
- Marketing wants to find out which advertisement results in higher sales.
- Service manager wants to assess dealers' service performance in terms of service time for various types of service calls.

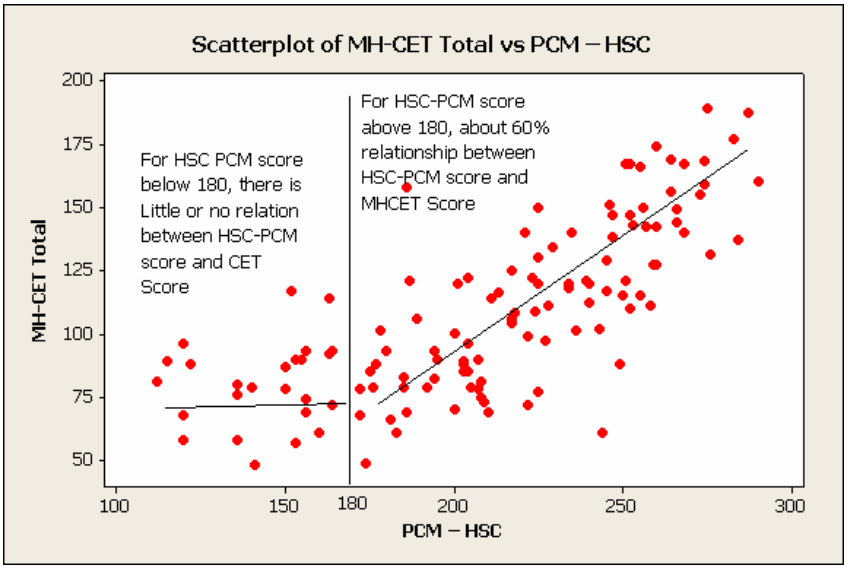
The tools can be used in many applications other than business. To illustrate the point, following control chart shows India's winning performance in one day cricket matches till 2007.



Another example is comparison of performance of Sachin Tendulkar and Brian Lara's batting.



An excellent example comes from a survey that I conducted for performance of students in HSC exam and CET. This was to assess whether CET is required or redundant. Following scatter plot of HSC PCM score vs MH CET total is interesting:



It is high time organizations and six sigma professionals start considering that the six sigma approach does not "end" when the projects are completed! We must change way data is managed and analyzed and decisions are made. Else, the most intense six sigma training could be waste of "underutilized talent"!

About Author:

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