

Six-sigma process 5 essays example

[Business](#), [Company](#)



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Abstract

Six-Sigma is a broad management method that added value to quality and process enhancement since last two decades. It is a favorable tool for companies existing worldwide and gained popularity when reputable organizations in the world preferred Six-Sigma in their business settings, for instance, General Electric is prominent. Six-Sigma specifically brought value addition in getting the defects at the negligible level in the manufacturing sectors specifically. Organizations existing globally employed Six-Sigma techniques in their businesses for the maximization of shareholders' wealth. The influence of Six-Sigma is not down to earth for bottom line enhancement but its impact is beyond the limits. This technique formulated usual

terminology, common procedures to outlining and gauging key performance indicators (KPIs), and a factual-oriented perception that generates a frequent platform for scalability.

Keywords: DMAIC, DFSS, Six-Sigma, Lean Six-Sigma

Introduction

Six-Sigma is a mixture of lean techniques and Six-Sigma tools and it also refers to Six-Sigma Lean. There are most of the companies worldwide that still considers Six-Sigma Lean as Six-Sigma for their initiatives although they are not aware that they have exceeded the definition of Six-Sigma and have incorporated lean approaches in their business transactions. The basis of Lean Six-Sigma is on the knowledge, techniques, and methodologies invented from the previous studies conducted in the field of operational implementation and enhancement. The approaches employed in Lean Six-Sigma encourage cost-effective measures for optimization of the process. Six-Sigma prefers to attain customer provisions and anticipation of stakeholders, and enhancing worth through gauging and removing issues and, Lean Six-Sigma pursues said techniques mutually, rules, and philosophies. The goal of Lean Six Sigma is to gain development and not only minimization of costs, and focuses effectiveness not only efficiency. A Lean Six-Sigma in this manner aims to execute better things rather execute things better. Previously, organizations used to apply Six-Sigma technique fundamentally for the purpose of enhancement in their operations that involve redefining present processes to curtail costs, enhance performance and procure effective customer worth. Nevertheless, the uncertain situations in the global marketplace asked growth-focused entities to execute

transition not only in terms of innovation but as well improvement .

Lean Six-Sigma is highly significant in target transition and scopes instead its heritage. The benchmarking organizations proved that the application of Six-Sigma promises rewards beyond expectations in process innovation that is adding value to each domain of the business including products, services, operations, and business models. Six-Sigma possesses advanced ingredients that allow organizations to redefine its whole business and develop a greater modern culture at workplace.

Six-Sigma Process

Companies including GOALQPC, Quality Function Deployment (QFD) and US Supplier Institutes since the 1980s invited the dominant worth gurus from Japan to impart the contemporary methods including 7 Quality Control (QC), Management and Planning tools, Total Quality and Production Maintenance, Taguchi Techniques, HOSHIN Planning, KANSEI Engineering etc to United States. Westerners felt tough to incorporate these techniques into a single system. General Electric and Motorola in the late 1990s started managing these methods into an enhancement procedure with the anticipation of getting customer fulfillment and competitiveness in which the focus was on the quality to addressing top and bottom line management. Quality was illustratable through the quantity of faults or failures in the service, product, and procedure and if faults exist, they were analyzable and measured by Sigma. Sigma represents an arithmetical term that shows the level of deviation in a process or product. The measurement of faulty works helps management to quantify the improvement goals, and a broad company benchmarks established with the help of the measurement. Six-Sigma

according to a rough estimate translates approximately three and a half faults per million processes, parts, range of software code etc. and reveals a fundamental enhancement more than even three sigma which are evident in the following diagrams:

Source:

The above diagrams show that the closer is the monitoring of human, chemical, and mechanical deviations processes for the purpose of naturalizing process limitations, the outputs will reveal satisfactory levels of tolerances to the customers. Six-Sigma aims to entrench quality benchmarks and arithmetical measurement not only to the processes of manufacturing, but to every business aspiration.

Define, Measure, Analyze, Modify, Improve and Control (DMAIC)

The quality elements discussed above managed into an issue-solving algorithm refers to DMAIC as depicted in the following diagram:

Source:

The DMAIC is highly preferable measurement-oriented technique which is quite different compared to traditional enhancement story's 10-step procedure as it utilizes additional stylish methods including multivariable assessments than QI story. The scenario demands advanced training, education, and professional certification procedures which recognized by its soldierly arts reference to Six-Sigma Leaders, Black, Green B, and Master Black Belts. Hence, Six-Sigma adds value in following areas of total quality management:

- Incorporation of numerous worth methods and networks.
- Enhanced procedures, academics, and dominancy experiments with the “

belt” programs.

- Substantial application of potential arithmetic and logical tools to gauge outcomes.
- The liability of top and bottom line to present logics against enhancements in the domain of break-even assessment and customer fulfillment mutually.

Design for Six-Sigma (DFSS)

In the current growing worldwide economy, time to market obstacles require organizations to develop commodities and services in an instant and professional manner. The transition established a move from examination-oriented quality checks that focused on faults remedy to design-oriented quality checks where faults disallowed from ever happening. Experimental designs, comprehensive failure mode assessment, zero fault or 3ppm faulty levels, and additional worth instruments gained through design and it refers to Design for Six-Sigma (DFSS). Yet additional profits are executable through DFSS upon its merger with QFD to confirm non-existence of faults but factual worth as outlined by the customer. DFSS through the help of QFD locates sensitive, unachieved needs of customers and exert efforts to design it into the product and useful while the process of manufacturing and assembly and it refers to customer-oriented DFSS.

Relationship between DMAIC and DFSS

Source:

The application of DMAIC process in Six-Sigma allows fixing of faults which is definitely an imperative instrument for the process that is going-on. The DFSS assists designing processes that do not reveal segregation in the initial phase, processes that execute significantly and cost fewer.

Application of Six-Sigma Process

Ford Motor Company

The customer-based Six-Sigma instrument of Ford Motor Co. includes frequent assessment of scorecard statistics in order to identify performance tendency. The executives of the company's at SAARLOUIS Plant, Germany, revealed a rise in consumption of basecoat paint. The discovery did not solely influence the drive in manufacturing costs but, as well showed improved solvent usability, which resulted in greater extents of emissions of volatile organic compound. The objective of the company in this scenario was to reduce costs, enhance customer fulfillment, and diminish environmental influence. The company used DMAIC Model to overcome the scenarios. At the onset, suppliers, inputs, procedure, outputs, clients (SIPOC) assessment made to outline the project stakeholders that revealed internal, external, and mixed groups that involved internal and external clients. In measurement segment, value-stream mapping, arithmetic measures, cause-and-effect diagrams used to locate the fundamental causes of performance and consumption problems in which brainstorming classes helped to rate the potential causes. Next, data gathering done to narrowing down the factors including daily basecoat usage, paint film thickness examinations, usage per robot, usage per manual painter, initial period through rate vs. usage, and application instrument. The group of Six-Sigma executed a 5 Why Assessment and experiment trials on the said six significant root causes. Usage per robot showed improved trend for the lift-gate robot, application instrument revealed a spoiled solvent revival valve that confirmed more examination and it was the variable that contributed in improved

consumption and was opposite from its normal operation of cleaning solvent back to a recycling reservoir. The benchmarking operations and value-stream mapping behaved positively to identify a manual solution for controlling the valve. The identified variables after the assessment phase were the installation of stainless steel valves by removing plastic valves, generation of automatic valve examination network recovery, every seven-day monitoring of valves, and the removal of the solvent revival procedure. The fresh controlling network and benchmark operating processes were fundamental to assisting the SAARLOUIS Plant to keep outcomes strategically in the project. The SOPs of the plant were consistent with the ISO 9001 complaint quality management network and constant audit took place that confirmed that usage of paint within its boundaries.

Caterpillar

In 2000, the executives at Caterpillar felt uncomfortable due to a particular array of stiff competition and gains since last four year. Therefore, in order to revive its dominancy and development, the organization adopted a Six-Sigma technique in January 2001. The objective was to develop persistent customer-oriented modernization. The span of the strategic change was extensive due to over twenty-six group of businesses with more than seventy-two thousand workers based globally at six continents having different communication background. The foremost Six-Sigma spanned on more than eleven-hundred projects including subtle operational enhancements, modernization of fresh products, and unique working styles. The ACERT Technology radically diminished emissions and encouraged greater cost-effectiveness in fuel, and allowed clients to save their money

while managing the price governance of the company. The strategy enabled Caterpillar to experience significant transitions in its operations, specifically in its supply chain management. Caterpillar promoted Six-Sigma worldwide and procured gains that overcome application costs at the onset of this technique. The engines, machines, and monetary products involved in businesses developed through the application of Six-Sigma .

POSCO Shines

POSCO is the Korean steel company de-nationalized in 2000 after decades of govt. dominancy. Since last few years, the company is in stiff competition, specifically, its competitive advantage of low-cost is getting insignificant due to the advent of competitors that offered below the costs levels of POSCO products in which China is prominent. The organization entrenched a Six-Sigma technique to redefine its business and generate a market-focused mindset at workplace. The utilization of engineering group's feedback on customer needs, executives were able to evaluate potential of market and the abilities of the organization in the relevant services and products domains. The application of Six-Sigma in terms of customer demands, POSCO established IT and process innovations that radically diminished steel stock and curtailed lead period from twenty-eight to fourteen days by 2003. POSCO procured twenty-one forms of advanced steel including coated steel from the twenty one in order to cater pertinent industries through Six-Sigma. The workers' approach towards tasks and their mindset improved through the application of Six-Sigma and the pattern of perception spanned across POSCO was significant in which every business aspect covered in the business boundaries of POSCO. The organization was positive and

courageous in terms of applying corporate strategy and budgeting.

Scottish-Power

Scottish-Power felt its share of market in last decade of UK retail power marketplace. Officials liable for secured and consistent power supply started to depict their observations relevant to repetitive customer service complaints and this tendency needed to amend immediately. Scottish-Power attempted to apply Six-Sigma practices in its business for the purpose of driving modernization. Scottish-Power used Six-Sigma for the establishment of Business Transitions Department and counseling hundreds of workers. The application of Six-Sigma approach allowed organization find reasons for customers' leaving. The institution of a " hot key" allowed customers to officials that guide them to have the new connection at different place and this approach led Scottish-Power to expand its customer-base from 3. 2 million to 5. 1 million customers in only four years. Currently, Scottish-Power attained more than one-hundred and fifty million dollars as other gains and minimization of costs through the application of Six-Sigma initiatives.

General Electric (GE)

Six-Sigma is a fundamental element of the General Electric's culture. This technique utilized in numerous processes across all the business units of GE. Since the advent of Six-Sigma at GE in 1995, it reported more than seven-hundred million dollars in terms of gains by the end of 1998, about one-hundred and fifty million dollars in 1999, and more than fifty-hundred million dollars in recent years. The fundamental variable of Six-Sigma operation showed a greater influence on organization's top and bottom-line performance. Six-Sigma method allowed GE to achieve customer satisfaction

through emphasizing their success, competitiveness; persistent enhancement in culture through promoting frequent enhancement mentality along with precise performance enhancement objectives for each worker, discipline in management processes; and common platform for development through outlining and gauging key performance indicators that promoted training and developed forthcoming governors for the company and scalability platform.

Conclusion

Six-Sigma is a potential instrument in the arsenal of current experts and grew radically in its maturity since last decade. Six-Sigma significantly influences on each core level of an organization including profits maximization, cost minimization, and enhancement in customer fulfillment. Nevertheless, the executives should show prudence in Six-Sigma application and recognition of its limitations. It is a method to guarantee the consistency in following the processes but is not appropriate for effective process design. The success of Six-Sigma is highly significant worldwide not only in the manufacturing sectors, but in other sectors as well including Research and Development and Finance etc.

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