

Case study
On
Six Sigma at Wipro Technologies: Thrust on Quality

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Abstract: Six Sigma at Wipro Technologies: Thrust on Quality

Wipro Technologies is a global services provider delivering technology-driven business solutions that meet the strategic objectives of clients. Wipro has 40+ ‘Centers of Excellence’ that create solutions around specific needs of industries. Wipro delivers unmatched business value to customers through a combination of process excellence, quality frameworks and service delivery innovation. Wipro is the World's first CMMi Level 5 certified software services company and the first outside USA to receive the IEEE Software Process Award.

Wipro has one of the most mature Six Sigma programs in the industry ensuring that 91% of the projects are completed on schedule, much above the industry average of 55%. Six Sigma provides the tools for continuous improvement on existing processes thereby helping sustain the SEI-CMM Level 5 and CMMi certifications.

This case focuses on the initiatives taken by Wipro Technologies to implement the Six Sigma Quality tool to achieve sustained strategic business results. It explores the implementation procedure at Wipro Technologies and the benefits reaped by the company on account of adopting Six Sigma.

The case also throws light on the recent developments in the Six Sigma concept including **Wipro’s Six Sigma Skill base and consulting** experience and explains how the company intends to build its expertise and experience – to bring continuous process improvement to the organization.

Six Sigma at Wipro Technologies: Thrust on Quality

Backdrop

Wipro Limited was established in 1945 and commenced its operations in 1946 as a vegetable oil company. In the early 1980s, Wipro diversified into the Information Technology sector with Liberalization hitting India in the 1980s. This has been a fascinating transformation from a vegetable oil company into a global IT services giant.

Today, Wipro Technologies has become a global service provider delivering technology-driven business solutions that meet the strategic objectives of clients. Wipro has 40+ 'Centers of Excellence' that create solutions related to specific needs of Industries. Wipro can boast of delivering unmatched business value to customers through a combination of process excellence quality frameworks and service delivery innovation.

A strong emphasis upon building a professional work environment, leaders from within, and having a global outlook for business and growth have led to innovation of people processes on a continued basis. Over the years, Wipro has significantly strengthened its competency based people processes and demonstrated innovative practices in talent acquisition, deployment, and development, based on strategic needs.

A leading provider of communication networks in the US required improvement in the product performance of a telecom application using Six Sigma methodologies. Thus, with the growing importance on aligning business operations with customer needs and driving continuous improvement, Wipro began moving towards focusing on Quality, thereby, creating a learning environment that led to implementation of Six Sigma.

Prepared by Dr. Manisha Sharma, Dr. Kapil Pandla and Prof. Prashant Gupta of Jaipuria Institute of Management, Noida . This case is prepared solely for the basis of class discussion. Cases are not designed to present illustrations of either correct or incorrect handling of administrative problems

Integrating Six Sigma concepts was also intended to bring rigor in effective upstream processes of the software development life cycle. Implementation of Six Sigma methodologies brought in quantitative understanding, cost savings, and performance improvement towards product quality.

Some of the key challenges involved were:

- Reduce the data transfer time
- Reduce the risk
- Avoid interruption due to LAN/WAN downtime.
- Parallel availability of the switch for the other administrative tasks during the same period.

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What is Six Sigma?

The word is a statistical term that measures how far a given process deviates from perfection. Six Sigma is named after the process that has six standard deviations on each side of the specification window. It is a disciplined, data-driven approach and methodology for eliminating defects. The central idea behind Six Sigma is that if you can measure how many “defects” you have in a process, you can systematically figure out how to eliminate them and get as close to “zero defects” as possible.

Six Sigma starts with the application of statistical methods for translating information from customers into specifications for products or services being developed or produced. Six Sigma is the business strategy and a philosophy of one working smarter not harder.

One sigma gives a precision of 68.27%, two sigma, of 95.45% and three sigma of 99.73%, whereas Six Sigma gives a precision of 99.9997%. Although 99.73% sounds very good, it slowly dawned on companies that there is a tremendous difference between 99.73% and 99.9997%. For ex. For every million articles of mail, the difference is between 66,738 lost items and 3.4 lost items (Exhibit 1).

To achieve Six Sigma Quality, a process must produce no more than 3.4 defects per million opportunities. An opportunity is defined as a chance for nonconformance, or not meeting the required specifications. This means one needs to be nearly flawless in executing key processes. The process and culture is conditioned for zero defects rather than being one that accepts that it is inevitable, and acceptable, that mistakes will occur. Hence Six Sigma delivers substantial cost reductions, enhanced efficiencies, sustainable improvements and increased stakeholder value.

Evolution of Six Sigma at Wipro

Wipro is the first Indian company to adopt Six Sigma. Today, Wipro has one of the most mature Six Sigma programs in the industry ensuring that 91% of the projects are completed on schedule, much above the industry average of 55%.

As the pioneers of Six Sigma in India, Wipro has already put around ten years into process improvement through Six Sigma. Along the way, it has scaled Six Sigma ladder, while helping to roll out over 1000 projects. The Six Sigma program spreads right across verticals and impacts multiple areas such as project management, market development and resource utilization.

Six Sigma at Wipro simply means a measure of quality that strives for near perfection. It is an umbrella initiative covering all business units and divisions so that it could transform itself in a world class organization. At Wipro, it means:

- (i) Have products and services meet global benchmarks
- (ii) Ensure robust processes within the organization
- (iii) Consistently meet and exceed customer expectations
- (iv) Make Quality a culture within.

Difficulties encountered by Wipro and learning from them:

Build the Culture:

Implementation of Six Sigma required support from the higher level managers. It meant restructuring of the organization to provide the infrastructure, training and the confidence in the process. Wipro had to build this culture and that took time in implementation.

Project selection:

The first year of deployment was extremely difficult for Six Sigma success. They decided to select the project on the basis of high probability of their success and targeted to complete them in a short period to assess the success. These projects were treated as pilot projects with a focus to learn. For the selection of the right project the field data was collected, process map was developed and the importance of the project was judged from the eyes of customers.

Training: After the set up, the first step of implementation was to build a team of professionals and train them for various stages of Six sigma. The training was spread in five phases: Defining, measuring, analyzing, improving and controlling the process and lastly increasing customer satisfaction. These phases consisted of statistics, bench marking and design of experiments. To find the right kind of people and train them was a difficult job. This motivated Wipro to start their own consultancy to train the people.

Resources:

It was difficult to identify resources that required for short-term basis and long-term basis as it varied from project to project. Wipro did it on the basis of seriousness and importance of the project.

Project Reviews:

As timely reviews play a very crucial role to judge the success of a project. Wipro had to develop a team of experts for this purpose. The task assigned was to see the timeliness, find out gap, weak areas and to check the outcome as per the plan.

Implementation of Six Sigma at Wipro

Wipro has adopted the project approach for Six Sigma, where projects are identified on the basis of the problem areas under each of the critical Business Processes that adversely impacts the business significantly.

Wipro has evolved following Six Sigma methodologies (Exhibit 2):

(I) For developing new processes:

- (i) DSSS+ Methodology –Wipro employs DSSS methodology for software development. The methodology uses rigorous in-process metrics and cause analysis throughout the software development lifecycle for defect free deliveries and lower customer cost of application development.
- (ii) DSSP Methodology – used for designing new processes and products
- (iii) DCAM Methodology – used for designing for customer satisfaction and manufacturability

(II) For Improving Existing Processes

- (i) TQSS Methodology –used for defect reduction in Transactional processes.
- (ii) DMAIC Methodology -used for process improvement in Non-transactional process

(III) For Reengineering

CFPM Methodology - used for cross functional Process mapping.

The list of players at Wipro is as below:

- Executive Management
- Six Sigma Champions and Deployment Leaders
- Financial Executives
- Black Belts
- Green Belts
- Yellow Belts

Six Sigma projects at Wipro are (Exhibit 3):

- (i) Driven by business heads, also called Champions for the projects.
- (ii) Led by Green Belts (GB)
Assisted by Black Belts (BB)

The Management of the project at Wipro follows the following tools for implementation of Six Sigma:

- Ideation
- Definition
- Selection
- Tracking
- Reporting

Currently 15000+ employees are trained in Six Sigma methodologies. Wipro has also built up a Six Sigma skill base of over 180 certified black belts while helping to roll out over a 1000 projects. (Exhibit 4).

Six Sigma Consultancy at Wipro:

Wipro's Six Sigma consulting experience has peaked with the indigenous development of new methodologies that it takes to its customers. As Wipro continues Six Sigma consulting journey, it builds on its expertise and experience- to provide enterprise-class coverage of topics in business process management and information technology systems integration. The focus is on supporting the project needs and is also integrated with other methods to support process needs. Currently there are over 200 PMI certified consultants at Wipro.

The Wipro quality consulting group trains in achieving the precision of Six Sigma with Wipro's own methodologies, training capabilities and global experience. Wipro also helps in institutionalizing Six Sigma across the organization for transformation.

Wipro provides consulting in institutionalizing an organization wide Six Sigma program that specializes in implementation across IT development, production support and core business operations

Wipro offers the following Six Sigma consulting services (Exhibit 5):

- Six Sigma institutionalization
- Problem solving using six Sigma
- Six Sigma training

Reaping the Benefits:

The financial gain that Wipro has achieved by using Six Sigma has been one of the high points. (Exhibit 6)

As the Six Sigma initiative started maturing Wipro identified two major phenomenon:

- The biggest projects had all been completed
- The Yellow-belt culture had cured little problems before they became big ones.

At this point, the project-oriented Six Sigma culture began to give way to the sustaining culture.

The Six Sigma process resulted in an achievement of close to 250%, 6 minutes for 1 MB transfer and 18 minutes for average data transfer. The set target was 200%.

Because quality is customer driven, the objective of Six Sigma Implementation at Wipro has continuously been on integrating and implementing approaches through a simultaneous focus on defect reduction, timeliness, and productivity. This has translated to lower maintenance costs, schedule-overrun costs, and development costs for customers. Measurements and progress indicators have been oriented towards what the customer finds important and what the customer pays for. Towards this, Six Sigma concepts have played an important role in:

- Improving performance through a precise quantitative understanding of the customer's requirements thereby bringing in customer focus
- Improving the effectiveness in upstream processes of the software development life cycle by defect reduction (software defects reduced by 50%) and cycle time reduction (rework in software down from 12% to 5%).
- Waste elimination and increased productivity up to 35%.
- Cost of failure avoidance (installation failures down from 4.5% to 1% in hardware business).
- Tangible cost savings due to lower application development cost for customer.

Analysts remarked that Six Sigma was an indisputable success at Wipro whether in terms of customer satisfaction, improvement in internal performance, or in the improvement of shareowner value.

The results of achieving Six Sigma are rapid and overwhelming at Wipro Its unique methodology provides Six Sigma knowledge and skills to the client, enabling the client to create ownership, generate results and sustain success. The maturity of Wipro's quality processes takes the benefits to another level, ensuring that the customers benefit from:

- 30-40% lower total cost of ownership
- 20-30% higher productivity
- On-time deliveries (93% projects completed on time)
- Lower field defect rates (67% lower than industry average). The performance enhancement enabled the client to have an improved product with the overriding benefit that the end customer perception of the quality of the client's product is improved.

Future Focus and Challenges:

Six Sigma certainly produces breakthrough improvement. But to achieve this Wipro will have to combine the power of the Six Sigma method and tools with stretch goals, goals that almost seem too aggressive, too optimistic.. Also Wipro will have to benchmark

itself against the competition on the level of performance achieved by rivals.. This focus will lead to the adaptation of newer dimensions of the quality management framework towards embodying a totality of process, people, product, and technology for achieving high process capability.

Six Sigma projects require continuous change. Black Belts and Green belts develop improvements to systems and processes for which they are not accountable. And when these participants are done with their project, they ask the real system or process owner to implement and sustain their solution and hence the challenge before Wipro lies in bringing the commitment towards continuing its process optimization theory.

The Challenge will be to transform Six Sigma from a tool for improving product quality to an overall business improvement methodology. The company's aim will be at having 100% of its management trained in Six Sigma.

To summarize, the quality system will continue to be based on incremental optimization, with rigorous implementation and sustenance of the same. The goal will be to make quality as the No.1 objective for all employees.

References:

Gygi, Craig, DeCarlo, Neil, Williams Bruce & Covey Stephen; "Six Sigma for Dummies", Willey Dreamtech India

Wipro-Annual Report, 2002-2006

ExpressComputer, Sept.2002

V. Subramanyam, Sambuddha Deb, Priya Krishnaswamy, Ritupama Ghosh "An Integrated Approach to Software Process Improvement at Wipro Technologies:Veloci Q"

Websites:

www.isixsigma.com

www.wipro.com

Exhibits:

Exhibit 1:

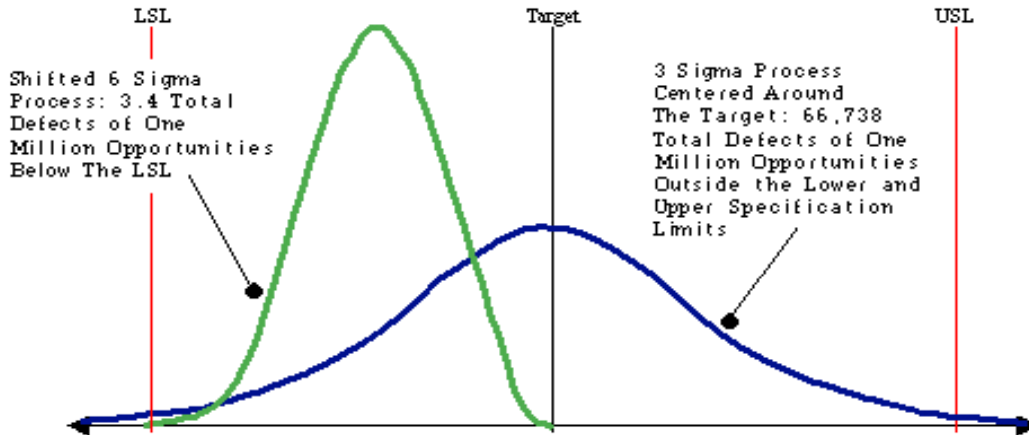
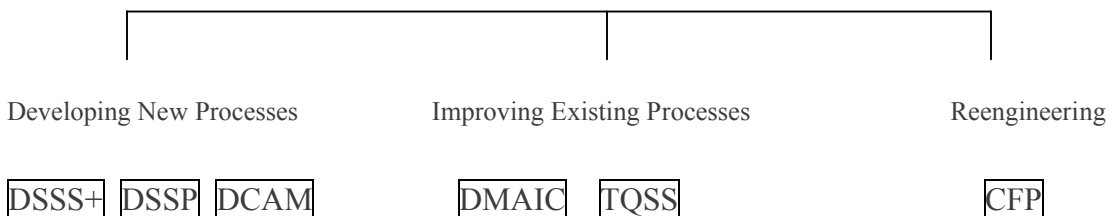


Exhibit 2:

Six Sigma Methodologies:

Six Sigma



DSSS+ (Developing Six Sigma Software) - Software Development

DSSP (Designing Six Sigma Process & Product) –Software Development

DCAM (Design for Customer Satisfaction and Manufacturability)-Hardware design & Manufacture

DMAIC (Define, Measure, Analyze, Improve, Control) - Helpdesk, Infra support, Call centre

TQSS (Transactional Quality Using Six sigma)- defect reduction

CFPM (Cross Functional Process Mapping) - Cross functional streamlining of process

DSSS Methodology

- For defect reduction in Non-Transactional development processes (Software Engineering)

TQSS Methodology

- For defect reduction in Transactional processes



DMAIC Methodology

- For Process Improvement in Non-Transactional Process

CFPM Methodology

- For Cross Functional Process Mapping

Continuous improvement through Six Sigma Initiative

Exhibit 3:

Green Belts (GB)- trained in Six Sigma who spend a portion of their time completing projects, but maintain their regular work role and responsibilities. Depending on their workload, they can spend anywhere from 10% to 50% of their time on their project(s).

Black Belts (BB) - the experts in Six Sigma methodologies and its usage. Black Belts are the heart and soul of the Six Sigma quality initiative. Their main purpose is to lead quality projects and work full time until they are complete. Black Belts can typically complete four to six projects per year with savings of approximately \$230,000 per year.

Champions: Facilitate the leadership, implementation and deployment of Six Sigma philosophy

Exhibit 4:

Resources invested in Six Sigma

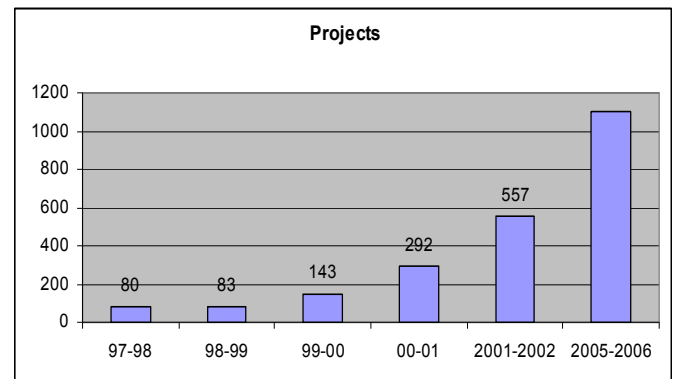
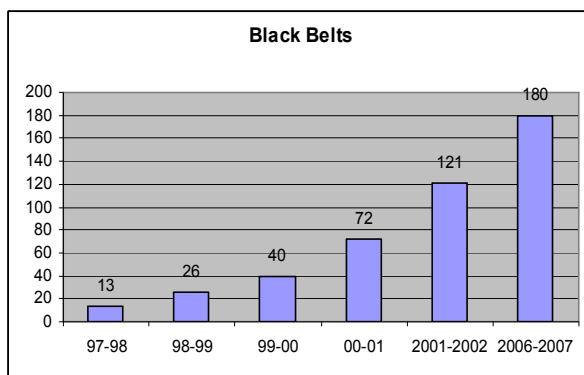
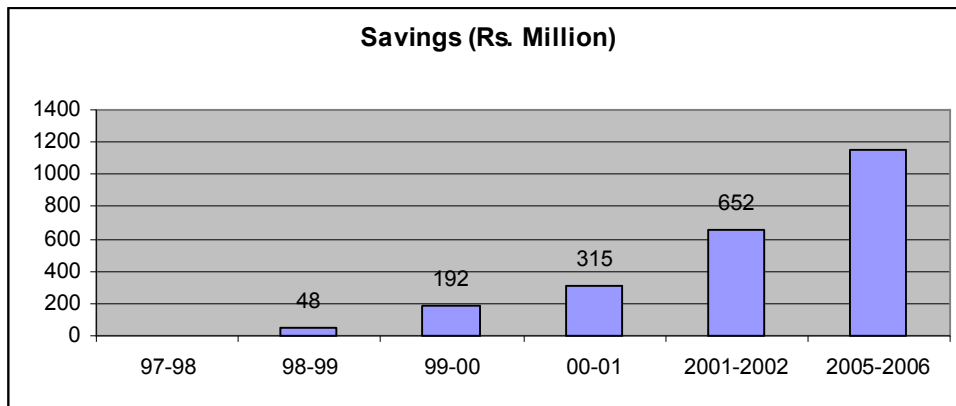


Exhibit 5:

- **Six sigma institutionalization:** Here the Wipro consultants work with the senior management of the client team in identifying pain areas and critical business processes. The Wipro consultants then create a program of implementing six sigma throughout the organization; creates six sigma teams; provides the necessary training to the green belts and black belts; identifies projects to be run; helps manage change; and identifies the benefits
- **Problem solving using six sigma :** Here Wipro’s consultants work with the process action team at the client organization to identify the problem areas, determine the root causes of problems and establish necessary recommendations for corrective/preventive actions
- **Six sigma training :** Wipro provides training on various 6 sigma methodologies (DMAIC/DMADV/DSSS+) and statistical tools (Control charts/QFD/ etc), use of Minitab etc.

Exhibit 6:

Six Sigma and Financial Gains:



Key Words: Zero defects, Nonconformance, Project Management, Resource Utilization, Quality Management

Teaching Note

Synopsis of the Case: The Case on Six Sigma at Wipro deals with the evolution of Six Sigma, talks of its implementation and gives an understanding of Consultancy in Six Sigma. It also raises the future challenges. By studying this case the students will be versed with thorough understanding of Six Sigma.

Research behind the case: The case is based on the Secondary research. However to write this case a thorough understanding of Six Sigma was a prerequisite. The authors read many books to get a glimpse of Six Sigma and visited most of the available information of Six Sigma at Internet. Referred many journals. The detail of which has been provided as references.

Suggested Course Level: Graduate /Post Graduate Programme

Suggested Course: Quantitative Techniques

Guide Questions:

1. What led Wipro to implement Six Sigma Programme without a proper strategy.

Ans: The demand in the Industry led Wipro to implement Six Sigma although it was not a well thought out plan. It took Wipro few years in reaping the benefits. Even without a specified strategy Wipro stepped the ladders very cautiously. They trained their employees first, implemented in a few projects. Motivated by success they spread it in almost all the projects taken up by Wipro.

2. What is the objective of Wipro in providing Six sigma Consultancy

Ans: Wipro being the pioneer in India in implementing Six Sigma has trained and experienced consultants in the field. Leveraging on home grown expertise from Wipro's own Quality journey, a team of over 350 consultants provide world class consulting in the area. Over 70 satisfied customers globally, across various domains with tangible, measurable results speak of the success of the process improvement efforts. That gives its customers a confidence in the Six Sigma process at Wipro

Wipro provides stand-alone training on various customized modules to aspiring Six Sigma Black Belts, Green Belts and Six Sigma Champions. Extensive hands-on training is also provided on advanced statistical tools and on the statistical software Minitab, the core of any Six Sigma learning. Train-the-trainer methodology is adopted to create new team members who can focus on continuous improvement – this gradually helps in the consultant disengaging from the overall initiative.

3. The Competition is huge, the challenges are many. Wipro hasn't still come up with a proper planning to face the challenges and overcome.

Ans: Some of the key challenges involved in implementation are

- Reduce the data transfer time

- Reduce the risk
- Avoid interruption due to LAN/WAN downtime
- Parallel availability of the switch for other administrative tasks during the same period.
- In spite of more than 10 years of implementation, Wipro still has to advance the methodologies.
- Wipro needs to adopt a systematic approach to analyze the data and increase the usage of statistical analysis software.
- Operation downtime can be reduced by reducing data transfer duration, risk of the operation being interrupted by LAN/WAN downtime will automatically reduced. The switch availability. The switch availability will also increased as the data transfer time is reduced.
- Apart from this, there is a challenge to train all the employees in Six Sigma and implement it in all the projects, also to focus on the new innovative methodologies in the field.
- The performance enhancement will enable the client to have an improved product with the overriding benefit that the end customer perception of the quality of the client's product is improved.

4. What are the other business benefits apart from the profit?

Ans:

- Enhanced collaboration and resource sharing across global locations.
- Centralized management and fewer management entities.
- Continued access to network resources even during link failures with a revised authentication approach

(Each benefit can be discussed in detail during discussion).

Suggested Teaching Plan: The case can be discussed in a class of 1 hour 30 min.

The case will be discussed after Six Sigma has been taught to students as this case will show the practical aspect of Six Sigma to the students.

The following issues can be raised:

- Six Sigma vs. TQM
- The Cost vs. benefits in implementing Six Sigma
- The time delay in reaping the benefits
- Lack of awareness or inhibition on the part of companies in implementing it.