

Six Sigma Sense

Sigma-level measurement helps sustain the program when interest wanes.

by Praveen Gupta

Launching a Six Sigma initiative starts with a lot of enthusiasm from the “champion” who’s found courage and conviction to persuade management to commit to it. With enough resources, interest, excitement and the help of some consultants, the Six Sigma initiative gets off the ground. After initial training, the promise of Six Sigma starts fading. The interest level wanes, the “champion” moves on and the Six Sigma crew starts losing its touch. In the Six Sigma journey, it’s only a matter of time before the team loses its momentum and ceases to progress. Sustaining a Six Sigma initiative is at least as important as launching it.

Measuring what is considered “value” is a basic Six Sigma tenet. Six Sigma is a major initiative that a corporation latches onto but doesn’t always measure. Instead, organizations fall back on financial measurements, which is contrary to the balanced scorecard approach. Besides, Six Sigma being a data-driven methodology, one must look at more process measurements, instead of depending on the financial measurements. Sometimes, financial measurements may be too late to learn about the Six Sigma initiative’s progress. Moreover, after the initial success, it’s tough to sustain a management system without a compelling measure of success and profitability. There must be a measure accessible to everyone that tracks progress toward goals and can be regularly discussed or reviewed. The absence of direct measurement for a Six Sigma initiative often can be traced to the absence of a goal. Corporations can set goals in terms of implementation of methodology, amount of improvement or profitability. However, there must be a measure progress in Six Sigma; in other words, a measure of the Six Sigma level. That’s why I have developed Six Sigma business scorecard to determine the corporate sigma level. I do this by determining the corporate yield, the corporate DPU and the opportunities for error, and defects per million opportunities (DPMO). Corporate yield is measured in terms of business performance index (BPI_n). Corporate DPU is calculated using the formula $DPU = -LN(\% \text{ Yield}/100)$. Opportunities for error are determined based on the number of C-level decision makers to ensure executive accountability.

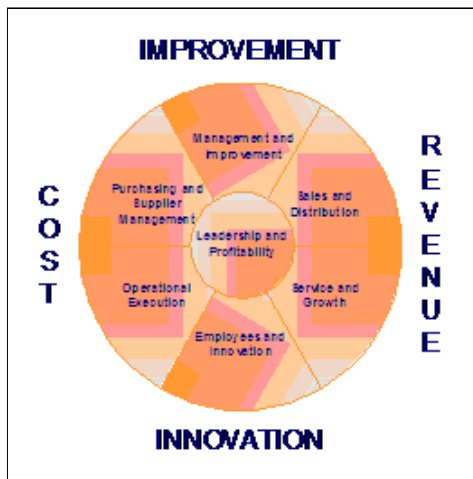
The Six Sigma business scorecard combines the Six Sigma methodology for dramatically improving customers’ satisfaction with the balanced scorecard approach to achieving financial objectives. The Six Sigma business scorecard is a balanced and complete corporate scorecard that promotes inspiration by the leader, improvement by the managers and innovation by employees. Most importantly, the Six Sigma business scorecard links the BPI_n to expected profitability, therefore providing a direct indication of financial performance. That must be the objective of an effective corporate performance scorecard, whether it’s balanced scorecard or some derivative of it.

The salient features of the Six Sigma scorecard include the following:

- Provides a new model for defining a corporate sigma level
- Aligns with the business’ organizational structure
- Maintains visibility of cost, revenue and profitability
- Includes leadership accountability and improvement rate

The framework for Six Sigma business scorecard is shown in figure 1. It consists of seven categories that represent key business processes and roles. The Six Sigma business scorecard framework balances sales and purchase, management and employee roles, customer service and innovation for growth, and execution for profitability. These processes are experientially weighed for their significance in corporate performance.

Figure 1: Six Sigma business scorecard



An example of determining business performance index (BPI) using the Six Sigma business scorecard framework is shown in figure 2. The BPI is determined using 10 measurements that include measurable processes, as well as soft processes. It's believed the total corporate performance is a function of all processes instead of just the tangible ones. The new measurements include employee recognition for exceptional performance toward growth or profitability and employees' intellectual participation through their recommendations. Idea management must become a well-defined process implemented to utilize human capital.

Figure 2: BPI Using the Six Sigma Business Scorecard

Measurements	Category Abbreviation	Importance	Initial Performance Guidelines	% Score	Weighted Score (A x C/100)
		(A)	(B)	(C)	(D)
1. Employees recognition (% of employees)	LNP	15	0.2-25 0.5-50 Feb-75 >5-100	100	15
2. Profitability	LNP	15	Feb-50 Apr-60 Aug-80 >12-100	65	9.75
3. Rate of improvement in process performance	MAI	20	<20-50 30-60 40-80 >50-100	20	4
4. Recommendations per employee	EAI	10	0.5-50 Jan-60 Feb-70 >5-100	64	6.4
5. Total spend/Sales	PSM	5	>60-30 45-50 35-75 <25-100	57	2.85
6. Suppliers defect rate	PSM	5	25-Mar Apr-50 May-75 6-100	48	2.4

7. Operational cycle time variance	OPE	5	>50-25 40-50 25-75 <10-100	87	4.35
8. Operational sigma	OPE	5	<3-25 Apr-50 May-75 >6-100	31	1.55
9. New business/Total sales	SND	10	20-25 30-50 40-75 50-100	50	5
10. Customer Satisfaction	SAG	10	80-60 85-70 90-80 100-90	60	6
Total (BPIn)					57.3
DPU (-ln(BPIn/100))					0.55687
# of Executives (CEO/COO Staff)					9
DPMO (DPU/Exe)*1M					61,874
Sigma					3.06

Rate of improvement is a critical and difficult measurement to implement. Surveys have found that employees know what they are supposed to work on; however, few of them know how well they perform. A smaller percentage of the employees know how much they or their company have improved during the preceding 12 months. Considering the competitive global environment, one must focus on accelerating the improvement rate. Continual improvement may not be sufficient, therefore continual dramatic improvement would be necessary to sustain growth and profitability.

The corporate sigma level provides a target for a Six Sigma initiative to move forward. One can set incremental targets to improve sigma level in all functions—operations and support. Having a sigma level measurement, the Six Sigma initiative can be carried on and be continually linked to the bottom line. Six Sigma cannot be viewed as an expensive initiative. Six Sigma is a profitable initiative that any business should pursue.

About the author

Praveen Gupta, ASQ Fellow, has been associated with Six Sigma since 1986. He completed his first Six Sigma project successfully in 1988. Gupta taught Six Sigma at Motorola University for more than 10 years. Currently, Gupta, president of Quality Technology Co., provides training and consulting services in Six Sigma and business scorecards. He has authored [Six Sigma Business Scorecard](#), a book that has been a Six Sigma best seller. His newest book, [The Six Sigma Performance Handbook](#) is due to be published by McGraw Hill in September 2004.