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New Delhi Institute of Management

Application of Six Sigma in India and Sri Lanka

S.K Tannan¹, H.M.R.P. Herath²

Relevance of Six Sigma to India's ITES/BPO Sector :

India has been positioned as the most favored destination for outsourcing in the world. The nation has made significant progress and established itself as a preferred outsourcing destination owing to factors like availability of vast talent pool, good telecom infrastructure, conducive Government policies, and stable economic environment and, above all, cost arbitrage benefits.

Thirty Six Indian firms have made it to the 2007 Global Services 100 list of the world's best InfoTech and Business Process Outsourcing (BPO) companies. The USA with 32 companies is the second largest contributor to the list-however, over a dozen of these US firms operate largely through BPO offices in India.

Some of the most successful companies today have adopted Six Sigma as a mean to achieve the end of providing a value proposition to clients that encompasses superior quality and competitive pricing. Over the years, Six Sigma has added multiple billions of dollars to the financial bottom-line of numerous organizations and is used in many areas, including financial, healthcare, military and general manufacturing.

Among the leading companies that emphasize Six Sigma are GE, Motorola, American Express, 3M, and Sun Microsystems, and Dupont, Bank of America, Rolls Royce, Boeing and Wipro. For companies, which are contemplating to embark on the Six Sigma journey, it just takes five basic steps to maintain and improve their competitive position:

- (1) Define competitiveness for the business
- (2) What are your customer expectations?
- (3) How are your competitors performing?
- (4) determine the gaps between your competitor's performance and your own
- (5) Close the gaps.

Companies which have not yet embraced Six Sigma argue that approaches like TQM, Benchmarking, and business excellence are the key to unlock the potential in the organizations.

What is Sigma?

Sigma - the lower case Greek letter that denotes a statistical unit of measurement used to define the standard deviation of a population. It measures the *variability* or spread of the data.

What is Six Sigma?

It is a statistical term that measures how far a given process deviates from perfection. Central idea behind Six Sigma - if you can measure **how many**

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"defects" you have in a process, you can systematically figure out how to eliminate them and get as close to "zero defects" as possible. A defect can be anything from a faulty part to an incorrect customer bill. To achieve Six Sigma qualities, a process must produce no more than 3.4 defects per million opportunities. An "opportunity" is - a chance for nonconformance, or not meeting the required specifications. This means organizations need to be nearly flawless in executing their key processes.

What is Cost of Poor Quality?

For a decrease of one sigma the manufacturing cost of the product increases by about 10%. Companies operating at 3 or 4 sigma spend

between 25 & 40 % of their revenues in fixing the defects or problems- Cost of Quality. In almost every company where the COPQ (Cost of Poor Quality) is unknown, the COPQ exceeds the profit margin.

Six Sigma Methodology:

Six Sigma focuses on improving quality (i.e. reducing waste) by helping organizations to produce products & services better, faster & cheaper. It focuses on defect prevention, cycle time reduction, & cost savings. Two approaches for achieving the Six Sigma goal:

- Improving existing products and processes.
- Developing new products and processes.

When to Use DMAIC:

The DMAIC methodology should be used when a product or process is in existence at your company but is not meeting customer specification or is not performing adequately

- | | |
|----------------|---|
| Define | ● Define the project goals and customer (Internal & External) deliverables |
| Measure | ● Measure the process to determine current performance |
| Analyze | ● Analyze and determine the root causes of the defects |
| Improve | ● Improve the process by eliminating defects |
| Control | ● Control future process performance |

Why Organizations are embracing Six Sigma:

Six Sigma is about improving profitability, although improved quality & efficiency are immediate by-products of six-sigma. Organizations that implement Six Sigma do so with the goal of improving their margins. Organizations that implement six sigma have profit margins grow 20 % year after year for each sigma shift (up to 4.8 to 5 Sigma).

Organizations operating at three sigma levels that marshal all their resources around six sigma can expect to make one sigma shift improvement each year, these Organizations will experience:

- **20 % margin improvement**
- **12 to 18% increase in capacity**
- **12% reduction in the number of employees**
- **10 to 30 % capital reduction**

Adoption requires a cultural change in order to gain best results. Six Sigma has changed the DNA of many organizations — *it is now the way they work* — in everything they do and in every product they design. Top management must be patient- there is no quick fix. Six Sigma is about getting the *right answer*, not just any answer.

Case Study:

Impact of Six Sigma Implementation at General Electric: Results achieved over the first two years (1996-1998):

- Revenues have risen to \$100 billion, up 11%
- Earnings have increased to \$9.3 billion, up 13%
- Earnings per share have grown to \$2.80, up 14%
- Operating margin has risen to a record 16.7%
- Working capital turns have risen sharply to 9.2%, up from 1997's record of 7.4 %

Case Study-American Express:

At American Express, Six Sigma has proved to be a key enabler in re-engineering and quality efforts. Application of Six Sigma methodology has given the competitive advantage to the American Express, enabling them to focus on continual improvement. To derive results through Six Sigma by widening its reach and application, they have fostered a culture of employee's participation at an organization level. The Six Sigma team comprising of Black Belts supports different business verticals in identifying, re-engineering and process improvement opportunities and then works closely with business leaders and employee groups to ensure that these opportunities are addressed by well structured Six Sigma Projects.

A significant percentage of the employees of the organization are formally trained in Six Sigma and are engaged in Six Sigma projects that are currently underway in the organization. American Express has an extraordinary pool of talent and keeping them intellectually engaged is one of the key responsibilities of senior management. At American Express, Six Sigma is not just a tool for driving excellence, but it's a great platform to unleash the collective intellect of their talented workforce to drive innovation.

American Express is now embarking on a new phase of Six Sigma called Business Performance Excellence (BPE). Through the use of integrated scorecards, BPE will increase their ability to measure, monitor and manage the quality of products and services they provide to their customers. Additionally, this enables them to clearly identify the areas that

impact the customer experience and then target improvement efforts on those critical to quality areas. By taking this customer-centric approach, American Express has been able to differentiate them from the competition as they have fully integrated quality into their core offering.

Why Six Sigma?

ISO, 5S, TQM, QM, CWQC etc, are some of the favorite concepts embraced by the Corporates, no sooner such concepts hit the market. All these concepts have one common goal, "improvement", either in Quality or Productivity; or both. Six Sigma is also focusing on overall improvement of an organization, but with a clear difference. The approach of Six Sigma is much more focused on the tangible points of improvement, to the extent that such improvements are measured and classified; so the organizations know, how better or worse they are than their competitors.

Benefits of six sigma

Six Sigma specifies a sure-fire way of achieving excellence. It guarantees excellence to the organization which embarks on and continues in Six Sigma approach. It is a fool-proof method, since one gets to know with evidence that one is improving. With a steadfast focus on customer satisfaction, Six Sigma process guides an organization step by step through One ó, Two ó, Three ó, Four ó and Five ó until the organization reaches the pinnacle Six ó stage, where only 3.4 defects/errors occur out of one million products/occasions. The committed and persevering

organization which improves through the stages, enjoy the fruits of their labour right throughout their journey towards excellence, by way of improved quality, productivity, customer satisfaction and profitability. The process of Six Sigma is no magic spell, but a judicious mixture of Statistical Process/Quality Control, breakthrough thinking and Management Science unleashed under a strong and wise leadership within a culture that fosters team work spirit.

Today's Challenge and Applications of Six Sigma in Sri Lanka

Any business or industry, whether small, medium or large, faces continued threats from competitors. Competition becomes threatening when competitor intelligence is not available when and where it required. In today's business, however, those who are not proactive cannot survive. To be proactive, one should know what is happening and what is going to happen in the market place.

Customers are demanding price reductions, better quality, and ever-shorter delivery lead-times. In these very difficult economic times customers are not only requiring getting better, faster and cheaper right away, but also they are expecting significant improvements in these areas consistently, year after year. Suppliers will fail or be swallowed up unless they can focus on how to increase quality and reduce costs quickly. To do this, it needs a method for achieving these improvements throughout in an organization on a rapid, systemic and continuous basis.

In that context, six sigma is a methodology which can create marvelous in achieving business excellence. Six sigma is a management philosophy which is a customer based approach realizing that defects are expensive. Fewer defects mean lower costs and improved customer loyalty. High value producer through the lowest cost is the most competitive provider of goods and services that will contribute to enhancing quality, efficiency and ultimately customer satisfaction. "Six Sigma strives towards" finding solutions for troublesome problems. As everything is data driven there is very little room for errors but there are no quick fixes.

Sri Lanka's first Six Sigma Black Belts in the apparel sector have been produced by the Brandix

Group. It is another milestone for the country's biggest apparel exporter where it has reaped significant benefits using Six Sigma both in terms of streamlining internal processes as well as providing cost effective services and solutions to the clientele.

A Large number of industries in Sri Lanka have already embarked on improving quality and productivity using the Lean and Six Sigma Systems such as Apparel Industry, Food Industry, Information Communication Industry, Telecommunication Industry, Construction Industry, Auto-mobile Industry, Airline Industry, Air Conditioning industry and Plantations industry. Specially in banking industry the Six Sigma methodology can help to reduce the amount of wasted time and resources as well as reduce cycle time to create banking applications. Result is lower maintenance, schedule overrun and development cost. And also Six Sigma allows banks to monitor and respond to:

- Number of consumer complaints
- How long to process a specific transaction (e.g. loan)
- Delivery of services to customers

It helps to improve on bottom line, and the Six Sigma model can help banks reduce transactional mistakes, reduce risks and improve customer satisfaction. Few foreign banks operating in Sri Lanka are applying six sigma currently. However still the Sri Lanka business sector both, private and public are not reaping its benefit to the maximum. Specially, the Sri Lankan tea industry, where it has good reputation and demand, not yet taken the benefit of improving their quality through such philosophies.

It might be because of the lack of top management commitment in implementing such sophisticated methodologies since if an organization is keen on implementing this methodology everybody including the top management should be dedicated while every member has to make a commitment.