AAROHAN

The Event Magazine

LEAN AND SIX SIGMA EXCELLENCE AWARDS '10

24TH and 25th September '10

The Event

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What started out as a management strategy developed by Motorola, today finds widespread application in almost all sectors of the industry. But it is nowhere close to its maturity, Six Sigma as a concept, continues to grow.

The 'Lean and Six Sigma Excellence Awards' is an effort from SCMHRD to recognise and honour those Corporate who strive to set new benchmarks in the sphere of quality and efficiency.

The selection parameters are first decided upon by a team of eminent panellists followed by the official invitations for participation to the Corporate. The projects received are then evaluated by the panellists on the previously decided parameters.

The best projects under each category are chosen and their team members are then invited to make their presentations at the regional rounds held at Bangalore, Delhi and Pune. The best projects under each category from the regional rounds will then be shortlisted and invited to make the presentations at the final round at SCMHRD, Pune, where they go through a final round of scrutiny. At the concluding day of the event, the winners are felicitated.

In our sixth year of hosting this event, we are proud to say, that the 'Lean and Six Sigma Excellence Awards' has accomplished new heights and has gained recognition among the Corporate to an extent where they have started considering these awards as a milestone in their six sigma journey. We promise to work at making the LSSEA, the most prestigious award in the field, in the years to come.

From the Desk of the Chancellor,
Symbiosis International University

Dear All,

It gives me immense pleasure in welcoming you to the 'Lean and Six Sigma Excellence Awards, 2010'.

Given today's economic scenario, when organisations across all sectors are making an effort to minimise the effects of the slowdown on their day to day operations, it is Six Sigma Concepts that hold special importance for one and all. Consistency in quality while minimising waste is what will help us all in this trying period.

Six Sigma is not only about correcting errors but also about continuously improving what seems perfect! And this is what we strive to do at Symbiosis.

At Symbiosis, we aim to improve the efficiency and effectiveness of all those who are a part of the Symbiosis fraternity. Hence Six Sigma is somewhere at the root of all that we do.

Wishing you all the very best for all your future endeavours.

Best Wishes,
Dr. S.B.Mujumdar
Chancellor and Founder Director,
Symbiosis International University

From the Desk of the Vice Chancellor,
Symbiosis International University

Dear All,

I am delighted to welcome you to the sixth edition of the 'Lean and Six Sigma Excellence Awards' that is hosted by SCMHRD every year.

I appreciate the efforts taken by SCMHRD, to not only felicitate Corporate who have taken Six Sigma initiatives and reaped benefits from them, but also to build a platform where everyone interested in Quality can learn a lot from the experiences of others.

We at Symbiosis believe in harnessing and disseminating knowledge to the youth today for a better quality tomorrow.

All the very best to all of you!

Best Wishes,
Dr. M.S.Raste,
Vice Chancellor,
Symbiosis International University

From the Desk of the Principal Director,

Symbiosis International University

I am pleased to welcome you all to the 'Lean and Six Sigma Awards, 2010'.

SCMHRD has always worked on improving the quality of its curriculum year after year to benefit its students. This event is the manifestation of that drive.

I am happy to see the respect this institute as well as this event draws from the Corporate.

My best wishes for all your future endeavours.

Dr. Vidya Yeravdekar
Principal Director
Symbiosis

From the Desk of the Director,

Symbiosis Centre for Management & Human Resource Development

We are elated to welcome you to SCMHRD 'Lean and Six Sigma Excellence Awards, 2010'.

In today's crisis stricken world, only a few have the gumption to think in terms of growth. One needs to consistently improve quality while aggressively reducing cost. Lean and Six Sigma methodologies empower organisations to achieve these goals even in adverse economic situations. The sooner we realise this, the better.

We strongly believe that Six Sigma is not just a methodology, but a way of life.

The organisations are yet to mature in this concept.

We, as an institute, wish to act as a catalyst in bringing about this awareness by felicitating those who have reaped the benefits of using Six Sigma Methodologies.

We, at SCMHRD constantly strive for perfection in every endeavour that we undertake. We thank the Corporate for enabling us in grooming our students in this regard and also for making this event a well branded one in an international context.

Best Wishes,
K.S. Subramanian
Director
SCMHRD

DFSS

Larsen& Toubro

Concept generation & finalization of contact system for Secondary Isolating Contact for U-POWER ACBs

"A Customer doesn't buy the product, he buys the experience" thus goes a famous quote by Prof. Kotler. Keeping it in mind, this project was initiated to generate and finalize a concept for contact system of Secondary Isolating Contacts for U-Power Air Circuit Breakers.

Background

U-POWER ACB is a prime product amongst the wide range of switchgear products manufactured by our company. It accounts for 30% of sales of Circuit Breaker product basket. The Secondary Isolating Contacts (SIC) are the user interface units for the Air Circuit
Breakers. They are used to feed the control circuit for remote operation as well as bi-directional communication of the breaker with its user. Hence its reliable design is of paramount importance to ensure safe and uninterrupted function of the installation.
Based on a few customer feedbacks regarding misalignment and loss of continuity of existing SICs, we used DMAIC methodology to improve upon their existing design, but the incremental changes were not sufficient to resolve the issues. In addition, a clear need of extra number of SICs for our new generation Matrix trip units called for a completely new design of SICs. This new design of SICs addresses the above mentioned customer feedbacks as well as the need for additional SICs..

Process

The process followed during the concept generation and finalization of new SICs is explained in the following paragraphs.

- **Define**

A questionnaire was prepared & face to face interviews were conducted during our visit to the customers. Voice of customers was captured for explicit and implicit needs of both internal and external customers. KANO model was used to narrow down our target points for the design.

- **Measure**

Features given by three of our competitors were studied to benchmark the design of the existing SICs. This study revealed the following pain areas –

- Insufficient levels in alignment system
- Low durability of the SIC contact material

- **Analyze**

Through analysis using tools like 5 Why's, Cause and Effect diagram and QFD, the design feature priorities were identified. Furthermore, by QFD analysis we arrived at the following attributes of the new design-

- wedge-shaped contact
- snap-fit design in plastic components

It was also decided to provide user friendly features like robust construction and ease of assembly which will not only meet but also exceed customer expectation.

- **Design**

Based on above inputs, three concepts were generated which were evaluated on the pre-determined parameters and also from their cost aspect. The best among the concepts was selected for detailed design. In addition to it, three different materials like Brass, Phosphor bronze &SiclanicS (a special alloy) were also evaluated for their mechanical properties using structural analysis on ANSYS for breaker SIC contact material. Based on the result of analysis, Phosphor bronze was selected as the optimal choice.

The plastic components were designed with more attention towards providing user friendly features like snap-fit type of assembly with adequate safety margin in design. Through DFMEA tool, the potential threats to the new design were identified and respective changes were effected to bring forth the most robust concept.

- **Verify**

After design verification by internal and external experts, the prototypes were subjected to stringent tests to ensure reliability of the new SICs. Temperature rise, High voltage withstand, Mechanical Endurance Test, Heat run test are some of the tests that were carried out successfully on the new design. Ease of assembly and user-friendliness of the new concept were tested through product interaction with internal and external customers.

Outcomes

A healthy financial impact of this project has been forecasted with annual savings of around Rs.45 lakhs. This innovative design also led to the filing of three patent applications & one design registration.

Reliance General Insurance Company Limited

Increase revenue through redesign of Packaged Products

Reliance General Insurance is one of India's leading insurance companies. It offers more than 90 insurance products to retail and corporate customers through more than 200 offices in 173 cities across 22 states. Customers can also use the company's website or
contact a 24x7 customer service center to purchase policies.

The product offering of RGIC include health, motor, home, travel, fire, engineering, liability, aviation, Packaged Policies etc.

Business Case: An internal analysis has shown that 65% of the business procured is of Motor product. The second biggest contributor is health product at 22%. The other products make up the rest of 13%. Package Policy is one of the healthy portfolio's (in respect to claims) as per the traditional view and this has been confirmed by our initial analysis which showed a claims ratio of 43% (for the FY '08-09). The packaged policies contributed to 0.77% of the total business procured during the FY '08-09.

This project has been planned keeping in mind two important points from the company mission and goal statement which is : 1) Along with protecting policy-holder interest make affordable insurance available to all and 2) Be the most innovative in product development.

This year the biggest focus is on Top line without compromising on Bottom line. The historically data has proved that the package policy has been a profit making portfolio and that there currently is an opportunity to sell more of these products as they can thus greatly influence our bottom-line. The biggest challenge as envisaged was to make the package policy more appealing & economically viable for all the customer segments to buy and subsequently more easy for the sales force to sell.

A Lean Six Sigma project was undertaken to tackle the problem and improve the process.

The main benefit of the project is :
Customer based increased from 5804 in FY'09 to 57826 in FY'10. An 896% increase. 33% increase in the premium from 8.88crs to 11.82 crs in FY'10.

Cognizant Technologies Limited, Chennai

Improved Design of the Ticket Handling system – Using Queuing theory

The SLA for ABC projects fluctuates between 96% to 100%, when compared to the agreed SLA of 98%. The misses were attributed to oversight, failure to monitor and delay in Customer inputs. Data analysis on these shows that there are 3 to 4 misses on an average for the critical applications. Even though the team has the delivery capability these few misses can affect the SLA /customer satisfaction levels. Hence the need for a new improved design was envisaged.
This 6σ project is unique, which imbibes on the proactive design approach bringing Operations Research concepts to the existing ticket management systems. The implementation of Queuing theory enables us to predict the possible SLA violation and resource planning based on the ticket arrival and resolution patterns.This idea was conceptualized and was totally developed by the empowered team, which made this even easier towards adopting and extending to the organizational assets.A detailed Process FMEA was followed to bring out the various failure scenarios in the existing system. This was followed by a robust design of a new system using Design FMEA bringing out the various control aspects for the key failure scenarios listed. Simulation of the Queue was performed to identify the ticket arrival and resolution patterns in the system. The thresholds of the various scenarios were studied with the control plan in moving resources before the expected breach of SLA's.

Data was ported real time with a design of a graphical user interface bringing out the areas of focus, including queue size, SLA and resolution time of the individual applications with drill down feature for further analysis. The design of the system has been made in such a way that it will be scalable and can be used across our organization. (Visual Factory Model).

The Total person Days saved per month is 18.9. This POC has been implemented in 4 similar projects and we expect a saving of 45360*4 = $181440/annum (87, 09,120 INR/ Annum). Please note that the SLA penalty and other indirect costs like implementation across other projects / savings which are intangible like customer satisfaction are not included in this project cost.

HCL Technologies Ltd

To improve Quality and avoiding penalty paid by the client

HCL BServ, a division of HCL Technologies Limited started its venture early in 2001 and is now a dominant player in the BPO field drawing revenue of USD 232.15 Million. With over 11,400 professionals operating out of India, UK and USA, HCL BServ runs 21 delivery Centers, offers 24X7 multichannel, and multilingual support in eight European languages.

Business Case:

Media Giant Company, a leading global entertainment content company, is required to broadcast the right advertisement following all the defined guidelines.

Media Giant Company connects with our diverse audiences everywhere they are. It is a leading global entertainment content company, which delivers the service across the globe through television, motion pictures and a wide range of digital media.

Commercial operations/Traffic is the group that schedules the commercial time sold by National and Direct response groups.

Errors while processing these deals are leading to revenue leakage as the client's do not pay for defective deals. More over these errors have dual impact as a substantial amount of time is spent in re-works.

Commercial Instructions/ Traffic should capture every instruction right first time and make sure that every commercials are aired correctly.

HCL is responsible to make sure that every instructions are captured at the right first time and aired correctly by providing services like Header Entry and Quality checking along with application (spotracker) development.

The error identification for the Client CI Specialist team has resulted in a saving of $687,534 for the past 5 months since it has gone live.

Define Phase:

The project started with a Quality Consultancy Opportunity and was converted to a potential Outsourced Project based on the inputs and support provided by HCL BPO and Technology team together.

Clients were losing revenue because of errors due to incorrect scheduling and had lost close to $1.2 Mn in 2008-2010.

The transition team designed the SIPOC, identified the CTQs based on the Client input and defined the timelines to achieve the targets as agreed by the client.

Measure Phase:

Data was collected and brainstorming was done to identify the root cause of the issues. Control and Impact Matrix was drawn to identify the process scope that can be outsourced to reduce the errors. Time and Motion study was done to calculate the actual FTEs that would be required to be deployed for doing Quality Check. Requirements were jotted down to design the process workflow application.

Analyze Phase:

The Value added and non-value added steps were identified on real time for different categories of tickets. Gage R&R was carried out between the team members to measure the agreement level between team members for all categories of tickets.

Improve Phase:

Process was revised based on the time and motion study as well as automation that was implemented in the process based on the Kaizens that were posted by the process team members. Changes were carried out in the workflow application for ease of use to reduce AHT and make it more user friendly for both HCL and Clients.

Control Phase:

Transaction Monitoring Form to capture the Client Errors, calibration sessions conducted to minimize variation and automation and system updated to ensure that errors are captured easily and AHT is reduced. This has resulted to a huge direct saving of $687,534. Savings due to reduction in AHT was not included in calculating the savings.

Larsen & Toubro

To Select Spo 2 Probe For Use With L&T Medical Product

At L&T, working towards delivering the best quality at affordable price to our customers, an indigenous module for measuring Spo2 was designed. This development mandated selecting a probe for the new module. Six-Sigma DFSS methodology was used to perform this selection.

Define: Project charter was used to define the problem and limit scope of the project. Selection of Head-Design as a champion ensured allocation of required resources and removal of roadblocks. Stakeholder analysis was done to include relevant people as team members. VOC and VOB were collected through interaction with sales representatives (Internal customers) and Head of Business respectively. Kano's model was used to categorize the customer requirements.

Measure: Data collection plan was made. Pugh matrix was selected as a tool for data analysis and hence the data was collected in the predefined standard format. Raters for the selected criteria's were selected and the rating exercise was carried out.

Analyze: For one of the selected criterion (Comfort of use) raters could not arrive at a consensus. The Pugh matrix was analyzed and it was found that the selection depended on rating of comfort of use. In order to devise a method for rating comfort of use a brainstorming session was carried out. The DOE approach was selected as the best solution for the problem.

Design: An experiment was designed; two factors namely Person and probe with 10 levels for person and 6 levels for probes were selected for the experiment. The order of experiment was randomized to avoid order bias. Ten People were selected in a way to minimize all kinds of biases like gender, age, vested interest etc. Full factorial experiment was carried out with two replications in order to get best results. The experiment indicated person being more dominant than the probe in deciding the comfort of use. This made it clear that it will involve bigger experimental group to arrive at probes comfort level value independent of person, however comfort level being a delighter and moreover looking at the time and effort required for carrying out bigger experiment, it was decided to remove person as a factor and perform test of hypothesis between the two probes under consideration.

Verify: Two hypothesis tests were selected (Chi-Square and Kruskal-Wallis) as response can be treated as both continuous (pseudo) as well as discrete. Both tests confirmed that the comfort level in case of both the probes under consideration is not different. Hence probe selection was done based on highest Pugh-Matrix score (neglecting comfort level). The selected probe was verified to be acceptable in performance and reliability through feedback from four sales regions.

The cost avoidance from this project for a period from Jan-2010 to July 2010 is Rs. 23, 00,000.

Saturation of peripheral oxygen (Sp_{O2}) is an estimation of the oxygen saturation level usually measured with a pulse-oximeter device

John Deere India Pvt Ltd

Design Of Transmission Oil Cooling System

High transmission oil temperature was observed in highest speed under extended transport and some more field applications. Due to high temperature the hydraulic system seals were getting damaged and implement attachments were not performing at required levels. It is needed to control the transmission oil temperatures below acceptable limits without disturbing the current systems. Hence the goal was to design and develop new transmission oil cooling system to reduce oil temperatures below 100 ^{0}C. The solution should be compatible to new tractor as well as tractors which are already at customer end.

The QFD and CTQ drilldown tools were used to identify the sub systems affected and the important system and part characteristics to take care during new design. The functional block diagram made to understand the detail function of each component and oil circuit. Able to find the noise parameters from P-diagram for which the actions were identified in the FMEA for making the design robust to noise parameters. The sigma level was negative for process capability of on the transmission oil temperature on current system.

The heat transfer functions for the oil cooler were, $Q = k_{*}A_{*}\Delta T$ and $Q = m_{*}c_{*}\Delta T$. The controllable and uncontrollable factors were identified based on the current tractor system. Screening DOE was done with five identified factors with two levels to find the optimum oil cooler size. From screening DOE optimizer, two factors were fixed and the final DOE done to find the remaining factors operating point. The equation for the transmission oil temperature was, 110.9 – 0.117*CH – 0.289*FPI.

The DFMA was done to improve the designs. Using Pugh matrix, the concepts were evaluated for various attributes like, compatibility to current tractor, cost, assembly time, and number of parts. The concept with highest weighted score was selected.

The capability study was done for the Inside diameter of the oil pipes since it is one of the important CTQ. The sigma level was 4.97.

The new oil cooling system was verified for the performance and durability under lab and field conditions. Finally the transmission oil temperature was reduced to 95 ^{0}C under extended period of applications with new cooling system. The new design was verified statistically for the transmission oil temperature with 2 Sample t-test. The process capability for the oil temperature improved from negative 2.85 to 4.45 sigma level.

Convergys India Services, Atria, Gurgaon

Compliance To Commercial – An Opportunity To Grow

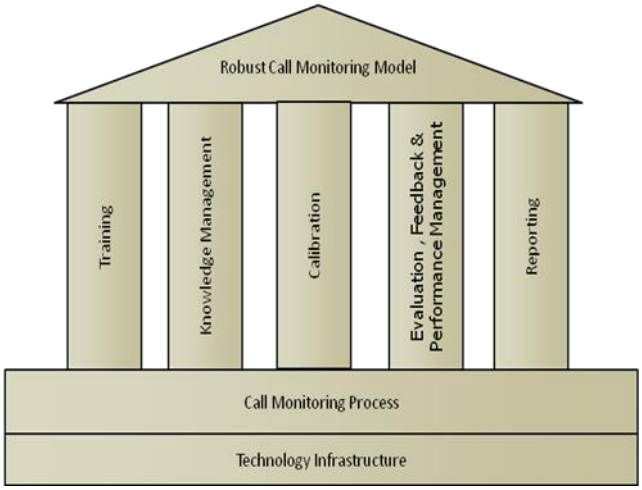
Background and Business Case: Convergys is industry leader in relationship management. It serves many clients across the industries. The relationship management industry has evolved over a period of time and requirements of both clients and end user of services has changed during this period. As end user is becoming more and more demanding, clients are also expecting something more, which gives them insight into the requirements of end user and enable them to serve end user even better. This objective can be achieved by reviewing the calls from end users perspective, which in the past is focused on compliance to call handling process and quality of service delivery improvement. Also in the current recessionary economy there was a need to identify new business opportunities to continue sustained business growth.

Convergys handles approx 0.7 billion transactions per month. There is a opportunity to develop Centre Of Excellence (COE) for call monitoring, leveraging existing in-house capabilities. Convergys won the deal for Call Monitoring Program for one of the world leader in telecommunication industry, to monitor calls handled by CSRs from its various contact centers.

Define and Measure: VOC was gathered through various channels like views expressed during Quarterly / Monthly Business Reviews, meeting/calls, email communication, contract document etc. Basis these inputs the CTQ were identified. Benchmarking survey was done to understand how and what other companies in similar business are doing to deliver customer deliverables and manage processes in-house. The results of benchmarking exercise were used to identify the CTPs and target setting.

Analyze: All the design options and their elements was shared with key stake holders, all agreed to create a model using best elements from all the design options rather than going for one. After comparing features of all elements from different design, best were selected.

Design: Quality Monitoring model was designed on the five pillars of Training, Knowledge Management, Calibration, Evaluation Feedback & Performance Management and Reporting. The base of the model is the basic Call Monitoring process and the Technology Infrastructure (generally defined & provided by client) required for quality monitoring.



The detailed design started with **Training Process** and covered all the aspects of Training from curriculum, duration, prerequisite for trainers, backup plan, certification process and finally transition of Quality Evaluators to production.

Knowledge Management was next design element which covers not only the details of initial training documents, but also how the continuous changes in the business requirements are communicated, from the point it is received from the client till it is documented and ensuring that its understood by all who are directly impacted by such changes, by evaluating them on there understanding of the changes. The Knowledge management process also includes the process for Resolution of Queries of Quality Evaluators, both internally and externally with clients. At the end of every update communication, an online quiz needs to be taken up by all i.e. TLs, SMEs and QEs to ensure that they have understood the changes/updates in the process.

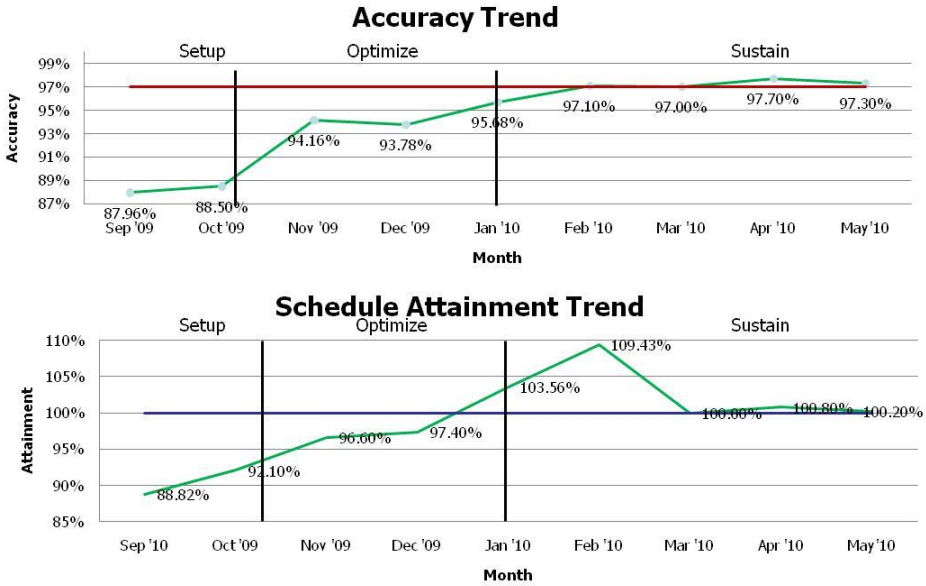
This is followed by **Calibration Process** where the idea is ensure the repeatability and reproducibility of the results of call monitoring. The detailed process of calibration was laid out describing what, when, how and who of process.

Evaluation & Feedback of work done internally is very essential as it helps in identifying areas of opportunity for individual and team as a whole. Basis findings from the TL / SME audits are shared with all the team members with specific focus on outliers identified. The performance improvement plan ensure that every one get full support in improving their performance. **The Performance Managements** takes holistic approach for the continuous improvement with human touch and provide all necessary support to an individual and team to improve their performance. It takes into account both the need of individual i.e. personal and technical developmental requirements through well documented Development Action Plan (DAP) & Corrective Action Plan (CAP Level 1 & 2).

Reports on all CTQs & CTPs acts as barometer to gauge the performance of program and take necessary business decisions. Reports are designed using Oracle database. These reports give complete snapshot of the program to leadership, process owners and client at predefine timelines. Using these reports dashboards are prepared to track performance on all CTPs and are used for WBR, MBR & QBRs.

Verify: A detailed implementation planned was made and FMEA was done to ensure that controls for each of the process were adequate for the sustenance of performance. During optimization some changes were made in the processes to make them more effective.

Following graphs shows the sustained performance on key performance measure (CTQs) Accuracy and Schedule attainment. Standard dashboards are created to track and ensure consistent performance on all the CTPs, ensuring sustained performance in CTQs.



And in the end a control plan was designed to ensure that team should not lose focus and all necessary corrective and preventive measures are taken on regular basis.

The fruit of hard work finally paid off and Convergys earned revenue of about USD 3.1 million (till Apr'10) from this quality monitoring program and helped us move from ***Compliance to Commercial***. Continues sustained performance on the base of strong processes helped Convergys win two new quality monitoring businesses with USD 660K combined revenue potential per month.

This initiative helped Convergys in adding a new service offering, to the bouquet of services we offer for a strong relationship management with our clients.

Capgemini Business Services (India) Limited

Transformation In Transition – Delivering Optimization

Project is focused on transforming the transition process from a mere Lift and Shift model to a Lift, Transform and Shift Model which will result in reduced time for transition, better knowledge transfer, better scalability of the processes. This project was to completely change the design of the transition process to enable the Process transformation.

Business Problem: When there is a multiple country transition, the project stabilisation timelines are always very high and very high level of dissatisfaction at the customer end. Huge gaps in the handover process of customer requirements and process specific knowledge between different functions such as Transition, Operations, Technology and support.

Goal Statement: Streamlining handing over process of complete customer requirements and process specific details between various functional areas at different stages of the engagement for smooth transition. Current schedule on the average of 16-20 weeks should be reduced to 8-10 weeks.

Vital Xs: No Standardisation of processes during transition, No proper handover of the process between transition and operations team, assumptions in process/ requirements, commitments made outside of proposals, not adhering structured transition procedure, lack of communication across stakeholders, poor communication, lack of awareness on the methodologies and procedures to be followed while handing over customer requirements and business flowing through practice heads without involving transition team.

Business Improvements: Formed Financial Academy with the team size of 30 people and developed Global Process Model (GPM), Standardized documentation structure from Level 1 to Level 4 for all clients, Client Specific requirements documented in Level 5 and 6, Developed FMEA during transition to identify risks, introducing compliance and risk teams during transition period to identify non-conformities and risks and structured functional and training plan

Business Benefits: 94% on time completion of the activities agreed with 8 weeks transition period. Huge cost savings and very fast stabilisation of the processes.

Customer Benefits: Shorter period for Go live resulting in cost reduction at offshore and structured process across regions.

John Deere India Pvt Ltd

Height Adjustment Mechanism For Pto Dynamometer

John Deere Developed Lab & field capabilities as a global facility to cater to domestic and other John Deere World. In tractor test cell (PTO test cell) we are using eddy current dynamometer for loading the tractor. We measured PTO power with help of dynamometer.

Function of PTO test cell (tractor test cell)

1) Measurement of PTO power, fuel consumption, various critical temperatures like Engine oil, transmission oil, fuel, exhaust.

2) Validation of cooling packages, PTO gear train durability and other components testing at tractor level.

Problem Definition

For recording PTO performance we need to connect the tractor PTO shaft with Dynamometer cardon shaft. So the torque and Speed value measured by Dyno and power calculated by using power formula,

Power (kW) = Speed (rpm) *Torque (Nm) / Dynamometer constant

Considering the various tractor models we have the different PTO shaft heights from ground level. Due to that we always face the problem for alignment of Tractor shaft with Dynamometer shaft and its time consuming process.

Requirement as per the Standard (IS12036) –

The angle of the connection of the shaft connecting the PTO to the dynamometer shall not exceed 2°.

Problem to be studied

To resolve the issue of height adjustment for tractor and alignment of connecting shaft following options available,

1. Height Adjustment platform for tractor
2. Height Adjustment fixture for Dynamometer

Considering the cost, available space and project time we decided to go with height adjustment fixture for dynamometer.

VOC Conducted to understand the customer needs & QFD were used to find the critical parameters affected to system. Process flow diagram made to understand function of the mechanism. Able to find the noise

parameters from P-diagram for which the actions were identified in the FMEA for making the design robust to noise parameters.MSA of angle protector conducted to understand the measurement system variation.
Using Pugh matrix best concept was evaluated for various attributes like cost, accuracy, and easy operation. DFMEA of selected concept was done to find the associated risk of failure & Corrective action taken during the execution.
Verified the assembly time & angle with height adjustment mechanism. Finally we reduced the setup time by 45 min & increased Dynamometer shaft to tractor shaft coupling accuracy by 85% (4° to 0.5°)

Capgemini Business Services India Limited

Process Transformation In Accounts Receivable Process

Project is focused on the Accounts Receivable process for FMCG giant in the world and targeted to improve Effective Utilization of Resources and Operational margin. Before initiating the project, the utilized workforce was higher than contract required (55 against 38) due to volume peaks in 2nd fortnight of the month and people dependent process. Impact brought by the project, resulted in **23 HC reduction** and Transformation in process model which increased the bandwidth of the team to support peak volumes during 2nd fortnight of the month.

Business Problem: More headcounts deployed than contract requirements (55 vs. 38, 31% more than contract requirements). Volume skews in 2nd fortnight of the month. Operations Margins are well below the Management targets. Extended cycle time in cash allocation process and low visibility of receivables.Highly person dependent process.

Vital Xs: High lead time involved in overall cash application process due to unique customer specifications, Country specific accounts receivable processing teams, Delay in query response time, High excel based manual workings in the process and High non-logical data entry involved in the process.

Business Improvements:
Process steps were classified into "Logical" & "Non-logical" and identified the technology solution to be implemented.

E2E Process steps were segregated into **3 step model**. 1. Streamlining the various Input types 2. Input refinement (**i2i – Input to Intelligent Input**) 3. SAP data entry automation (**ABi- Automatic Business intelligence**)

Implemented **i2i**, a Business solution (VB application) which eliminates the Excel based manual workings and also developed auto validation to ensure controls built to verify the data accuracy.

Developed **ABi**(macros) with the help of external Business application which can interact with SAP and transport the non-logical data automatically from MS-Excel to SAP with negligible manual intervention.

Effective utilization of resources and reduced manual intervention in the business environment (Excel & SAP). This reduced the lead time of the overall cash application process and ensures robust process model.
Centralised AR team formed to handle cross country volumes with designated Query handling team internally.

Business Benefits: Standardization and Streamlining of various sub-processes leading to better control of process.

Enhanced Customer Satisfaction.

Elimination of person dependency resulted No stretch hours & Backlogs.

Financial benefits of about Euro 160,000 (INR 1.1 crore p.a.) with the Process Head Count reduction from 55 to 32 validated by the Finance team.

Deployment opportunities evaluated and Implemented in Accounts Payable process.

Seamless process model and increased bandwidth to manage the higher and peak volumes.

Customer Benefits: Improved TAT. Better accuracy and effective volume skew management.

Increased visibility on unallocated cash. Improved overall process control.

DMAIC SUPPORT

Employee Transport Safety in Wipro BPO

Wipro BPO always had a well defined Transport system with a team of transport specialists involved in routing, tracking and controlling the cabs used for the transportation of employees from home to office and vice-versa. However, the need was felt to study the transport process in greater detail to identify the risks involved in it for employees while in transit using company cabs. It was felt by the management that the transport process could be made more robust if it is re-looked at from the perspective of a lady employee traveling at night. Unthought-of loopholes in the current process could emerge as a result of such a risk analysis exercise. Mitigation steps could then be taken to plug these gaps in the system.

This resulted in the management decision to: Study the transport process in detail to identify the loop holes in the system, plug the gaps identified through a thorough risk mitigation process, control the measures taken to mitigate the risks and institutionalize these control measures.
To ensure that these objectives are met in a structured manner, a project was initiated using the Lean Six Sigma methodology in conjunction with the Risk Analysis methodology of Wipro BPO's ISMS policy.

Problems/Challenges Faced

As approximately 40% of all the employees who use company transport are lady employees. The liability due to any untoward incident lies with Wipro BPO. The nature of these risks are such that the probability of their occurrence is extremely low, however, they are of extremely high impact if occurred. Hence the challenge was to analyze the transport process in failure mode and to understand and mitigate the risks of employees while using company transport (particularly lady employees traveling between 9PM and 6AM) and to find controls to mitigate these identified risks.
The challenges were manifold, starting from deciding the Risk treatment to be given in order to mitigate or reduce the risks identified after studying the transport process in failure mode, to implementing control measures and checking their effectiveness. However, the most daunting problem was to get the rubber to hit the road, i.e, getting these risk mitigation steps implemented. However, this was done and successfully so! If the reader has used Wipro BPO's company transport before December 2008, he/she would know and feel the difference!

Risk Analysis and Treatment

A project team was set up and the first task that this team did was to study the As-Is transport process in it's entirety and break it down into 46 process steps. The vulnerabilities and threats (Risk = Vulnerability + Threat) were studied for each of these steps which led to the identification of 41 risks in the transport process. Risk mitigation recommendations for the top 10 risks were brought to the platter through an intensive brain storming session. These recommendations were implemented and controlled through RMAC audits. The effectiveness of the control measures were measured through the Transport Safety Index.

The implemented risk mitigation steps were then institutionalized under the umbrella of Wipro BPO's Risk Assessment Methodology, ISMS policies and in the form of an SOP document for Wipro BPO's FMG (Transport) team. This document is now a part of Wipro BPO's Quality Management System (QMS).

To ensure that the risk mitigation steps are followed the FMG team conducts regular checks on all vehicles used to transport employees. These checks are as follows:

- Daily/Local Checks – on the vehicles, drivers and escorts. These checks are conducted before the vehicle leaves for a pick up or drop
- Central Checks – every fortnight

To keep a tab on these activities and to ensure sustenance of the improved process, the Risk Management and Compliance (RMAC) team of Wipro BPO, conducts regular audits on the Transport process using an audit checklist consisting of checkpoints for Daily Check Conformance and Central Check Conformance (as mentioned above).

To gauge the effectiveness of the control measures taken, a metric called the "Transport Safety Index" was developed. The Transport Safety Index is derived from the conformance percentage of both the above checks. Transport Safety Index is the sum of 70% of the Daily/Local Check Conformance percentage and 30% of the Central Check Conformance Percentage.

The Transport Safety Index is reported out to the FMG Management Team and the endeavor has been to have a 98% score in the same. This was achieved, on a continuous basis, from the mid of August 2010!

Benefits

The manifold benefits derived from this Risk Analysis and Treatment exercise are as follows:

- The safety of employees while using Wipro BPO Transport facility has increased by the treatment of the high impact risks. This can be gauged by the following:
- Current Transport Safety Index score of 98% which has been sustained since mid-August 2010.
- The Average Risk Severity Number of the Top 10 Risks reduced from 2624 to 873; a difference of 1751 points. A 66.7% reduction!
- The controls implemented are standardized across all locations. The same is governed by a control implementation SOP.

Conclusion/Summary

Having successfully implemented risk mitigation measures and achieving a Transport Safety Index score of 98%, we have to keep in mind that since this exercise was based on the Risk Analysis (RA) methodology of Wipro BPO's ISMS Policy, it does not claim to capture all possible risks in the system. The improvements were be done for the controls which are certified as feasible by the FMG team by keeping existing systems, cost and other business factors in view.

Since it is a requirement of the RA Methodology that a re-Assessment be carried out to update the Risk Assessment Document for any new or retired risks on a periodic basis or in the event of any major change in the process (transport), therefore, a review of the risks need to be done at-least once a year.

Reliance General Insurance Company Limited

Reducing IT Infrastructure Costs and promoting Green IT

Reliance General Insurance is one of India's leading insurance companies. It off ers more than 90 insurance products to retail and corporate customers through more than 200 offices in 173 cities across 22 states. Customers can also use the company's website or contact a 24x7 customer service center to purchase policies.

Business Case: Prior to 2010, Reliance General Insurance was struggling to manage afleet of around 100 servers. Inefficient resource use slowed database and application performance, while prolonged downtime hindered the ability of staff to serve customers and undertake development work. Datacenter space was shrinking as the company added more hardware to support its growing business. Procurement and maintenance costs were also rising to unsustainable levels.To address these issues, Reliance General Insurance turned to VMware's virtualization solutions. The company now runs around 130 virtual servers on eight physical hosts. These servers run applications that support software development and quality assurance, production staging and deployment, and network and web infrastructure. Virtualization enabled Reliance General Insurance to improve CPU utilization, overcome performance bottlenecks and ensure resources can be quickly scaled to support new initiatives or business growth. The company now plans to deploy VMware at its disaster recovery site to ensure business continuity. It is also looking to virtualize its storage and desktop infrastructure.

Results

• Reduced capital expenses and cut operating expenses by 30-35% in the current fiscal year
• Achieved a server consolidation ratio of 15:1
• Reduced server racks in the datacenter from 12-14 to three (INR 72 lacs savings in first year only for IDC Data Center expenses)
• Cut deployment times for servers and new applications from 6-8 hours to 1-2 hours (excluding procurement time)
• Provisioned a virtual server in one hour, compared to weeks to provision and deploy physical servers (No new Windows servers procured in 2010-10; INR 80 lacs savings for not procuring hardware for 40 new Application/Database servers)
• Enabled two administrators to remotely manage the entire infrastructure
• Improved application availability to near 100%

• Supported increased user load with ease

Capgemini Business Services (India) Limited

Vahan – Improvement in Transportation

Project is focused on the transportation process in improving the efficiency of general shift cab reporting to office. Before initiating the project, the average on time of cab reporting was 19% (Jan-Feb 08) against the baseline 75%. As a result of the project, the average on time of cab reporting improved to 78% (Jul 08 – Jan 09).

Business Problem: Low efficiency of cab reporting resulted in huge loss of employee login hours. Low Employee morale due to changes in the transport and delays. High cost on the transport due to additional cabs and/or to meet adhoc requests and manual tracking of transport process

Statistical Problem: The average efficiency of cab reporting on time was at 19% for the period of Jan and Feb 08 with baseline Z score as 0. Average delay of cabs was around 8:25 to 8:35 AM against baseline of 8:20 AM.

Vital Xs: Employees are reporting late, Extra Pickup, Traffic Jam, Route Deviation, Vehicle breakdown, driver reporting late, New Driver, and accidents are identified as critical causes for delay in cab reporting.

Business Improvements: Developed Zero Waiting policy and communicated to team, developed dashboards for effective communication of employees reporting delay vs. leakage of login hours vs. efficiency loss, implemented GPRS system to guide drivers on the traffic jam areas, standardized procedures for extra pickup /

change in the shift timings and/or changes in the employee database, developed travel portal for effective rostering and communication.

Business Benefits: Financial benefits of about **24 Lacs** with improving the on time reporting efficiency from average **19%** to average **78%**. Improvement in on time reporting resulting in improving employee utilization ratio.Standardization and Streamlining of various sub-processes leading to better control of process.Enhanced employee satisfaction. Developing portal eliminated person dependency and ineffective communication.

Customer Benefits: Employee Satisfaction and Improving employee login hours.

Ingersoll Rand

Efficient Transport System

Overview

With the movement of the Ingersoll Rand business unit from Bangalore city to the new facility to Bidadi industrial area in Ramanagaram their existed major challenges to the transportation support system to effectively manage the operations at the facility.

Bidadi industrial area is situated in Ramanagarm district and is about 50 KM (Kilo Meters) from the Bangalore city. The employee strength at the facility is 300 and almost all of them are resided closer to the city to meet their daily life style. The facility works in two shifts with a half hour overlap ie. 8:00AM – 5:00PM & 8:30AM – 5:30PM.

The Management decided to put in place a Transport facility to cater to all the employees commuting needs. The current system uses a 14(13+1) seater tempo traveler (TT) & has 25 different routes spread across the Bangalore city.

Challenges

With the fast growing infrastructure development in Bangalore the transportation system will always face tough hurdles to overcome situations like traffic congestions, route diversions due to road repairs and metro work constructions and others. These road blocks often effects the operations of the business with productivity and commitments taking a back seat. To compensate for this overtime facility was also introduced which resulted in additional operational cost in terms of late evening transportation system.

So the management's top priority was to effectively handle the process of transport for on time arrival to facility which in turn will have a major impact on the productivity of the employee.

Process Improvement Drive

A six sigma team was formed to drive the process improvement initiative to look at critical factors that are affecting the system and put together a control process in place to sustain the improvements.

The project was carried out between April – November 2010 and a detailed project plan was chalked out and subsequently, timely reviews were carried out to determine the project progress.

The project was started by understanding the business needs & converting those needs to CTQs. The historical data was gathered that provided the baseline for the current process. The data was explored more to understand the critical inputs that gave us a hint to plan for more measurements.
Data was analyzed using statistical tools that provided us an insight on the potential causes of the problem. Basis the Analysis findings improvement ideas were brainstormed with the support from the route coordinators and successfully implemented to see noticeable improvement in the process.
Control Plan was then setup to sustain the improvement and the transportation metrics were constantly tracked for any deviations.

Sap Labs India Pvt. Ltd.

Reduction In Inflow Percentage Of IT Support Tickets

Today, we are in the World of Service Excellence. Everyone is driving towards achieving a new high in the Customer Satisfaction.
At SAP it is even more challenging as we have to cater to the IT requirement of our Internal Customers. To provide the next generation customer support, we at SAP decided to use the already proven SAP Sigma methodology to drive a service improvement project leading to Service Excellence.
After carefully evaluating couple of improvement areas, we chose to work on the Topic which has maximum impact on the End Users. We identified two key areas defined below as our improvement areas.

1. Reduction in the ticket count per user per month (0.6 to 0.5)
2. Increase in the resolution percentage of tickets on the same day (75% to 90%).

The project spanned across 18 months using the DMAIC (Define, Measure, Analyze, Improve & Control) methodology. The problem areas were analyzed and identified using the past data for a period of 6 months. We were given go ahead, to work on the identified improvement areas.
During the Define Phase the Project Charter was finalized and final go-ahead was received from the Champion. We did a deep dive into the identified problem areas.
Moving ahead in the Measure Phase our Team finalized operational definition and collected historical data as per the plan. We took random sample of tickets using MiniTAB software tool. Data segmentation was done for the components contributing to maximum tickets using Pareto charts.
With this the Baseline was set to study the business case in the Analyze Phase for further analysis to find out the vital root causes. Our Team had brain storming sessions and used various tools like fish bone diagram for arriving at the exact root cause for the problem.
Based on the above findings, in the Improve Phase our Team finalized on improvements like rolling out of SAT (Share Admin Tool), implementing Self help tools, Facelift of Helpdesk to name a few.
During the Pilot run, the improvements were implemented and tickets were re-evaluated. The Pilot results showed improvement in the reduction of the ticket count per user per month from 0.6 to 0.5. We also achieved the second KPI of increase in the percentage of resolution from 75% to 83%.
Having achieved the improvement we implemented a Control mechanism in place to maintain the consistency.

In order to exceed the expectations of our Internal Customers, a systematic problem solving approach using SAP Sigma methodology our Team has become more efficient and faster in executing the baseline activities.

CSS: Customer Service System (IT Support Tickets, SAP notes, development requests, etc.)

SAP's central service and support system for

- SAP employees
- Customers
- Partners

Available worldwide, 7 days a week, 24 hours a day

- A global hotline network (Global Support) guarantees round-the-clock processing of customer problems

Bharat Electronics Ltd

Quality Improvement in Battery Charger 5.6 kW

BRIEF DESCRIPTION:

5.6KW generators are supplied to the Indian Army as Direct Deliverables of project Shakti. The Generators are also provisioned for charging of ten 12V 88Ah, SMF batteries. During inspection & offering of Gensets to customer there were a lot of non conformities which eventually delayed the testing & dispatch of Gensets to consignee locations. The scope of this case study is to minimize the non conformities by customer by means of Quality improvements in the Generator.

DETECTION & ANALYSIS:

The causes for failure were listed by Cause & Effect diagram. They were broadly classified under four categories namely, Battery charger panel, AMF panel, Power & BC cables and other accessories. The main cause & the sub causes for each category were individually analysed using FMEA technique. Value stream mapping was done to study the time delay from receipt of items from supplier to dispatch at consignee locations.

SUGGESTED & IMPLEMENTED SOLUTIONS:

The following suggested improvements were implemented by the supplier in future supplies.

1. Battery charger panel –
   a. SMPS & Reverse polarity failure were avoided by introduction of a safety box &modular construction of SMPS cards.
   b. Wrong wiring & loose connections avoided by changing screw in type connections to crimp type with proper identification.
   c. Better thermal management provided by means of suction & exhaust fans.

2. AMF panel-
   a. Easy accessibility due to single panel constructions.
   b. Wrong wiring & loose connections avoided by changing screw in type connections to crimp type with proper identification.
   c. Analog meters replaced with digital meters for durability.

3. Power & BC cables-

a. Transit damages avoided by providing a unique compartment within the equipment.

b. BC cables with channel no. identification to avoid wrong connections.

c. BC cables with hook type lugs instead of U type to avoid loose connections.

4. Other accessories-

a. Breakage of handle & rusting of name plates avoided by improvement in design & process.

b. Fuel spillage avoided by design improvement.

c. Handling Damages & breakage of silencer avoided by design improvement.

ADVANTAGES:

1. Z value improved from 4.25 to 5.28
2. No. of defects reduced from 736 to 9
3. Lead time reduced from 78,988 mins to 8262 mins.
4. Completion & accuracy improved from 84 to 100%.
5. Resulted in a savings of around 11 Lakhs.
6. Improved reliability of the product & increased Customer satisfaction

Capgemini India Pvt Ltd

Optimization Of Power Consumption

The Problem:

As a developing nation, India's per capita Energy Consumption is very low. To achieve economic growth, we need to use more energy and power to increase the pace of development. The natural resources as available on earth are getting depleted very fast with time as their use is increasing exponentially. Energy costs takes up substantial share in the overall cost structure of the operations.

The Voice of Customer (VOC) and Voice of Business (VOB) at Capgemini India for identification and execution of Six Sigma project on "Optimization of Power Consumption" are –

- Conservation of energy by working towards 'IT For GREEN'
- Reduction in operational costs

Approach:

The team started a Six Sigma project using DMAIC Methodology for driving improvements with the objective of optimizing power consumption at Capgemini India. The operations at Capgemini India span across Mumbai, Bangalore and Kolkata locations with Head office at Mumbai. Capgemini Bangalore office 1B was set-up as vertical infrastructure. The Senior Management identified Capgemini Bangalore 1B office as the first project for implementation of "Optimizing Power Consumption" in Q1-2008.

Data centers and facilities at these premises are operated based on redundant power supplies through the following sources –

- Power through the energy supplier – Bangalore Electric Supply Company (BESCOM)
- Backup Power i.e. Diesel generators for supporting the operations
- Transitioning of power while switching from Board Power to Backup Power are supported by Unregulated Power Supply (UPS)

Accordingly, the 'Engineering' team at Infrastructure & Facilities Management (IFM) Function at Capgemini India monitored power consumption since Jan-2008 through regular meter reading of AC Panel, UPS and Utility Panels (used for elevators, etc) on each floor on monthly basis. This facility accommodates around 1600 employees along with huge training facilities (i.e. training rooms with several projectors, machines, Plasma Screens, etc).

Consolidation and generating reports from the above data proved that cumbersome and ineffective processes led to high utilization of power consumption and thereby high costs of operations.

The **targets** for reduction in power consumption in 2010 were –

- **10% improvement** in power consumption with significant reduction for operations at Capgemini India by December-2010

Segmentation approach & analysis for power consumption was done using Box Plots as projects across floors work in various shifts. Inferences were drawn based on the following –

- Floor-wise power consumption in 2008 (H1 and H2)
- Power consumption based on AC Panel, UPS and Utility Panels in 2008

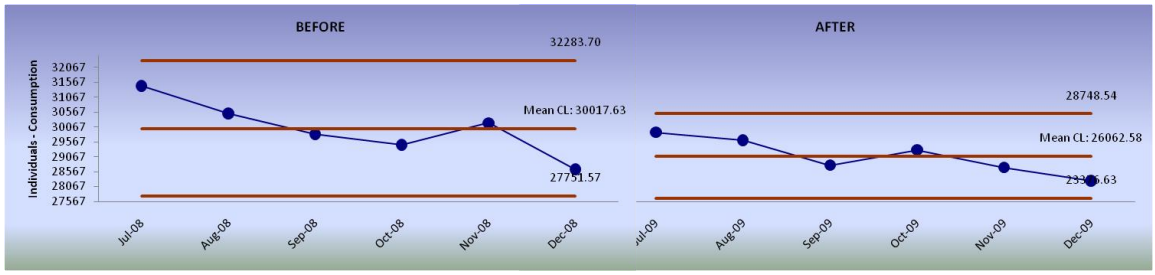
Data on power consumption was further analyzed for identification of root causes through Fish-Bone analysis. This was conducted through 'Brainwriting' with representation from Senior Management, organizational support functions – Training, IFM, HR and few Project Managers working from these premises. This 'brainwriting'exercise helped in identification of all contributing factors which led to increased power consumption.

Root causes identified through Fishbone exercise were validated before initiating improvement actions plans by IFM through –

- IFM Internal Audit with focus area on 'Engineering' and 'Power Utilization'
- Trigger for inspection of electrical installations and equipments with respective vendors

Based on these validated findings, the Control Impact Matrix and Cost-Benefit Analysis were used for identification of solutions using 4 quadrant approach which segregated process inputs into impact on Critical to Quality (CTQ). Lead indicators were introduced to identify improvement action plans for power consumption. Improvement actions for power consumption at these premises were educated and disseminated to all employees in the premises. Post-implementation of improvement actions, the IFM Engineering team collected data on power consumption in 2010 by respective floors, AC Panels, UPS and Utility Panels.

Before v/s After Individual Control Charts were drawn for demonstrating improvements in power consumption at respective floors in Capgemini offices, AC, UPS and Utility Panels.



These improvements in power consumption were also demonstrated statistically using Hypothesis test (i.e. 2 Sample t-test) at each floor level and for AC Panel, UPS and Utility Panels.

Outcome:

Results from this improvement project are as follows –

- Reduction in power consumption by 11.18% and cost savings of more than $7500 by Dec-2010

Sustenance & Way Forward:

- As planned, improvement actions are being implemented across all offices of Capgemini India (Mumbai, Bangalore and Kolkata) and has resulted in **overall financial savings – INR 1.6 crores or US $32,000 till Jun-2010**

- The **estimated cost savings** due to power consumption at Capgemini India across locations is **$48,000 by Dec-2010.**
- Capgemini India is amongst the initial and very few IT companies which is working towards achieving Environmental Management Certification ISO 14001:2004 by Q4-2010 to support implementation of "IT for GREEN".

Sutherland Global Services

Improve Ontime Cab Arrival For Employees

1. About Sutherland

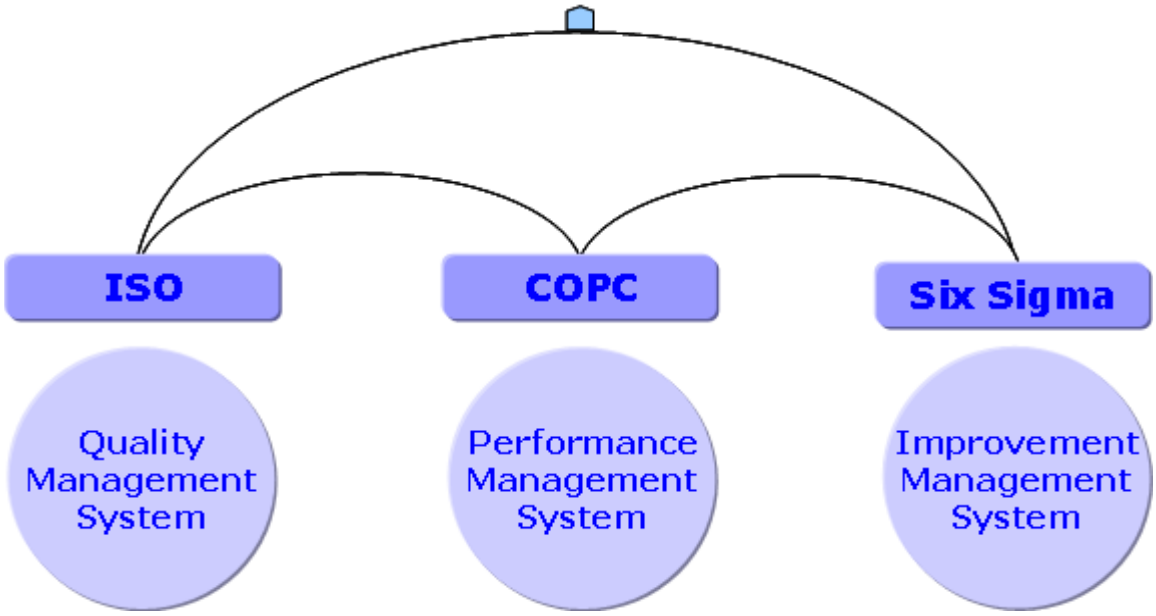
Sutherland Global Services is a leading Business Process Outsourcing (BPO) company with over twenty four years of experience in the customer management space. Since 1986, some of the world's most respected companies have depended on Sutherland to manage various aspects of their customer operations. By taking advantage of Sutherland's domain knowledge, quality processes and global delivery options, clients are able to dramatically improve their sales, marketing and customer support results while remaining focused on their core competencies. Sutherland was awarded many certifications which include ISO 9001:2000, COPC version 4.0A, ISO 27001:2005 and PCMM Level 5.

2. Six Sigma practice at Sutherland

Over the years, Sutherland has meticulously built the quality system, which enables in managing the dynamics of change, while balancing sustenance and scale. Six Sigma methodologies play a key role in this. Sutherland has been one of the early beneficiaries of implementing best in class practices, pioneering quality innovations & benchmarking based improvements. Sutherland has successfully adopted Six Sigma as the de facto platform for its Improvement management system and has completed several improvement projects using Six Sigma methodology which has been seamlessly weaved into Sutherland's "Blended Quality Model".

3. About the project

Clients have out sourced their business to Sutherland for handling their customers. When customers call, the call needs to be answered within the specified time which is defined as SLAs by clients as part of the contract. Right numbers of associates are to be staffed across intervals based call arrival pattern to meet SLAs. Being 24X7 operations, employees are to be picked up from their residence to office and dropped back after work. At Chennai city alone Sutherland has operations in 5 different locations transporting 6000+ employees on 160 routes employing around 300+ cabs. It is critical to bring associates on time in order to meet the Service



Levels agreed with various clients. Based on shift schedule and employee rosters, cab schedules are prepared and released. The on-time arrival of Cabs is trending around 78%. This leads to missing the Service Level targets agreed with our clients besides increased abandonment rate and customer dissatisfaction. The annualized estimated loss of due to late arrival of cabs is US$ 1,350,000.

4. Project Highlights

• The On-time Cab Arrival has two important CTQs in its upstream process chain, one is Cab Pickup Delay which means Cab reaching the pick- up spot 10 minutes after the scheduled time and the other CTQ is Employee Boarding delay which is the delay due to Employee not boarding cab after the scheduled time.

• The Vital causes for Cab Pickup Delay is Cab shortage due to low occupancy and Incorrect travel time assumptions – to manage Traffic

• The Vital causes for Employee Boarding Delay are Cab waiting at pick up spot – Employee not ready, Employee unaware of cab / pickup time changes and Driver unaware of employee's unplanned leave causing long wait at pick up spot

• The following solutions are implemented to improve On time Cab Arrival:

_ Site/ program based cab scheduling has been changed to single window scheduling covering all sites and programs within city.

_ Depending upon time of the day & traffic density, the variable travel time for 160 routes is used for scheduling instead of fixed travel time assumptions

_ Introduction of Short Messaging Services to intimate cab details with driver's mobile number 4 hours prior to scheduled pick up time

_ GPS system with integrated GPRS introduced. Automated SMS sent to employees once the cab reaches Geo Boundary

_ SMS introduced for cab cancellation. Automated No Show / Late reports sent to the employees and their respective TLs / PMs

5. Project Summary

• On time Cab Arrival has improved from 77% % to 92 % against the target of 90 %. Process Sigma has improved from 0 to 2.08

• Sutherland has realized the benefit of $309,814 from April '10 to June'10 and with a projected Annualized benefit of approx $1,240,000

Dboi Global Services Pvt. Ltd.

Improvement In Reporting Productivity

Introduction

BMSC is the report creation unit for the various operating units of DBOI. This unit is based out of multiple locations in India and other locations of DBOI Global service. The BMSC unit has evolved over last 3-4 years, and today it creates more than 2200 reports.

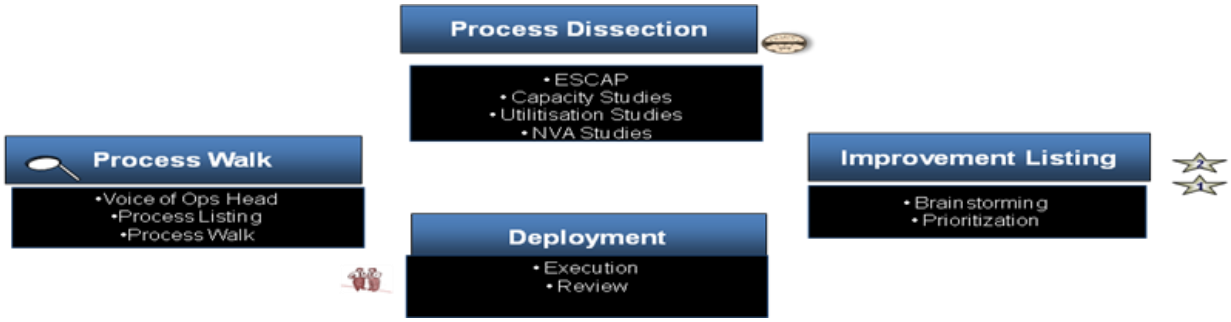
Project Background

Reports prepared at BMSC got transitioned from various operating units of DBOI and other units of Deutsche Bank. The process gets transitioned mostly in the form as it was done with the operating team. This has created non standard way of report preparation and fragmented report creation unit. The data collation, report creation, distribution was done for each report in standalone manner. Currently the report generation process at BMSC is manual; therefore increase in reports inventory requires proportional increase in headcount. In

order to bring the efficiency in report creation, a six sigma green belt project was initiated during Dec-09. The project timeline was fixed as per internal standard of six sigma program. The project is aimed at improving the efficiency of report creation.

Methodology

A background study was conducted by Business engineering team to understand the report creation process and the standard tools used. A detailed process walkthrough was done for a set of sample of 100 processes. Voice of the leadership team and the operating team was captured through multiple harvesting and brainstorming session.



Based on the background study, four stage processes was decided.

Stage I- Capacity modeling

Stage II- Client recertification on the reports and activities

Stage III- Value added, Non value added steps

Stage IV- Identification of automation opportunities

Stage I- Capacity modeling

Measuring effort in report creation was a difficult task, as it needs to be done at each report level. A drive was initiated to list the activities for each report creation. The nos. of times the report needs to be created during a month, and the time spent in doing the same was captured. The effort was further categorized under standard steps of report creation- Data collation, Report preparation, Presentation, Validation, distribution and client briefing.

This has created a compendium of work done by each FTE; hence it has enabled the capacity modeling for each FTE. FTE capacity modeling has lead to identify the understaffed and overstaffed departments. It has also helped us to identify the FTE, who are spending more time in transactions. It has helped us to do the load balancing.

Stage II- Client report consolidation and activities realignment

The transition activity from operating team was further consolidated, which has lead to efficiency save for various units.

The various reports were further restructured within to create utility structure. This has lead to creation to consolidated units, where scale benefit was realized and best practices was shared effectively.

- HR
- MIS/ anlysis
- IT Risk/ Ops control
- P2P
- Divisional administration & processing

- CRES & GS

Stage III- Value added, Non value added steps

Two set of activities was undertaken in this step.

During first step, a client level recertification was done to identify the set of projects, which can be either discontinued, partly discontinued, merged or their periodicity can be changed

Next step was to use the activity listing done during capacity study and get it classified under Value added, non value added and value enabling activities.

Stage IV- Identification of automation opportunities

As a part of ESCAP (Eliminate, Simplify, Combine, Automate, Parallel), all manual reports are identified. Based on the cost effectiveness study automation opportunity was shortlisted. These get monitored by department in terms of its efficiency register.

Benefit

The overall benefit of all steps has lead to improvement in FTE efficiency by 23 till Q2 end. There are new initiatives which are planned to tap further efficiency benefit. The main focus areas are implementing identified automation opportunities, and the BMSC automation engine.

Sustenance of the above initiative is maintained through periodic dashboard and tracker sheet.

Firstsource Solutions Limited – Healthcare Vertical

Everest Csd Tickets Reduction

Customer Service Perspective

Firstsource Solutions Limited is one of the few Global BPO companies offering process management both on the Payor (Insurance end) side and provider side (Hospital end). Firstsource Solutions Limited's services on the Payor side include end-to-end services including enrollment services, mail room services, claims processing and claim adjudication. On the provider side, Firstsource Solutions Limited offers complete revenue cycle management including front-end patient services, eligibility services, receivables management services and collection services.

For providing these services Firstsource has proprietary workflow system / applications which are developed and maintained by the Dev support team. These tools are used by the Firstsource's operations team to deliver their services to clients.

Any problems faced by Operation's team is escalated as a ticket which is resolved by the Dev support team.

Problem statement

CSD tickets tagged in Everest contributes to 80% of overall healthcare CSD tickets according to the data collected in 13-July till 13-Aug 2010. The proportion of repeat issues identified in these tickets accounted to 55%.

Project Goal

To reduce the number of repeat issues identified In the Month of Jul / Aug to 30%.

Results

Achieved 51% reduction in Repeat CSD tickets in Everest.

Annual financial savings of $12,260.

Wipro Ltd

Loss Avoidance For US Retail Major

Wipro Supports for Back office processing for a US Retail Major for Accounts Payable, Account receivable, Retail accounting Claim Processing & Credit Card dispute resolution & Chargeback retrieval and store support, Pharmacy receivable and Physical Inventory Exc.

Client is US fourth largest broad line retailer with 3,900 full-line and specialty retail stores in the United States and Canada. Annual Revenue of 44B$ & 350,000 + Employees Our Client is the leading home appliance retailer as well as a leader in tools, lawn and garden, home electronics and automotive repair and maintenance and US largest provider of home services, with more than 12 million service calls made annually.

Problem Statement: Key Business challenge for Client in 2010 was "Reduction of Operating Expenses". Wipro identified this as a key value add theme and decided to improve the same through a coordinated project approach cutting across different functions.

Project Goal: Financial Loss Reduction for Retail Client By 2M$ (Annualized) by 30th Oct-09

CTQ Prioritization

Y1: Loss Reduction in Credit Card Chargeback

Y2: Spend Reduction in News Paper Advertisement

Y3: Scanning Cost Reduction

Y1. Loss Reduction in Credit Card Chargeback Avoidance Rate

Problem Statement: Financial Loss to Client due to credit card chargeback is estimated to be about 1.5 Mn USD p.a. Chargeback reversal rate for ABC Credit Card is 4~6% due to stringent guidelines. Average Charge back avoidance rate is 79% of Overall disputes received. This leads to continuous financial loss to Sears.

Project Goal: To improve the Charge Back avoidance rate from 79% to 89% by Sep-2010

Operational Definition of Project CTQ: This measures as [1-(Total disputes converting into Chargeback (in Value) divided by the Total disputes Received in Value from ABC Card provider)*100] Defect Definition: if a disputes converting to Chargeback which is considered as Defect.USL: 89%

Data Collection Plan: Source of Data is Customer Tool (Access Database) which provides all the transaction information required for analyzing the case. Agents / Leads can pull the data from Customer Tool.

MSA: Data source is customer tool (Access Database) which is already calibrated. Hence there is no requirement for Gage Repeatability & Reproducibility

Root Causes Identified

1. Delay in sending response to provider & Store
2. No Response / Incorrect response received from stores
3. Insufficient documents to provider
4. Credit not Issued on Time
5. More Variation Across the Associates

Improvement Solution:

1. Improvement in Process Lead time to avoid delay in sending response to provider & Store
2. Implemented the Case Expiry Tracker and follow up
3. Standardization of Case resolution approach
4. Avoid early response to provider, thereby giving reasonable time to the stores to resolve the issue with the customer to prevent Incorrect response received from stores

5.Tracking CN conversion to CB cases, to know the failure points which can be fixed in future.

6. Send right fax to Amex on Fatal CB, if sufficient documents are available.

Y2: Spend Reduction in News Paper Advertisement

Business Challenges: Client has 963 Vendors for News Paper Advertisement across US. During process Audit, the following points are observed for over payment.

Root Causes:

1. Contracts were executed late on account of pending approvals. These dates are well over the effective date of contract.
2. News Papers were billed on Old rates
3.Credits given in the invoices were not properly noted and availed

Solution:

1. All the newspaper vendors are to submit their invoices on time. Rates matched with estimated rates in the system and rates mentioned on the invoices submitted by the vendor
2. Verification and approval made mandatory for payments
3. All corrected and approved payments would come to the AP team as a feed for payments

Y3 Scanning Cost Reduction

Root Causes/ Wastes Identified

- From the analysis of Blank envelope processing, It was found that more than 97.3% of blank envelopes have no Value addition to the Business . This process has potential scope for reducing the man hours spend in processing and Scanning cost of envelope

Solution: implemented the screening process at Dallas NSC Team to secregate the Value add Blue Envelopes and send for scanning

Benefits

- Losses Reduction in Credit card Chargeback: $ 0.74 Mn p.a.
- Scanning cost Reduction: $ 0.131 Mn p.a.
- Spend Reduction on Newspaper advertisement: $ 2.8 Mn p.a.

Total Annual Financial Saving to Client $ 3.15 Mn
(150% achieved against the Target)

John Deere India Private Limited

Reduce voice communication cost at John Deere India

Project Objective

The objective was to reduce the telecommunication cost at John Deere India. This project was completed using DMAIC approach.

Objective was – Reduce telephone cost per employee per month at JDTCI from $ 15 to $ 10 using VoIP.

Project Steps

Define: "Pareto charts", "In out fence" was used for scoping of the project. Representatives from different functional groups brainstorm for finding input variables resulting in high telephone cost at JDTCI. Fishbone

diagram was used to organize these input variables. Cause and effect matrix was used to prioritize all input variables. One of the major causes was found to be no or less awareness of VoIP among JDTCI employees.

Measure: 1st Measurement System Analysis (MSA) was used to check the VOIP awareness among the JDTCI employees. 24 operators were selected to represent different functional groups at JDTCI who generally make ISD calls. It was found that these 24 operators do not have sufficient awareness about making calls using VoIP. "Frequently asked questions (FAQ)" were prepared for VoIP awareness. We educated the 24 operators with the help of this FAQ's.

2nd MSA was conducted to check if the FAQ's help operators to understand how to make VOIP calls and save cost. The results clearly showed that the FAQ's helped the operators for understanding about VoIP method for ISD calling.

Analyze: FMEA was done for input variables selected from cause and effect matrix. Actions were prioritized as per the severity and RPN score.

Improve: Appropriate actions were taken for improvements. VoIP tie lines to USA were increased from 30 to 60. Communication campaign was carried for making employees aware on how to use VoIP. Mistake proofing was done by creating a VoIP dialing utility in excel. Improvement results were validated statistically.

Control: Control plan was prepared and is being used to ensure that the telephone cost is always below the target.

Project Results

Telephone cost per employee per month reduced by 60%
Mistake proofing done so that employees need not remember different and complex dialling procedures at different locations

Skf India Ltd

Compressed Air Energy Consumption Reduction By 12%

(This project is under the energy umbrella project in DGBB Bangalore)

Belt Name: Jnanesh N;**Business Unit:**EL&TW \ SDGBB \ Bangalore;**Belt level:**Black;**Project duration:**5.6 Months
Forecasted hard savings:3 MINR
Soft savings:432 Tons of Co2

- Project Owner Need
  - Energy cost for the Bangalore Factory is in the increasing trend
  - Out of the complete Energy 23% was contributed by Compressed Air
- Project Solution
  - Compressed Air Pressure
    - 850 cfm air converted from High pressure to Low pressure
      - 5 bar pressure requires 4 kwh / day / CFM air generation
      - 3 bar pressure requires 2.8 kwh / day / CFM air generation
  - Pipe Diameter From Valve to Application
    - Lower the diameter lower the air flow
      - Pipe diameter of all spindle seals & washing machines mapped and changed to PU3
  - Pipe Length From Valve to Application

        - Lesser the pipe length lesser the wastage of air
            - Valve position modified and positioned near the cylinder
    - Compressor Unloading Setting
        - Higher the unloading pressure higher the energy consumption
            - Unloading setting modified from 80 psi to 78 psi
- Customer Benefits
    - CO_2 emission reduction for local community
- SKF Benefits
    - Increased profit margin by reduced energy cost
    - Reduced additional power requirements

Start Date: 20-01-2010; Black Belt: Jnanesh N; Sponsor : G W ChidambarRao; Date Completed:12-07-2010

Problem Statement:

- Energy cost of DGBB Bangalore is on upward trend
- * Per day consumption is about 50000 units
- * Energy cost per bearing is approx- 1.25 to 1.3 Rs
- * Compressed air is one of the most expensive sources of energy in a plant. It is the 1st highest of existing energy usage (approximate 23 % of the Total energy)

Goals

	Baseline	Actual	Goal
Energy consumption / day	12737 kwh	11139 Kwh	11208 kwh

Customer Satisfaction benefits:

• Energy Consumption Reduction

• CO2 Emission Reduction 432 tons

Financial benefits:

Hard savings:

• 3 MINR

Soft savings:

• CO2 emission reduction by 5000 tons / annum

Project Summary:

Define:

•Project under energy umbrella

• Source of energy not in the scope

• Project to be on Generation, Distribution & Consumption areas of Compressed air

Measure/Analyse

•245 Xs identified in Pmap

• 74 Inputs Taken for PFMEA

• PFMEA Output with 5 Xs for Validation & 5 To do activities

• Validation done for all 5 Xs - 4 Xs are found to be Significant they are

    • Compressed Air pressure

    • Pipe Diameter from Valve to Application

- Pipe Length form Valve to Application
- Compressor unloading setting

Improve

- 850 CFM of Air pressure Mapped to be converted from High to Low Pressure
  - Major areas of conversion – MST Turning , Channel Assembly (MYD, MGO, MVM, TOS, Flex link, HHC), FSF OR honing, MVM Washing Machines
- All Pipe Diameter mapped to standardize at lesser diameter
  - All washing machines
  - FSCs Or Honing
- Unloading setting correction from 82 PSI to 78 PSI

Control

- Pressure of unloading & pressure to line monitoring
- Air leak age arresting on frequent intervals
- New connections to get introduced only on approval from maintenance

Key Learning:

- Compressor efficiency validation procedure
- Effect on energy due to Compressed air generation & Distribution
- Types of compressors

SKF India Limited

Improve Process Capability Of Soft Turned Rings From Cp-0.90, Cpk- 0.66 To Cp, Cpk> 1.33 Dgbb Ring On Ch#1 Supplier: Ring Turning Supplier

Business Case: In 2010 there was more number of rejections on SKF Bangalore channels in case of rings supplied by turning suppliers to Bangalore plant. This has resulted in to frequent line stoppages at SKF and loss of channel out put. These scenarios have forced SKF to take actions in the area of ring turning facility to get green rings on channels. One of the key projects is to address these quality issues by improving process capability of ring turning supplier. Increased Out put coupled with reduced rejections on SKF Channels will benefit on time deliveries to our customers.

Objective: Improvement in Process Capability of turned rings on DGBB CH#1 from ring turning supplier to enhance the productivity/ better out put and on time delivery to our customer.

Project Progression.

Define: Stratification:High volume one type out of 7 Bearing Type's on channel 1 alone selected contributing 38 % (No of rings rejected on ch#1 in 2008) for first phase. Baseline data collected for all the rejections & for all the types on DGBB Channel 1.

Measure: Turned Ring Supplier capability evaluation:Supplier visit for understanding process details and to find out each ring parameter process capabilities.

In-house ring capability form other sources evaluation:In-house inspection studied in response to all other turned ring dimensions/ variations. They found in order and capability observed >1.33.

Analysis: Hypothesis validation: Tube parting process found to be major factor for ring width grinding at turning units. Trial conducted with different parting blades to improve yield and reduce variations in ring width.

Hypothesis validation: Study conducted to find Effect of rough turned rings on width & OD grinding at ring turning suppliers i.e. tier 2 suppliers. Rough turned ring sizes are increased by 20 mic and tolerance kept on + side. Tendency to turn more due to scrap material.

Hypothesis validation: Study conducted to find the capability of grinding process. Grinding dressing cycle was established after the testing and feeding mechanism changed from single roller to double roller feeding mechanism. Process Capability of ring width stabilised after these improvements.

Hypothesis validation: Study conducted to find the capability of track turning process. One of the major validations done for Inserts in place of brazed tools. Process Capability of ring width stabilised after these improvements.

Improve: Trials: Sample batch trials conducted on site for all dimensions to check the process capability and the same batch validated on SKF channels. Bulk lot trials completed after 1st success of trial lot. Dock audit is introduced to check before dispatch to SKF and keep a log of the same.

Other Activities carried on machines to support Process capability improvement.

Results: Projected Hard saving – INR 1.00 Cr./year

Bulk trial improvement shows as below –

Channel out put increased from 35K to 40K per day.

Rejections reduced by 26% and no internal customer complaint is received after improvement phase

Control: Detailed control plan with PIC and Frequency handed over to supplier with agreement and cross functional team for Monitoring and Sustaining of the Results.

DMAIC SERVICES

Motilal Oswal Financial Services Ltd.

Tat Reduction In Account Opening

Background:- The Turn around Time Reduction in account opening was started with the Organization`s vision to be the best service provider in broking industry. Looking at this bigger picture, the BPEX (Business Process Excellence) team did a bench marking exercise to identify the different aspects of the business. The exercise indicated that this parameter was directly affecting our CSAT (Customer Satisfaction), Revenue and Brand name. In Order to improve these three key metrics the management decided to make Account opening time as the organization's USP. It resulted in an initiation of a project to reduce our turnaround time from customer signing the form to actual account activation.

We have used following tools & techniques in order to Zero Down the Project.

1. Vision & Mission statement
2. Benchmarking
3. Priority matrix
4. Effort & Impact Matrix

After setting up the measurement system we found that "The TAT (Turnaround time) of account opening (Branch operations) from the day form is signed by the client to account activation was 10 days, and we have set up a tough Target of 5 days (as per our benchmarking study) to be the best in industry".

As the problem was directly related to CSAT revenue and branding, we were looking for an opportunity to convert this weak area into our biggest strength.

1. CSAT: - As per the current status of account opening process, the turnaround time from customer signing the form to activation was 10 days on an average, which was way beyond customers' expectations.
2. Market Share Loss: - Because of such higher TAT there was a tendency among end customers to shift to another broker; as they were trying to reap the benefits of market movements.
3. Revenue: - The delay in account opening was causing a cascading impact on receiving revenue from

Customer after opening an account.e.g. If we open an account in 12 days so we will start getting the brokerage/ revenue after 12 days only and if we open an account in 8 days so we can generate 4 days extra revenue plus the interest cost for 4 days.

The problems/resistance faced in this project:-

We have faced three Major problems/ Resistance during the entire project.

1. The End clients were not putting the signing date, they were only doing signature and later the date has been put by the MOSL sales representative …basically two major issues.

a. 20 – 25 % forms were coming to head office without form filling date

b. Date is not filled by the end client;it is done by sales rep.of MOSL

For point a. we have put the signing date as major rejection and the respective sales person need to give us the dates again before account activation, as the core issue of change management. It took us 15 days to get 100 % signing date filled forms.

For point b; to understand this issue, we upfront called the end client to find out the form filling date. After

verification we have found this phenomenon in selected area only; once we understood this we have took

their reporting authority in confidence and talk them one on one… after 20 – 25 days this problem was solved.

2. The field executives were not clear with the regulatory requirement issued by SEBI.As all the requirement were send to them as a ppt that was too big and difficult to carry … this was more of a technical resistance… to overcome this issue we have made a handy Ready Reckoner for field executives. This ready reckoner containing all the regulatory requirements (issued by SEBI) helped to reduce major objections.

3. MOSL Branches are scattered across country and in order to control the entire process regional challenges were also part of this project.

Project Summary:-

The TAT of account opening of branch operations for the period of Jun-Jul'08, was 10 calendar days (from the day the form is signed by client to Back-Office activation) which was very high. Various factors affecting the turnaround time were explored and analyzed during this project.

1. The business of MOSL is spread across India with 40 branch offices having no data of Account opening at all. The team found that because of non availability of measurement system and granular details, people were not aware of this serious issue and a lot of back and forth escalations were happening. As the project established a robust measurement system of TAT and MIS for senior management and relevant stake holders, there was an improvement in overall process and metric.

2. The next big reason for higher TAT was objected account opening forms at verification. The project team worked on creating a ready Reckoner for sales team which helped them to collect the right documents and complete them in correct manner and that's how the objection rate was reduced.

3. Also the Team analyzed the ground realities and created the "Pull" factor in the objection clearance bysending upfront information via SMS to end client to act fast in case of any objection.

Benefits

Tangible:-

1. Reduced TAT of account opening for Branch operations (day from form filled by client to account activation date) from 10 days to 5 days which causes financial savings of 66 lacs INR annually.

2. Reduced Client loss due to objected forms: Customer applied for opening an account but never came back after an objection is raised.

3. Additional revenue through TAT reduction (including the interest cost)

Intangible:-

1. Higher CSAT due to faster process and satisfied clients spreading the good word about MOSL to other
prospective clients.
2. Reduction in logistics and operational costs.

Sap Labs India Pvt. Ltd.

Gobig – Test Effectiveness (Using White-Box Testing Approach)

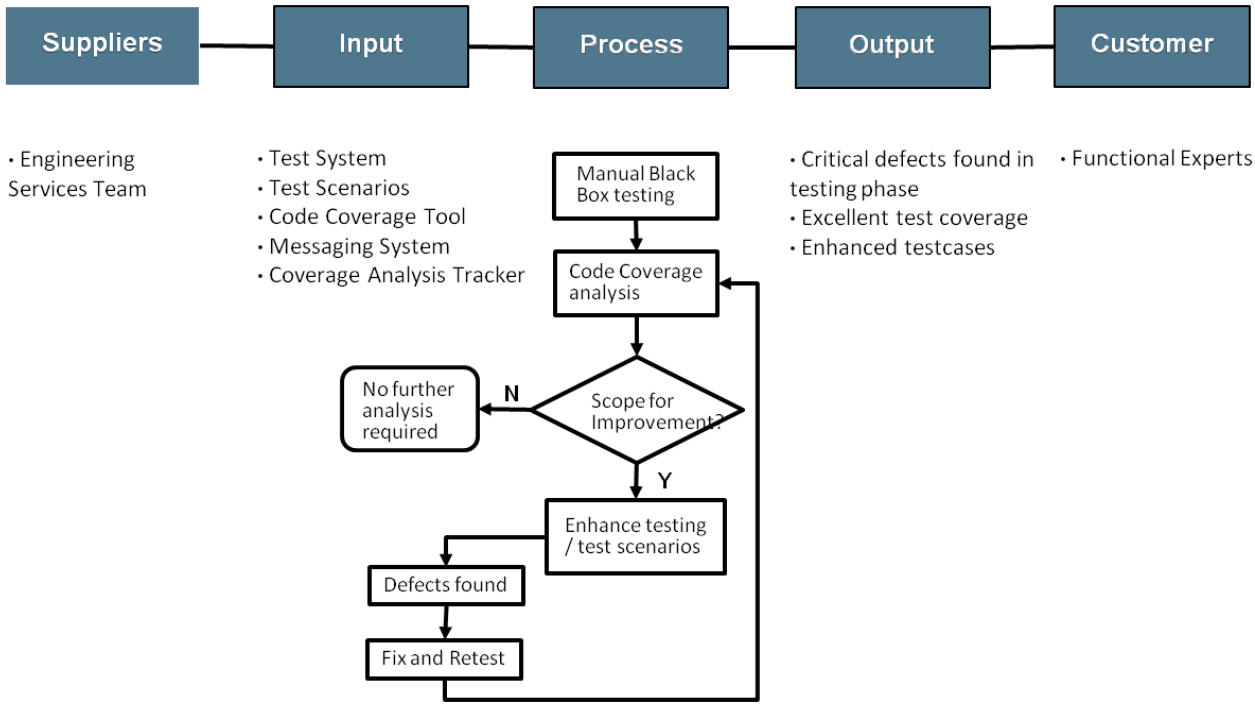
Ever since the Software Development process has become an engineering discipline, it has been a constant endeavor to provide effective and efficient means for the early realization of defects in the product. Detecting defects earlier in the development phase results in a better quality product to the customer as well as savings to the organization by means of lower 'cost-of-fixing'.

SAP always aimed at helping its customers get the most out of their IT investments so that they can maximize their business performance.

The Project was one of the first integration projects between some of the acquired products and some of the existing products of SAP. Since, it was first of its kind; it had high Customer Expectations which from Quality perspective means the product should be "bug free". For that, we needed to have inbuilt Quality in all phases of development by early detection and prevention of defects.

The Project was executed for over a period of 6 months using the DMAIC methodology.

Define – The problem statement for this project was derived from the voice of the customer. The objective of this project was to improve the test coverage and find critical defects by following the exhaustive white-box testing approach using Code Coverage Tool (SAP internal). Using these details, a Project Charter was put in place. A high level process map was created using SIPOC.



Measure – The existing tests were executed and the code coverage results for the same were taken as the baseline numbers. For the test effectiveness ratio, the number of defects found in earlier test cycle (tested using

black box approach) was used to get the baseline. Then a Data Collection Plan was put in place to record our findings in the project phase.

Analyze– A detailed process mapping is done to analyze and find the potential causes for less code coverage percentage and "hidden" defects. Once the potential causes were found, we worked on ways to improve the test effectiveness ratio as well as the code coverage. The main reasons are:

Test Effectiveness Ratio

- black-box testing
- missing test scenarios
- lack in completeness of tests due to lack of functional/technical knowledge

Code Coverage

- tests overseen in Manual Testing
- tests dependant on other classes / features
- code can be reached only via other framework
- missing implementations
- "dead" code

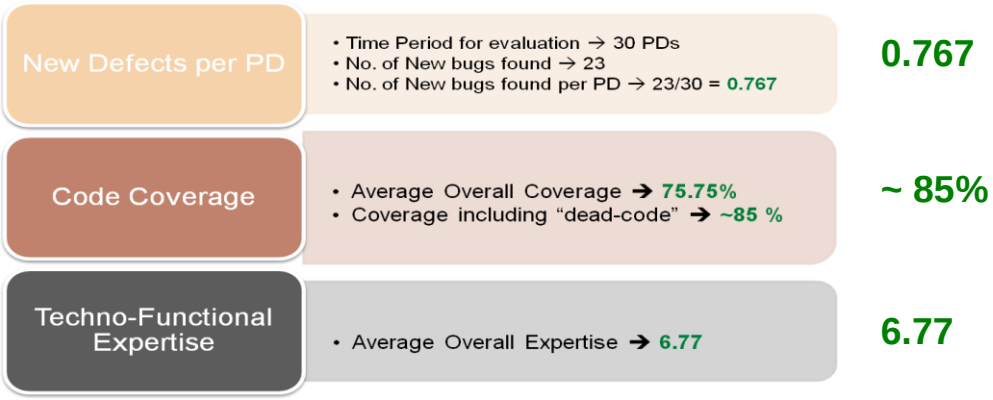
The identified ways to increase effectiveness in terms of quality of the product also helped in identifying missing scenarios in manual tests which lead to creation/modification of existing test scenarios.

Analysis Key Improvements:

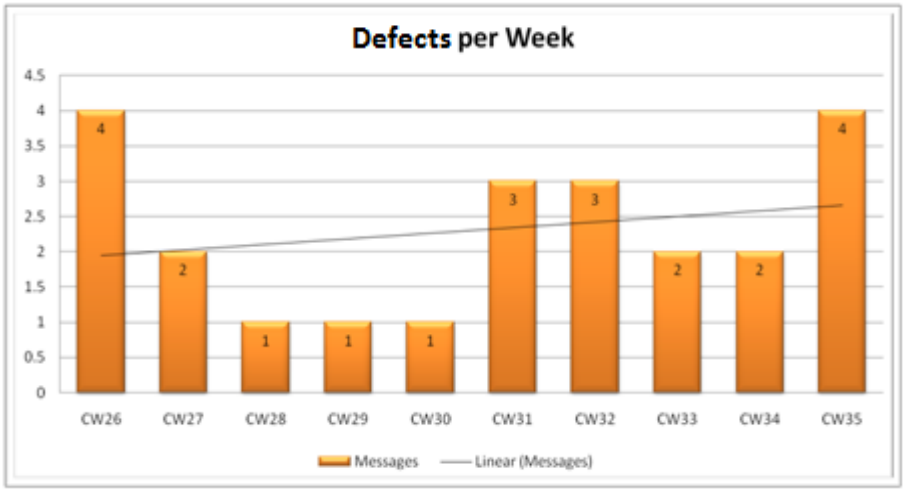
- Adoption of Code Coverage based testing to improve test coverage
- Effective testing methodology using exhaustive White box approach
- Early identification of critical and quality defects in terms of Functionality as well as Usability
- Re-defined TestCase Template with technical details at code-level

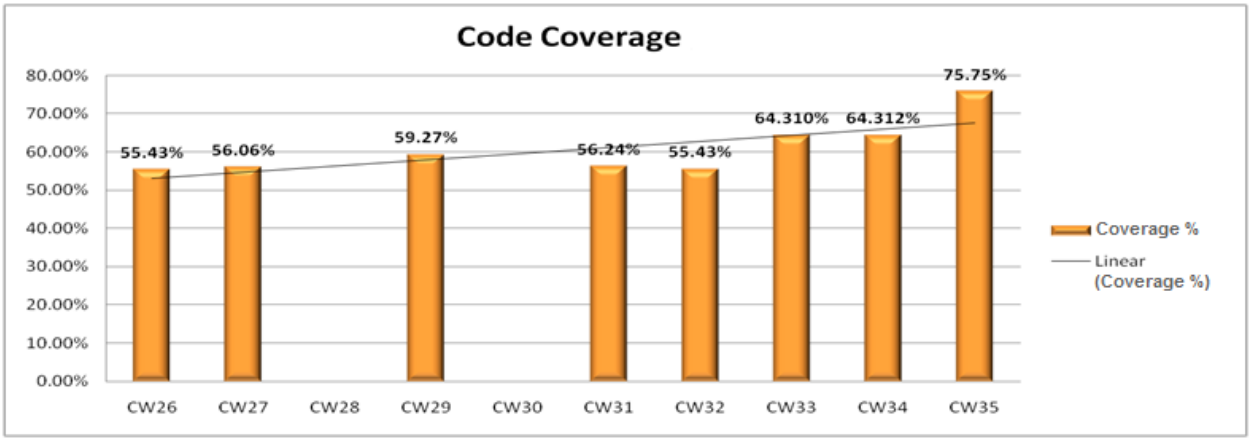
Pilot Run Results – At the end of our analysis, with continuous monitoring, we reached a state where no further improvement of scenarios or increase in code coverage is required. We then recorded the results.

We achieved test effectiveness ratio (Defect/Efforts) of **0.767** and Code Coverage of **75.75%** (including dead-code an overall coverage of **~ 85%**). In the end, the technical and functional expertise of the quality team has also been improved by a great extent; from 4.38 to **6.78** (on a scale of 10).



The trend can be observed from the below charts





Control – At the end of the project, a Control Plan was put in place to monitor the current project for over a period of time which can also be utilized for forthcoming projects. To enable sustained improvements, the processes were tracked closely on a weekly basis.

The BETA Customers (14 world-wide) feedback says - ***"…There were only a minimal number of critical bugs entered, many of which have been resolved since the end of the Beta…"*** which clearly solves the purpose of our six sigma implementation for our project.

The success of this project and the potential for savings led to an important decision – the Champion of the project recommended the white-box testing approach to all other projects in the same area which benefitted us a lot in finding critical defects at an early stage, thereby lowering the TCO.

With a structured improvement approach using SAP Sigma methodology, testing and quality assurance has become more effective.

Sap Labs India Pvt. Ltd.

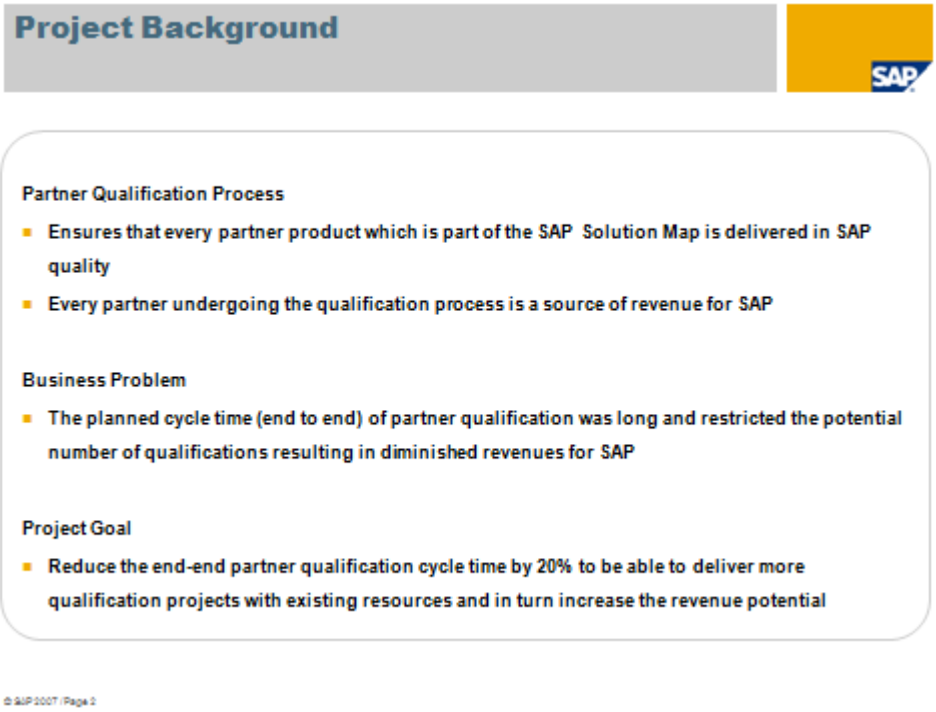
Reduction Of Cycle Time For Partner Qualifications

1.1 Introduction:

There has always been a tough tug of war between the Testing cycle time and the Quality of testing. The cycle time has a direct impact on the revenue generation. However, the quality of the product is of utmost importance and hence cannot be compromised. In today's highly challenging and competitive market

situation, one of the critical business requirements for any successful company is to achieve a **faster go-to-market time** for products all the while ensuring that the **high quality of the product is maintained.**
In order to achieve such an **"optimal cycle time"** for the Qualifications of SAP partner products, a **Lean Sigma project** was initiated to have a detailed look into the entire process and identify the pain points, non-value adding activities that can be removed and processes that can be parallelized to optimize the cycle time for Partner Qualifications.

1.2 Background and Relevance of the Project to the Organization:



SAP partner products which are key contributors to SAP's revenue. These products need to be **"qualified"** by SAP before they can be resold or marketed. Hence the Qualification cycle time has a direct impact on the go-to-market of a partner product.
The Qualification process itself consists of 2 parts which spanned over 12 weeks:

1. Enablement Package
2. Qualification Package

1.2.1 Enablement Package:

Partner products are often very varied using different technologies and third party solutions. It is important for SAP to know the product in detail, evaluate the compliance of the Product to different Quality standard requirements and also make the necessary preparations for the active testing (system landscape, test scope etc.) On the other hand, partners also need to understand the process and the SAP Quality standard requirements that their product needs to comply with.

1.2.2 Qualification Package:

Once all necessary deliverables are in place, the active validation of the partner product is performed for various SAP Product Standards. Once the product has successfully passed the Validation against the different Quality Standard requirements and has all necessary deliverables from our Product Innovation Lifecycle (PIL) in place, a release decision is taken by different stakeholders to make the product available to customers.

1.3 Project Execution and Summary of Results:

1.3.1 Approach:

The Lean Sigma project was executed over a period of 6 months using the DMAIC methodology. The problem statement for the project was derived from the "Voice of business". The goal of the project was to reduce the cycle time of Partner Qualifications from **12 weeks to 10 weeks** ensuring that the Quality and the efforts for Qualification remained the same.

As a first step, feedback from customers, partners and internal stakeholders was collected to identify critical pain points in the process. Then the entire process was split up into detailed steps and data for each of the critical steps was collected for all projects in the Measure Phase.

During the Analysis Phase, all the **Non-value adding activities (or Muda)** in the entire process were identified and analyzed so that they could be either removed or improved upon.:

It was found that one of the major contributing factors for the long cycle time was the partner understanding of SAP Product Standard requirements. Another major factor was the very formal approach to the static evaluation of the partner product by the SAP Product Standard experts.

1.3.2 Major Process Improvements:

As a result of the Lean Sigma project, the following improvements were introduced:

- **Product Standard Aids** are now provided to partners so that they can have a better understanding of how to comply with our requirements.
- **Modified expert evaluation process:** A new expert evaluation process was rolled out, where the SLA was reduced to 2 days. An optional call between the partner and experts was introduced so that everything could be clarified in a single call.
- **Parallelization of Component Validation and Test System Landscape set up**

1.3.3 Introduction of Lean Qualification Track

In addition to this, it was also identified that some of the Lean partner products like a simple ABAP Add-on or a Java add-in, did not require the entire 10 weeks as the scope of validation and the efforts for system set up was lesser. Hence to accommodate such projects, the results of the Lean Sigma project was used to also come up with a Lean Qualification concept where the cycle time was further reduced to **8 weeks**.

1.4 Value Additions for SAP and its Customers:

- **Faster go-to-market** and revenue generation.
- **15% increase** in the number of Qualifications done in Q4 2010
- **Higher product quality** due to better understanding of SAP Standards by partner.
- **Reduction in the efforts** for the partner due to the simplification of the process.

Larsen &Tubro Limited

To Reduce "No Problem Found" Spares From The Field To Factory Services For Ultrasound Products

Larsen & Toubro is Asia's Largest Engineering Conglomerate. Medical Manufacturing is a tiny part & it is situated at Mysore Campus. Continual Improvements has always been in focus year on year. Ultrasound Scanners, Patient monitoring Systems and Electro Surgical Units are 3 branches of L&T Medical equipment Systems.

Role of SERVICE Department:

Service will support customer after sales for a defined period & even after product obsolescence.

Provides support for product quality improvements by giving feedback to manufacturing.

AIM of Service Department:

To improve the response time by reducing **TAT** of field return materials with sustained continual improve the quality level.

Why the Project?

Service department has to trouble shoot the field return defective items. Detect & solve the root cause of the problem. And by giving valuable feedback to manufacturing supports in product quality improvement. But "No problem found" spares were receiving in Ultrasound service was 51%(Average of 6 months) of total received item. 51% of time was spending in testing and documentation of no problem spares. It was affecting actual TAT of Service. Need was there to reduce "No problem spares" coming from field.

Six Sigma helps us solve problems in a systematic manner hence chose Six Sigma Methodology.

Objective Statement

To reduce "No problem found" spares from field to factory service for ultrasound products.

- Organized the team
- Target - Reduce "No problem found" spares from 51% to 25%.
- Identified the scope of the project & drawn **SIPOC.**
- Brain storming session had & identified **CTQs.**
- Using **Pareto analysis** found the material whose contribution is high, in different categories like Shop item, Bought out items & together is Product type.
- Brain storming session had & made **Cause & Effect analysis**
- Based on prioritization following causes were chosen and made **FMEA**.
    - Sending back the unused PWAs for testing
    - Intermittent problem
    - No problem reconfirmation
    - Improper problem description
    - Request for wrong material
    - Improper problem description in SFR
    - Hand writing.

By using tools VSM, VA/NVA analysis and effective tool Brain storming, target is achieved.

In Analysis Brain storming session conducted with Customer (all over India service Engineers).

- Collected information & their requirement.

Found that no reconfirm facility in Hub. By providing it, material coming for up gradation can be reduced.

High contribution products (from product Pareto analysis) jig made & sent to all regional Hubs.

Service Engineer will

- Test the material (which ever is possible to test in provided jig) after replacing in field.
- Test unused material for future use.
- Send only defective PWA.

All Jigs are validated & validation frequency is a year.

Benefit to Customer: No shortages of material for field service.

Benefit to Company: Material coming for up gradation & some extent technical problem got reduced.

On Service Engineers request Service guide made & documented. It covers the following

- Do's & Don'ts (Material handling, SFR filling, General instruction).
- Product wise
    - Material Photo
    - Part no.
    - Description
    - Compatible revision
    - Testing procedure
    - Frequently observed problem
    - No wrongly declared material part no. conversion facility. There was chance of receiving wrong material at field

New method implemented

- Writing actual part no in good item label.
- Writing Wrongly declared part no. in other label.
- Wrongly declared part no. label will be removed after conversion at SMC.

Benefit to Customer

- Picking correct part no. for required item.
- Writing problem description in SFR
- Identifying problem technically.

Benefit to Company

- Reduced Non- technical problem
- Reduced Technical problem at some extent.

Other benefit to Company:

- 7 Days saved in service.
- Total 20 days saved in material transportation from Hub to Hub.
- Rs.80/- saved per part in transportation
- Avoided material transportation & SAP transactions.

From all above implementations & team members, service Engineers contribution, " No problem found"spare from field to factory is reduced to 23.96%.

Reliance General Insurance Co.Ltd.

Reducing AhtAt Call Center

Reliance General Insurance is one of India's leading insurance companies. It offers more than 90 insurance products to retail and corporate customers through more than 200 offices in 173 cities across 22 states. Customers can also use the company's website or
contact a 24x7 customer service center to purchase policies.

Business Case: As a part of cost cutting measures, the customer service team was given a target to reduce call center billing. The team embarked on a Lean Six Sigma project to reduce AHT maintaining the same Quality and service levels.

We started with a 3-dimensional approach viz; People, Process and System to identify improvement opportunities.

As a start point, a call was divided into various buckets like welcome, data entry, hold time, information, SR generation, closure etc.The team listened to approx. 350 live calls and measured time (in secs) for each bucket. The time for each bucket was statistically checked for significance. For every significant bucket, solutions were identified to plug the extra time required for each bucket. Thus there was a action plan to reduce time in each

significant call bucket. Through Fishbone, other x's were identified and checked for significance. Action and a control plan was laid down for each significant x.

In the Improve phase, we divided all executives in 4 quadrants viz; i) low AHT, low variation ii) low AHT, high variation iii) high AHT, low variation iv) high AHT, high variation. Every executive, based on his AHT and variation, was classified into a quadrant. The calls of the executives in the 3rd and 4th quadrant were analysed and a control plan was put to bring these executives in 1st or a 2nd quadrant. Further these executives were analysed for their tenure and category of calls they handle. A proper feedback mechanism, script change, online support, training, IMR chart etc moved the executives into the 1st and 2nd quadrant. Now, there are few executives in the 3rd and 4th quadrant who are on the improvement curve.

The AHT at the start of the project was at 00:05:51. Currently we have achieved our target of 00:04:30.

Satyam BPO Limited

Improving Quality Scores

Engagement Overview:

The client is a telecom major in India providing services on GSM (Global System of Mobile Communications) platform. Today, client serves over 37 million customers in more than 320,000 towns and villages across the country offering a wide range of telephony services including Mobile Services, Wireless Desktop Phones, Public Booth Telephony and Wire-line Services.

For the Andhra Pradesh region, Service delivery has started from MSat BPO in Aug '09 along with Tech Mahindra as one of the service providers to deliver customer care and technical helpdesk services to the client's nation-wide customer-base. This was the first domestic project for MSat BPO.

Process Overview:

It is an in-bound domestic call center handling queries, requests and complaints calls in Telugu, Hindi, English languages. Tier 1 and Tier 2 levels are specified in the support boundaries. Support scope includes the following activities:

- Attend to inbound customer calls
- Verify/ Update customer information on the Client provided tool
- Probe for customer's issue
- Troubleshoot various issues related to GPRS/Internet, caller tunes, bill information
- Provide effective resolution
- Update notes on customer's account as appropriate
- Escalate the calls to Escalations Desk when requested by customer
- Offer any other additional assistance, as required

Business Problem:

Quality Score is one of the critical performance metrics defined by the Client. Call Quality (CQ) is measured as: CQ1: 90% of the calls to be >= 80%; CQ2: 70% of the calls to be >= 90%.

There is also a bonus / penalty clause attached to this metric. While exceeding Quality Score target will result in avoiding penalty or attracting bonus it also helps other metrics such as Repeat Rate, Average Handle Time, End Customer Satisfaction (measured a KASH – KyaAapSantushtHai?'), better customer experience and stakeholder delight.

CQ1 and CQ2 scores during the baseline period were hovering at 60.11% and 29.79% against the targets of 90% and 70% respectively. Overall Quality Score was at 71.9% with a target of 85%.

Business Solution:

Taking the DMAIC approach, the team critically reviewed all possible causes leading to lower quality score. As the process just completed Transition phase, root causes were identified and bifurcated into System Level, Floor Level and Transaction Level. Tools and techniques such as Fish Bone Analysis, Hypothesis Testing (including Correlation, Regression, ANOVA), Multi-Voting, Prioritization and Control-Impact Analysis are used. Vital few Xs were identified as below:

Lack of awareness on Fatal Errors; Lack of standard call notes for various call types; Ineffective communication of process updates; Lack of formal Bottom Quartile management process; Lack of structured performance reviews

A well coordinated and proactive approach was taken to improve the process and implement the solutions. Key improvement actions were:

- Developed an automated tool called 'Fatal Error (FE) Killer'
- Prioritized authentication questions based on factors such as availability, ability to recall and the time it takes to capture these details.
- Introduced call type wise standard call notes
- Updates are disseminated through online portal.
- Process Updates task force formed (2 teams) to cover all teams during huddles
- Bottom Quartile (BQ) Management implemented based on low Quality score
- Weekly Quality performance reviews with Team Leads/ Team Managers

Results:

As a result of the project, CQ1 and CQ2 scores have improved to 99.5% and 88% against the targets of 90% and 70% respectively. Overall Quality score increased to 94.76% against the target of 85%.

Considering the YTD performance, MSat BPO stood No. 1 across 14 other delivery centers. The project resulted in Client Delight and improved End Customer experience. The best practices were appreciated by the Client and implemented across other service providers resulting in shortening of their learning curve by almost 50%.

Tangible benefits include annualized savings close to of USD 100,000 (by avoiding penalty or attracting bonus). This success story helped us win similar businesses worth USD 1.3 Mn.

Sap Labs India Pvt. Ltd.

Increase In Customer Satisfaction

Customer satisfaction is very important factor in software maintenance. The importance of customer satisfaction is apparent when you realize that, without customers, you don't have a business. Satisfied customers will make a great foundation for return business, and they may also bring in reference customers.

Project Background

Maintenance and stability of our product is of highest priority. The project goal is not just to satisfy customers, but to delight customers by efficient support.

Our product has a customer base crossing 1000 and ensures the following benefits for customers:

- Reduced storage requirements for non-production systems
- Reduced infrastructure spending
- Reduced cost while increasing quality in development and training activities
- Fast returns on investment

Problem Statement

Key areas where issues/potential issues were observed:

- *Customer Satisfaction:* Customer satisfaction rating for support SLA's is 7.6 and for quality of solution provided is 6.0.
- *Escalations:* Around 25 escalations in the past 5 months including critical escalations from reference customers.
- *Time Zone Coverage:* Challenge to support customers for all time zones globally when the development support is based in India.
- *Solution Quality:* Quality of solution provided can be improved in terms of bug fixes, completeness of solution.

Goal Statement

- *Increase in customer satisfaction:*Increase customer satisfaction rating to 8
- *Improvement in overall maintenance services:* Improve customer SLAs
- *Overall support coverage:*Extend support coverage to 24X7
- *Improved Solution Quality:* Streamlined process for message solving

Key Performance Indicators

No	Project KPI	KPI		Metric	Baseline	Target	Result
		Formula / Operation Definition	Unit				
1	Customer satisfaction rating for quality of solution provided	Messages with Rating <=5	%	% compliance	82%	97%	93 %
	Customer satisfaction rating for support SLAs			% compliance	84%	97%	96 %
2	Maintenance services – avg. processing time at SAP	Time taken by SAP to solve a message	Person Days (PD)	Avg. processing time	1.96 PD	1.3 PD	1.25 PD
3	Reduced rework effort – reopened messages	Number of messages reopened >=2	%	% compliance	80%	97%	96 %

Root Cause Analysis

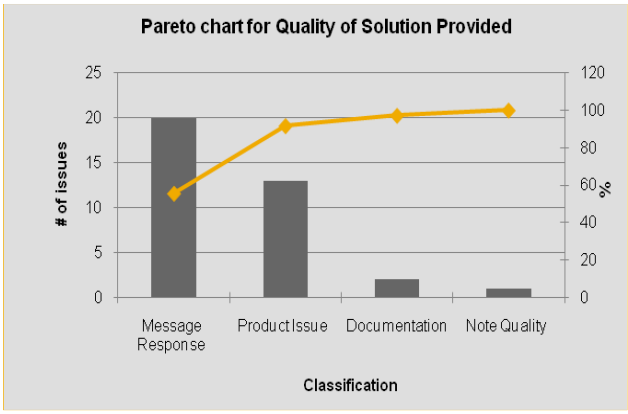
KPI 1: Customer Satisfaction

Data Analysis: Customer has given a rating of 10 or 0/1, which shows that the customer is highly satisfied or not satisfied at all.

Key areas of improvement:

- Message response (time and quality)

- Product issue
- Documentation
- Quality of bug fix



KPI 2: Maintenance Services

Data Analysis: Support SLAs show an even distribution of rating.

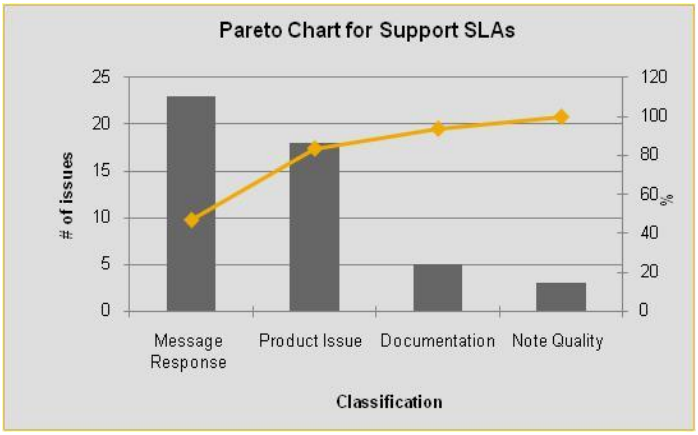
Key areas of improvement:

Message response (time and quality)

Product issue

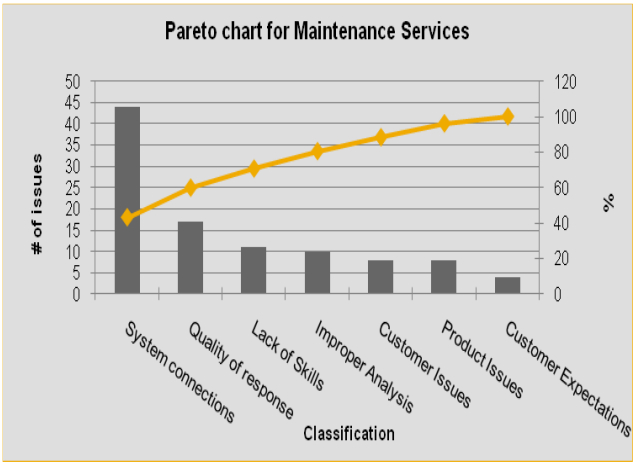
Documentation

Quality of bug fix



Data Analysis:

- 75% of the messages were solved within 2.6 days
- Maximum messages incoming on weekdays
- Incoming messages on Fridays, Saturdays and Sundays had a high avg. processing time at SAP.
- The processing time was approx. 26% higher than the time taken for messages received Monday-Thursday
- Time Zone coverage shows that we need to cover all time zones globally



KPI 3: Reduced Rework Effort

Data Analysis:

- 55.7 % messages were not reopened.
- For messages not reopened, the average time was 2.10 PD.
- Overall average time for reopened messages was approx. twice that of messages not reopened.
- Messages which were reopened a greater number of times had a higher average processing time.

Key areas of improvement:

- Follow up on problems
- Inadequate solution

- Quality of bug fixes
- Clarification required by customers

Key improvements done:

Improvement points	Internal Actions Taken
Efficient message handling process	▪ Comprehensive process model defined ▪ Check points at various stages in message solving ▪ Internal memo usage for information sharing ▪ Reply content (acknowledge/understand the problem, solution details, transfer of ownership to customer) ▪ Feedback channel to primary support
End to end bug fix process	▪ Predefined search terms to enhance search results ▪ Clear instructions to apply bug fix in relevant systems ▪ Complete testing and review done before releasing bug fixes to customers
Regular Audits	▪ Message Compliance checklist ▪ Share audit results with the team on weekly basis ▪ All improvement points categorized based on priority ▪
Best practices imbibed	▪ Best practices for efficient message solving ▪ Best practices for effective communication with customers
Standardized Reply templates	▪ Reply content (acknowledge/understand the problem, solution details, transfer of ownership to customer) ▪ Reply templates for specific scenarios such as initial required information, providing bug fixes and creating new messages.
"One problem one message" rule	▪ Asking customer to create a new message for a new problem. ▪ If customers do not create a new message, create a new message on behalf of the customer.
Questionnaire for customer	▪ Initial questions to customer as a reminder for opening system connection and other details

	required for message analysis ▪ In case customer has not provided system details, use questionnaire which acts as a checklist of initial questions
Structured mentoring process	▪ Defined mentor-mentee relationship ▪ Consulting the mentor before replying to customers ▪ Ramp up of colleagues in terms of knowledge
Time zone coverage	▪ Started Primary support in India, Brazil and China to extend time zone coverage ▪ Extended Development support coverage from 8 am – 5 pm to 8 am – 2 pm
Proactive weekend support	▪ Started with proactive support on weekend for very high and high priority messages instead of on call support initially ▪

Results:

The improvements have helped in great results with significant improvements.

Benefits:

- ❑ Improvement in customer satisfaction rating by 15 %
- ❑ Improvement in average time at SAP by 49 %
- ❑ Improvement in solution quality by 17 %
- ❑ Increase support coverage
- ❑ Standardized process implementation across locations

Learning:

- ➢ Structured and well defined process framework ensures better results
- ➢ Smallest of measures can lead to significant improvements
- ➢ Periodic and reiterative self-assessment is the key to improvement

Firstsource Solutions Limited – Telecom And Media

Improve Billed Hours Per Agent For A Telecom & Media Client

The client, a leading UK broadband firm, is UK's third largest internet service provider. It is a significant player in broadband services, offering a wide range of internet services. In 2006, the client sold its broadband arm to a leading company in UK. It has become a well-established recognized brand and has used it to influence and as a deterrent against its competitors. It recognizes that in order for them to remain competitive and successfulthe have to create a product/service that will be far superior to that of its competitors and that is why it is looking forward to expand further in the telecommunications market by not just offering mobile phones services but also to become one of the main providers of internet services.

Billed hours is directly proportional to the performance of staff and the revenue generated thereof, thus impacting the Gross Margins of the program. To make sure that the revenue generated is optimum/maximum, and the Gross Margins are improving consistently, it is imperative to increase the Billable hours per agent per day for the program and Firstsource. We have calculated the difference in the actual billability against the forecasted call minutes. It purely compares the actual against forecast and doesn't take any other factors into consideration. When we look at comparing the actual billed hours against the forecast hours for the queue, we see a difference of **56579 Euros**. If we were to get 100% of the set forecast, we could have capitalized on the mentioned number. For the period of Jan '09 to Apr '09, the Billed hours per associate was 3.94. It is imperative for us to improve the overall billed hours per agent as this is directly affecting the process monetary wise. This figure is clearly indicating that Billed hour per agent has dipped and needs to improve to increase the project profitability. We realized that we had never touched a target of 5 Billed Hours Per Associate based on the centre's historical performance.

We used statistical methods (1 proportion test) to check if 5 Billed Hours Per Associate was an appropriate target to achieve. It was seen that improving Billed Hours Per Associate to 5 was statistically significant and could not be achieved by chance alone as the p-value that was returned was 0.000

Having stated the above, a stakeholder and risk matrix was drawn up by the project lead with the help of Black Belt supporting this project. This exercise served as a medium to clearly understand key expectations of stakeholders, the kind of impact that they would have on the overall success of the project and also the appropriate stakeholder management strategy that needed to be employed along with the project governance plan. Once this exercise was completed, the outputs were used in ensuring that the core project team that was adequately formed represented all key stake holder groups. The team assembled for this project included Operations, Quality Analyst, Training and Process Excellence (Black belt). The whole programs' prime initiative was sponsored by Sr. Vice president Operations and supported by the unit Head.

To tackle the X's identified; a solution matrix was used to score all the potential solutions. The impact of some vital Xs that were measurable was validated using chi square tests. Post this, solutions for each X's were rolled out. Key business results post improvement implementation included –

1. **Improved Billed Hours Per agent from 3.94 to 5.04**
2. Through the project we saved $10000 in the Control Phase which was officially signed off by the Business Analyst team.

The rigor of this project got translated into a method to serve all our customers better. A specialized team was sent to a process in the Telecom & Media vertical to up skill the WFM team on the billing methodology, DAT Adherence and the connect minute model. This initiative has been rolled out in the process and the white paper was shared with them. Also, the best practice was shared with the Lead Black Belt of leading Insurance Company as they work on the connect minute model and a project was initiated

The project is replicated across all Telecom and Media processes with a connect Minute Model and with a leading Insurance Process

Firstsource Solutions Limited – Domestic Vertical

Call Handling Time Variation Reduction

Reduce ACHT Variation for Andhra Pradesh Prepaid Process.

Vodafone is one of the leading Telecom Company in India. During our review, we identified that Andhra Pradesh Prepaid Process has an area of opportunities to reduce the ACHT variation in the process. It was found that the current process delivery could be improved using the Six sigma approach. A project was thus initiated which would directly reduces our ACHT for the process with optimum utilization of manpower. The goal was to reduce the variance from 20.70 secs to less than 10 secs.

We followed the DMAIC approach and many tools to establish the major root causes for the variance which were increasing the overall ACHT for prepaid process. The following are the Key area of improvement which came up during the brain storming session with the Advisors and team leaders.

Key Improvement Areas

- Process Gaps identified in process.
- TOP areas in improvement identified.
- Updates not reaching to associates.
- Lack of proper product knowledge.
- Concerns not getting resolved within TAT.
- Soft Skills and finer aspects of calls needed to be taught and improve.

A thorough analysis on the data and with the help of the tools and validate whether our assumption towards the root causes are correct or not

After prioritizing the root causes, we had an action plan in form of Special bay process, concern tracker, feedback standardization, Night shift reports, Six Zone Process and briefing process to address the concerns across the floor.

Results:

Key Y	Pre-Project	Post-Project
AHT standard deviation	20.70 secs	11.30 secs

As a result of reduction on standard deviation, actual ACHT has reduced from 141 to 130 Secs.

Capgemini Business Services (India) Limited

Adhikatama – Delivering At Optimum Level

Project is focused on the Accounts Payables process in improving the productivity of invoice processing. Before initiating the project, the average productivity was at 25 invoices per person/day. As a result of the project, the average productivity improved by 70% i.e. 43 invoices per person/day (Feb 09 – Oct 09).

Business Problem: Low productivity per person resulted in high back logs. More headcounts employed than contracted. Low Payment Efficiency resulted in customer dissatisfaction.

Statistical Problem: The average productivity was at 25 invoices per person/day for the period Feb 09 with baseline Z score as 0. Average processing time per invoice was 16.1 minutes against baseline of 9 minutes.

Vital Xs: Invoices were unevenly allocated due to limited volume and skills, high number of queries due to variations in the inflow of invoices, Invoice waiting time before allocation, additional processing time due to non-value added activities in the CAF (SAP) and process.

Business Improvements: Formed nine (9) different teams based on the complexity of invoices, Implementation of the Pull system and Heijunka concept resulted in load leveling and elimination of Muri (Overburdening of Processors), Implementation of Batch upload in SAP Workflow to eliminate the single invoice upload and eliminated invoice waiting time before allocation, Standardization of associate process skill set to eliminate the time spent on analyzing the complexity of work request, Implemented daily productivity tracking and Takt time for resource planning, A Gold team of Subject Matter Experts created to handle exceptions, additional volumes and in-house resolution of queries.

Business Benefits: Financial benefits of about 85 Lacs with process head count reduction from 87 to 55 FTEs. Improvement in Productivity resulting in handling higher volume with optimal resources.Standardization and Streamlining of various sub-processes leading to better control of process.Enhanced Customer Satisfaction. Elimination of Person dependency and load is uniformly distributed resulted No stretch hours & Backlogs. Deployment benefits resulted with 50% improvement in productivity for additional process

Customer Benefits: Payment Efficiency improved by faster TAT. Enhanced customer satisfaction.

TCS E-Serve Limited

Tat Reduction In Treasury Vision External Entitlements

Project Goal:

Reduce Overall TAT time by 33% from current level of 91 hours to 61 hours by 10 July, 2010.

Background:

The Treasury Process does New Client and Maintanance related Entitlement activities. The list of activities include uploading an account and ends with subscription in Treasury Process.

Updated Account balances in the Treasury Process portal is critical to the top management of clients for multi million dollar account management, cash flow forecasting, analytic reporting and strategic decision making. Reduction of the overall TAT time will hence provide tremendous benefit to the client.

Need :

Clients perspective

- TAT reduction - Customer can view multi million dollar balances within a quicker TAT(33% Improvement), this results in quicker and more efficient cash flow forecasting, analytic reporting and strategic decision making
- Reduction in Hold Items by 20% has provided tremendous benefit to the Client Implementation Team

- TCS has now taken on the work order creation activity from the Client Implementation Team providing them a time save of 50 man hours per annum
- Incremental Services – TCS has taken on incremental activities like Account Upload and 3rd party bank follow up which provide value add to the client

TCS perspective

- Work Effeciency – Reduction in Turn around time (TAT) time by 33% from 91 hours to 61 hours per work order on average
- Error Reduction – Reduction in Internal Errors by 50% and a 'Nil' external error record as benefits from project
- Monetary Benefit – The reduction in TAT has resulted in a 3 FTE save or $82,500 per annum

Key Analysis Findings :

- **VSM** – Time study to find VA/NVA and delay in TAT.CB II search/reporting accounts, 4 C form completion, overnight feed and e-cif subscription, account upload activities have direct impact on TAT.
- **CART Analysis**– Ineffective client followup, Incomplete details in Ecommit, Shift timing, delay in response from implementation and vintage have significant impact on TAT.

Key Innovative High Impact Solutions:

- **Shared drive with Implementation/Timing the CB II run/ Initiating Follow Up's** – For CB II checking, accounts are now taken from Client Master sheets in an authenticated drive shared by Citi Implementation and TCS e-Serve
- **Positioning the 4C form completion** – The cut off of the EEU Team for receiving 4C form requests is 9 pm IST, daily. Two Team members come in at 6 pm IST so that 95% of 4C Forms can be sent to the EEU Team to catch the same day cut off.
- **Blanket entitlement completion** –
  Citidirect e-Cif and TV Entitlement on the same day. Earlier this took 2 days due to the timing of back end feed.
- **Account Upload by TCS** – This activity involves uploading client accounts into the TreasuryVision and done by the Technology team at Citi. TCS eServe has now taken on this activity.
- **Training Plan revamped**
- **Work Order Creation** – Instead of TCS eServe informing Implementation on reporting accounts, TCS eServe Team creates work orders for reporting accounts on behalf of Implementation. Implementation reviews and approves the work order for processing.

Improvement & Benefits:

- 39% reduction in Turnaround time, the existing FTE can complete 936 work orders per annum. A 38% gain translating to a 3 FTE save or $90, 500 per annum
- Reduction in Hold items by 20%
- Reduction in internal errors (evidenced in July 09 during 'Improve' phase) by more than 50% and a 'Nil' external error record in 2010 till date
- Additional Services (E.g. Upload)
- Customer Delight
  Improved Employee Satisfaction

Naqel Express

Reduction In Ageing Of Outstanding

BUSINESS CASE:

NAQEL is kingdoms largest 'door to door' delivery service provider with over 700 vehicles and a network of 4900 cities, towns and villages. One of the key performance factor for NAQEL is the ageing of the outstanding amount which is measured based on last revenue amount and the outstanding amount NAQEL had 14 million riyals as outstanding amount (receivable from the customers). This was refraining NAQEL from further investment opportunities, expanding/ procurement opportunities and they were losing out on banks interest.

PROBLEM STATEMENT:

In NAQEL, Sales & marketing division, since January 2010 the ageing of the outstanding was more than 3.8 months, which was affecting the NAQEL's investment, procurement opportunities and NAQEL was loosing out on banks interest.

GOAL STATEMENT:

To reduce the ageing of outstanding from 3.8 to less than 3 by Feb 2010

IN-SCOPE:

Ageing of Outstanding Amount for customers more than ageing of 2

DATA COLLECTION & SIGMA LEVEL:

Data was collected for ageing of outstanding for the customers having the ageing more than 2. Data stratification was done based on location, customer/ shipper, consignee, service provider, Sales executive, POD dispatcher wise. The baseline sigma was 1.38 sigma.

IDENTIFICATION OF POTENTIAL CAUSES:

After conducting the brainstorming sessions followed by cause & effect diagram and control impact matrix, following reasons were identified as potential causes for high ageing of outstanding

- Delay in submission of PODs
- No Follow up or poor follow up
- Invoice Errors
- Delay by the customers
- Delay in receiving receivables report

VALIDATION OF ROOT CAUSES:

After doing pareto analysis on identified potential causes, it was identified that Delay in submission of PODs, Lack of follow up from sales executives and invoice errors were contributing to 80% of the high ageing Each of the these causes were considered as small Y within Big Y

Big Y = f(y1, y2, y3)

High ageing = f(delay in submission of PODs y1, lack of follow up from SE y2, Invoice errors y3)

Validation of y1 (delay in submission of pods):

Data was collected for time taken to submit the PODs and it was found that 50% of the PODs are submitted in more than 5 days. Brainstorming was conducted for delay in POD submission followed by cause & effect diagram, control Impact matrix.

Identified potential causes were subjected to mood's median test and pareto analysis to identify the root cause for delay in POD submission. Following root causes were identified for delay in submission of PODs

a. Location (Riyadh and Dammam had significant high POD submission time as compare to other locations
b. For some shipper the POD submission time was high as their customers were delaying the POD submission (customers were delaying in signing the PODs)
c. POD dispatchers at origin and detonation were delaying the POD submission for Riyadh and Dammam

Validation of y2 (Lack of Follow up from Sales Executives):
Using pareto it was clear that Riyadh and Dammam had high POD submission time, hence further drilled down was done on the sales executives of these reasons to identify the top sales executives who are contributing to 80% of the delay in POD submission. For each sales executive who was contributing to 80% of the delay, further pareto was done for their customers to identify the top customers who are contributing to 80% of the outstanding.

Validation of y3 (Invoice Errors):
To furher find out the causes for invoice error, FMEA study was conducted with customer service team.
Entering the wrong account number on the way bill and wrong manifestation were the causes with highest RPN.

SOLUTION GENERATION & IMPLEMENTATION:
Based on the root causes identified, solution was proposed which can be classified in following main categories
• New process to submit PODs
• Sharing best practice among sales executives, service providers & few customers
• Training to customer service agents

VALIDATION OF IMPROVEMENT & BENEFIT:
After implementing the suggested solution the ageing reduced from 3.8 to 2.4. This increased the cash flow by 8 million Saudi riyals 100% of the PODs are now submitted in less than 7 days.

Naqel Express

Increase In No. Of Pick Up AndDelivries Per Route

NAQEL is kingdoms largest 'door to door' delivery service provider with over 700 vehicles and a network of 4900 cities, towns and villages.

One of the key performance factors for NAQEL is the utilization of pickup trucks, which means how many pick ups and deliveries each truck does on a given day per route vs. its capacity.

This performance indicator was never been measured, management did not know about the current utilization of the pickup trucks & its service providers (drivers). Management had a feeling that some trucks/ routes are underutilized and some are over utilized.

Management wanted to measure the current performance of the pickup trucks and increase it by 10%.

PROBLEM STATEMENT:

In NAQEl, Dammam Operations, after measuring the truck utilization for the period of Feb 2010, it was found that the on an average a pickup truck can do 30-32 pickups and deliveries per day, however, they were performing at 82% utilization vs. the target of 90%. This was leading to loss of revenue

GOAL STATEMENT:

To increase the utilization of pickup trucks from 80% to 90% by May 2010

IN-SCOPE:

Within Dammam operations 6 Regular Routes, 2 satellite town routes (Hofuf, Jubail), 1 Ops/ Backup route

SETTING BENCHMARK:

CTQ defined by management was Utilization of pickup trucks per route per day, which we drill down to number of pickups and deliveries done by per pickup truck per route against the total number of pickups and deliveries possible per route.

Since the possible number of pickup and delivery per route was not known, we conducted a study on the routes within the scope. Data was collected for a month for each route to find out the pickup time, delivery time, point to point travel time & other factors like availability of parking at customer location, distance between the parking and customer desk, no. of floors in the building, no. of pieces to picked up or delivered, prayer time, break time, shipment loading time and shipment unloading time and distance between yard & first point. Based on the route types and traffic conditions (down town route, uptown routes, suburban areas, industrial areas), it was not possible to standardize the travel time per route. However, the pickup time and delivery time was standardized base on data.

It was observed that on average it take 5 minutes to complete the pickup and delivery time and 75% of the pickups and deliveries were done in less than 7 minutes. Hence 8 minutes was set as standard time given for every pickup and delivery time (set by management).

Possible number of pickups and deliveries per route was calculated by dividing the Net available time in day by the time taken per delivery (8 min of pickup time + 75th percentile of travel time per route). Net available time was calculated by excluding preparation time, loading time, offloading time, first point travel time which was 110 minutes from the total time available in a day (720 min). Hence the net available time was 610 min.

For ex: For route DH01,

Total no. of Pickups and deliveries = Net available time (610 min) / Time taken do complete one pickup or delivery (18 min)

i.e. (8 min pickup & delivery time + 75th percentile of travel time for DH01)

Based on this calculation, possible number of pickups and deliveries was calculated for each route and was set as benchmark for each route.

Actual number of pickups and deliveries were calculated for each route and compared against their benchmark.

It was observed that the current utilization of pickup trucks was 82%. The goal was set to increase it to 90%.The sigma level of the process was 1.02 sigma

IDENTIFICATION OF ROOT CAUSES:

After conducting and brainstorming session using fish bone diagram for the potential causes, 15 potential causes were identified for low pickup and deliveries. It was followed by control impact matrix to identify the causes which are high in control and have a high impact. Finally 7-8 causes were short listed as high control high impact causes. Data was collected for the identified potential causes

VALIDATION OF ROOT CAUSES:

With a use of tools like ANOVA, ANOM, Correlation, scatter plot, root causes were validated. Following root cause were identified

a. Pickup & delivery time route wise
b. Pickup & delivery time customer wise
c. Pickup & delivery time service provider wise
d. Shipment offloading & loading process

SOLUTION SUGESTION & IMPLEMENTATION:

Based on the root causes identified the solution was suggested which can be classified as in following themes:
a. Sharing of best practices among few identified customer
b. Sharing of the best practices among service provider
c. Swapping the routes between service providers
d. Buddy up low performing service providers with high performing service providers
e. Launch of new process to call customers before arriving to do pickup and delivery
f. Implementation of 5 S and visual management

VALIDATION OF IMPROVEMENT & BENEFIT:

After implementing the suggested solution the utilization increased from 82% to 91%. The net profit for the organization SAR 1378400 (1.3 Million Riyals)

LEARNINGS:

The learning from the project is now being implemented in the rest of the locations like Riyadh and Jeddah.

Firstsource Solutions Limited – Banking, Financal Services And Insurance

Improve Tat To Offer Compliance For Stores

- A leading UK Bank was losing revenue due to slow speed of service in its mortgage origination process
- Firstsource Solutions, who provide outsourced services to the bank chartered a Six Sigma team and employed the DMAIC problemsolving process to diagnose and correct the factors leading to slow speed of service
- The Six Sigma team identified the root causes and implemented a multitude of process and design changes to the mortgage origination process, thus improving the speed of mortgage processing by 18% within a short period of 6 months
- This resulted in an incremental revenue of £6.9m per annum for thebank and also increased the Net Promoter Score by 5 points

  Firstsource provides outsourced services across the complete mortgage lifecycle – from initial application to completion, as well as servicing ongoing mortgages. In response to the global economic downturn that has particularly affected the mortgage sector, Firstsource has offered flexibility and scalability, giving clients the necessary agility to adapt rapidly to changing market conditions. Firstsource has in-depth knowledge of the mortgage process, which it uses to benefit its clients through significant process improvements and efficiency savings.

The client was losing revenue due to low application to disbursement conversion rate in the origination process. Firstsource applied six sigmamethodology to improve the process which resulted in incremental revenueof £6.9m through yield improvement.

The Opportunity

Firstsource works with one of the UK's leading mortgage lenders, carrying out 80% of its origination tasks and 60% of all servicing processes. The client has an ambitious target to grow market share and sustain revenues in a shrinking marketplace. The client also targets to cross sell a wide range of banking and financial services to its mortgage customer base. Improving brand value through superior customer experience is an inherent component of this strategy.

One of the key factors impacting revenue and market share was the loan conversion ratio. The key driver of loan conversion was speed of service. The bank pledged to deliver a mortgage offer to customers within 14 daysof application at least 75% of times. Delay in processing mortgage applications resulted in low loan conversion rate thereby resulting in low revenues and market share. Since the average mortgage value was GBP 150,000 it presented a significant opportunity for improvement.

Results

Just four months after this project, the goal of 80% mortgage offers within 14 days of application was achieved. This resulted in a yield improvement of 1.4% through quicker loans, thus generating a revenue of GBP6.9 million per annum for the bank. The enhanced performance in speed of processing mortgage applications also had a significant impact on the customer experience, the bank realized an increase in the Net Promoter Score by 5 points.

Whilst NPS and revenue are significant gains from a business context, a greater win is the fact that this project has significantly improved the processes that touch 100,000 potential new home owners in the UK, and has served a vehicle in helping them to realize the dream of owning a home.

Sustenance

The strong sustenance plan deployed during the control phase of the project ensured that the gains made on project Y and X's continued to be realized post closure. The project metric is monitored on a daily basis by the process owner and any irregularities are addressed as per the control plan designed by the team

Executive Commitment

The execution of the project was not very straight forward as the processing is carried out across two sites in India and one site in UK. Apart from this all the technology solutions require an approval from the program owners at the client's end.

The project team in Firstsource signed a "terms of reference" with the program owners at the client's end which helped receive executive sponsorship from the client and ensured that there were no roadblocks in implementation of solutions. The project was reviewed on a fortnightly basis between the project team, operations team, six sigma black belt and key stakeholders from the client team.

Apart from the above, the project was reviewed on a monthly basis along with other key projects in the company by the EVP, Process Excellence(Chandeep Singh), head of BFSI (SandeepBhalla), master black belt and several process owners in the Business Quality Council (BQC) forum. The BQC forum helps the project team to showcase the project to the executive management team and highlight challenges (if any) in terms of resources and timelines. It also acts as a "Best Practice Sharing" session as projects across different verticals & locations are showcased in the forum.

Continuing PI Journey

This effort from Firstsource in transforming the performance on a key business metric has been highly appreciated by the client and the client has requested Firstsource to conduct in-depth analysis and drive performance on other key business metrics like NPS, cost per application, cost per account, first time resolution. In addition to this, Firstsource is also partnering with the client and assisting them on integrating their business processes with that of a recent acquisition.

Cognizant Technology Solutions

Reduce Defects In "Drawing Release And Control System" Application Enhancements

The Application "Drawing Release and Control system" is the key interface for the customer Manufacturing processes. Any downtime in this critical application may adversely impact the production work flow and cause an immense delay in Supply Chain Management. The key scope of the project varies from region, sector, and plant and even to the machine level. Differentiated security levels are provided to the various stakeholders for executing their planned work. This product also interfaces with purchasing and ordering processes of other third party applications. Any defect in this application would result in a huge loss of business and cost.

VOC from the customer was to reduce the count of defects

Y1 : Reduce Post implementation defects by 30% within the next 2 months.

A core team supporting around 20 different applications was part of this brainstorming initiative. This team was also responsible for identifying root causes and eliminate the occurrence of the defect.

This 6σ project focused on defect reduction. Vital X's were identified at the release level to reduce the defect count. This resulted in the reduction of post production defects. Data collection identifying the right category of defect was performed to assess the process stability using control charts. 2 Proportion Hypothesis test was performed to statistically validate the improvements for the respective problem areas.

This project resulted in a direct saving of Rs, 9,26,808 P.A. Indirect savings to the customer applications like Order processing and Purchasing system could result in a huge saving even to the tune of 1 Crore P.A.

Sutherland Global Services

Increase Rental Conversion

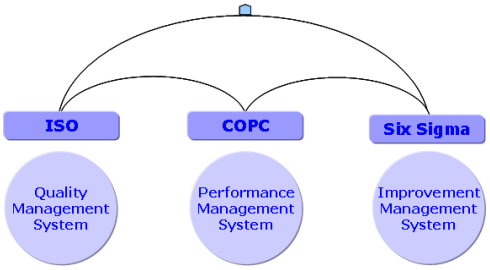
1. **About Sutherland**

   Sutherland Global Services is a leading Business Process Outsourcing (BPO) company with over twenty four years of experience in the customer management space. Since 1986, some of the world's most respected companies have depended on Sutherland to manage various aspects of their customer operations. By taking advantage of Sutherland's domain knowledge, quality processes and global delivery options, clients are able to dramatically improve their sales, marketing and customer support results while remaining focused on their core competencies. Sutherland was awarded many certifications which include ISO 9001:2000, COPC version 4.0A, ISO 27001:2005 and PCMM Level 5

2. **Six Sigma practice at Sutherland**

   Over the years, Sutherland has meticulously built the quality system, which enables in managing the dynamics of change, while balancing sustenance and scale. Six Sigma methodologies play a key role in this.

   Sutherland has been one of the early beneficiaries of implementing best in class practices, pioneering quality innovations & benchmarking based improvements.



   Sutherland has successfully adopted Six Sigma as the de facto platform for its Improvement management system and has completed several improvement projects using Six Sigma methodology which has been seamlessly weaved into Sutherland's "Blended Quality Model"

3. **About the project**

   Sutherland provides customer service to customers of leading car Rental Company offering quality vehicles and rewards rental experience at nearly 1,900 rental locations worldwide. Rental Conversion is one of the key performance indicators of Sutherland that did not meet the required target. It was trending around 17 % to 19 % against the target of 30 % and that would cause the Client to a loss of $14 million per annum and severe dissatisfaction on Sutherland performance with a possibility of business termination. The goal of the project is to improve rental conversion from 19.28% to greater than or equal to 30% by the end of August 2010

4. **Project Highlights**

   - The rental conversion has two important CTQs in its upstream process chain, one is Reservation Conversion with the process yield of 39.66% and other is Show Factor with the process yield of 48.6%.The Rolled through yield of the above two processes is 19.28 with the process sigma of 0.57.
   - The Vital causes for low reservation conversion are "Needs not identified", "Benefits not explained", "Lack of Associates' Product Knowledge"

- The Vital causes for low Show Factor are "Unable to gage the Customer's plan change" and "Flight delays are not monitored"
- The following solutions are implemented to improve reservation conversion and show factor
  - Decision Tree Solution called as "Probe + Tool"
  - Update Management Tool
  - Real time Flash Alerts
  - Tool tip text
  - Virtual call manager
  - Flight delay monitoring system

5. **Project Summary**

- Rental Conversion has improved from 19.28 % to 47.16 % against the Client set target of 30 %.Process Sigma has improved from 0.57 to 1.18
- Client realized a benefit of $21 million from Aug '09 to Jan'10 and with a projected Annualized benefit of approx $40 million
- All rental car reservation related work has been consolidated by client and the consolidated business has been awarded to Sutherland.
- This collaborative initiative has given an opportunity for Sutherland to do a Business Process Re-engineering initiative at the client place. This is a clear example of Sutherland moving up the value chain as an outsourced business service provider.

TCS E-Serve Limited

Improving Underwriting Accuracy % in Variable Annuities process

Project Goal:

To increase Accuracy % in Under writing for Applications from 85% to 95% by December 2010.

Background:

As part of pilot for Variable Annuity Product for Allianz Life, TCS team is carrying out an Underwriting process which involves application Underwriting, Keying & Review of Transfer & Exchange (T&E) & Cash With Applications (CWA) i.e. New Business applications. Accuracy level in overall Underwriting process is around 85% (Oct09) and not meeting SLA threshold of 95%. Client is expecting accuracy of 95%+ when process moves in BAU.

Need :

Clients perspective

1) Because of the error correction by the onshore team they were stretching everyday & because of which the client was losing a big amount of money in paying the overtime(double of the salary).
2) Because of this delay in error correction &all the client was unable to keep their promise of issuing the policy to the end customer within the promised time period of 2 days.

TCS perspective

1) This pilot process is one of the most complex process& highly valued for TCS which had extended its pilot for more than 30+ weeks.

As this process is in pilot the TCS is receiving the minimum amount per policy processed in VIP.

Analysis Findings:

- Identification of probable critical causes through Fishbone Diagram.
- Classification of errors according to field type as present in the received application copy.
- Drill down on Root Causes through Why-Why Analysis.

Key Analysis Findings :

- 1> SOP silent on 8 fields out of 20 .
- 2> Inadequate typing skills of 8 out of 11 associates.
- 3> Improper seating layout, spread into 3 locations.
- 4> Calibration within team was poor.
- 5> Unclear entries on the applications.
- 6> Small text box area of the O/P screen.
- 7> Negative correlation between volumes & accuracy.

Key Innovative High Impact Solutions:

1. Use of US search website – This helped drastically reduce manual errors in address and name field
2. Automation of underwriting grid. This helped reduce the errors occurring in underwriting since the team was new and underwriting is a complicated process. Automation of business rules helped underwriting decision to be more process driven rather than individual
3. Implementation of green star. – This helped to motivate the team a lot.
4. Reviewer checklist revamped. – Review checklist given by client was very tedious and practically not usable. It had @240 check points and @20 pages. Basis historical data we revamped this with key check points (@30) and in 2 pages. This also helped reduced the TAT which was a reason for errors as the agents were under pressure to meeting timeliness targets.
5. Pixel setting adjustment.
6. SOP updation process – there was delay from client in getting the SOP updated which was stream liined
7. Typing tutor.
8. Calibration within team by grouping.

Improvement & Benefits:

- Increase of Accuracy % to threshold of 95% enabled Process to be progressed from pilot to BAU as per Client requirement.
- Client was keenly following for BAU by end December 09, as they were expecting Business increase in Year 2010 & this was only feasible with increased Accuracy levels.

  TCS team was able to restore confidence with Customer & ensured future process migrations to Offshore.

HCL Technologies Ltd

Panacea

Context

- In December 08 Retail Billing & Enquiries Offline were receiving approx. 2000 Customer Issues daily from online agents into the 2 main billing offline queues.
- 85 Advisors in offline team were dealing with these issues.

Problems

- In January 09 Over 3000 customer issues were waiting for a resolution
- Advisors unable to deal with all Customer issues within 24hrs

- Delayed resolution led to repeat calls into the online agents and repeat referrals
- Inefficient resource management
- Increase in customer complaints and customer dissatisfaction

Solution

- Identified the reasons of increased volume of Customer issues.
- Regular feedback given to online, how to deal the identified issues themselves.
- Scope of Work document prepared for online teams for guidance to fill the knowledge gaps
- Additional functionality incorporated in One view releases CCP17.
- MIS produced to show offline referrals which was not available before.

Result

- Inappropriate Customer issues reduced by 88.14% .
- 99% Customer issues are now getting looked at within 24 hrs
- Optimum utilization of resources as 51 FTE reduced.
- Cost savings to BT: £568k
- Increase in Customer Satisfaction
- Managed to avoid increase in volumes despite of increasing WLR3 Customer base

Convergys India Services Pvt Ltd, Thane

Vision 2010 – Reducing Credits / Call In Tech Helpdesk Process For A Major Telecom Client

Background & Business Case:

Convergys serves one of the large Australian Telecom service providers from its Thane center. "Credits disbursed" is one of the major revenue leakage areas for the client. We planned to work on the Credits given per call by our associates and in turn help our client to avoid revenue leakage and have a better overall OI in the recessionary economy. Between Oct to Dec 2008, Convergys gave credits at the rate of 3.00$ AUD / call. This led to annualized revenue losses (to the client) to the tune of 3.8 million in AUD. Some of the common reasons for credit include –Breakages or System Issues, Premium SMSs for special numbers, Recharge issues, Technical / network issues, Service provisioning for new/modified services, Goodwill credits etc.

Define & Measure Stage:

A cross functional team was formed to Reduce Credit disbursement. Team used Six Sigma DMAIC approach to work on this project. Detailed project charter was prepared, with goal of reducing the Credit / call (CTQ) from 3.00 AUD to 2.00 AUD (33% reduction) by 30th June 2010. Clear process start & end boundaries were defined. All credits disbursed by agents was in scope and the 'Transfer Credits' (not resulting into revenue leakage for the client) were out of scope. Detailed project plan with timelines for completion of each of the DMAIC stages was prepared. High level process map (COPIS) was prepared to understand the call handling process. High level process steps were further detailed using TDC to identify steps where credits were given to the caller.

Client VOC was captured and was converted into Critical customer requirements (CCRs) and the CTQ was defined as Credit / call < 2.00 AUD. Detailed data collection plan was prepared to collect data on Xs& Y with clear Operational Definitions. Since all the data was client system generated, there was no need for MSA. Process was at –0.03 Baseline sigma levels, with a non normal distribution, with key issue of huge variation.

Analysis & Improvement Actions

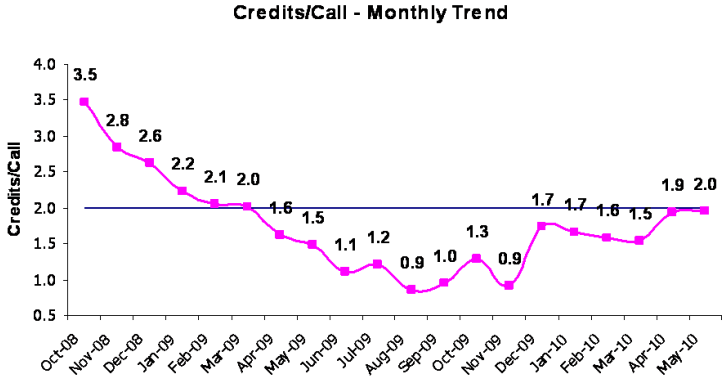
Potential causes were identified through brainstorming and were prioritized using multi-voting. Root causes were further validated by using data approach after running normality tests. Graphical and statistical analysis tools like correlation, Boxplot, Levene's Test & moods median test etc were used to validate key "X's". Key "X's"

include impact of AHT, C-Sat, Agent Tenure, TL and Product Knowledge. Team used brainstorming approach to identify potential solutions for validated "Xs". Of all the identified solutions, Control-Impact matrix was used for identifying critical action items which will lead business to desirable results. Few of them are as follows :-

1) 100% Credit audits
2) Coaching on negotiation and de-escalation
3) Outlier management and weekly review
4) Changes to Scorecard
5) Call listening to identify and address "Will Issue" cases

Results:

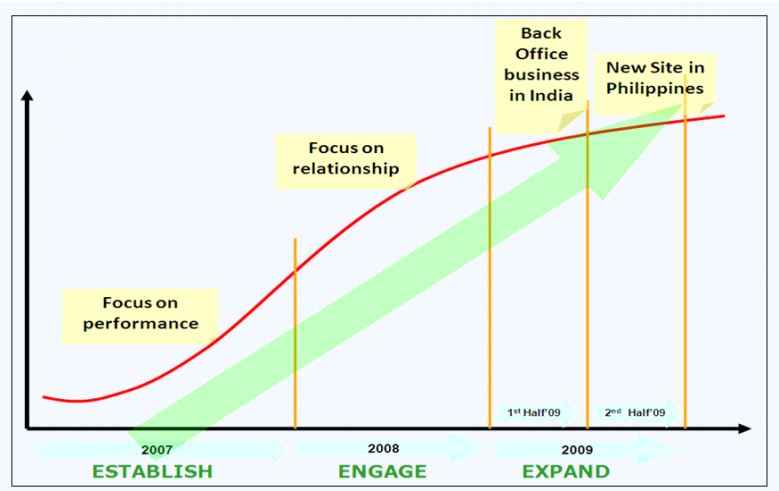
The action items resulted in consistent target delivery of less than $2.00 Credit / Call. Process became more stable month over month as indicated by Control Charts with reducing control limits. A Control Plan was prepared to ensure sustainable performance. This not only resulted in increased client confidence &retainability of business but also saving of 2.09 million AUD in 2010 / 10, to the client. Sigma levels improved from -0.03 (baseline) to whopping 2.20.



More competitive plans and promotions introduced Jan '10 onwards leading to a rise in Credits/call. Luring customer with high usage to move to a better plan and as goodwill the client waived off 50% of the current customer liability.

The Way Forward :

The relation of the Tech Process client with Convergys started in June 2005. The relation was at a nascent stage, Focus more on performance. With consistently meeting and exceeding business goals the relationship strengthened to a stage where the client started taking improvement feedback from Convergys around 2007. This was the stepping stone to building a long and strong relationship, with focus on performance continuing. Owing to the best in class performance Convergys was awarded the back office business in 2010



Dboi Global Services Pvt. Ltd.

Tmq (Transaction Management Query) Reduction

- Continuous Improvement has been a key focus area for DBOI Global Services since its inception
  - Organization's 5Cs (Client, Capacity, Cost, Control, Completeness) along with Operating Philosophy led toemerging theme :Apply lean, hence this project
  - The project helped in
    - Re-aligning resources dynamically with change in volume trends
    - Designing the processing (Clustering, Resource allocation…)
    - Identifying improvement opportunities – (TMQ reduction project taken)

Capgemini India Pvt Ltd

Reduce Partial Life-Cycle Cost Through Improved Ad-Am Integration.

Background:

Today's large IT outsourcing eco-system involves interaction among multiple teams across multiple vendors. Though united by common long term client's business goal the natural urge to chase short term objectives eludes the much needed synergistic collaboration between AD-AM teams. Across organization and industries, integrated Six Sigma and Lean techniques have always been extremely useful in analysis and improving effectiveness and consistency of processes.

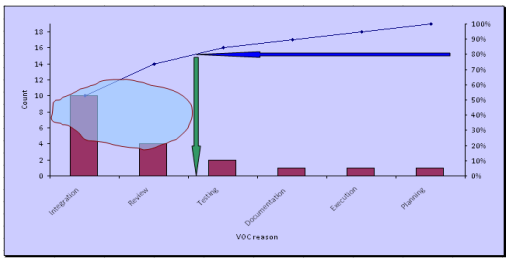
Introduction:

Capgemini has been delivering AM and AD services for one of the large Integrated Energy business in US. Around Q4 of 2010, some large project deliveries showed sudden spurt in issues. The pulse of various voices (Customer, Business, Employees) indicated an opportunity to improve the existing processes/performance end enhance delivery effectiveness. Imbued with the organizational culture of excellence through Six- Sigma, this was perfect setting to kick off a Six-sigma project.

Objective and Approach:

To investigate and identify the real issue, establish the causes, determine the recommended solutions/practices and pilot it to study the favorable results so that this can be subsequently used and applied across other Business Units across the organization. We have used the proven Lean and Six Sigma methodology DMAIC (**D**efine-**M**easure-**A**nalyze-**I**mprove-**C**ontrol) to pursue the project objectives

- **D**efine phase:



Pareto analysis was carried out on the causes of the different voices and it showed that low level of 'Integration' of AM-AD teams including lack of 'Review' by AM team at right time caused ~80 of the issues like schedule slippage, migration delays, re-work on defects and cancellations of CRs.

Quality function deployment (QFD) carried over three iterations to determine the critical to quality (CTQ's) for quantifying the real problem as given below-

1. Customer complaints/issues were observed as 0.23 per CR(23 issues every 100 CRs)
2. Average 20 % of the projects were cancelled.
3. Average delays(Schedule variation) observed as +2% with huge Standard Deviation of 30%
4. Re-work on post production issues observed as 38% (38 tickets per 100 CRs delivered)

Tools/Techniques: VOC, Affinity Diagram, Fish bone, Pareto, SIPOC, QFD Project Charter, Brainstorming

- Measure Phase:

Data collection was carried out and the existing process performance in terms of CTQ's were studied using – *Control charts like P-Chart, I-Chart, U-Chart, Histograms,*

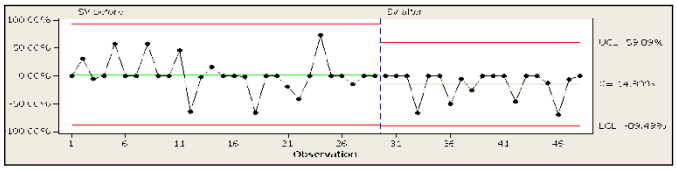
The instances for the different CTQ's monitored are referenced during the Improve phase giving the cases for before and after comparison.

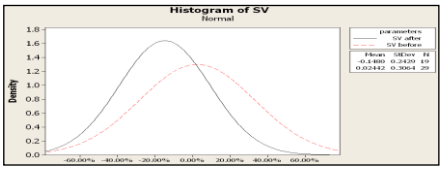
- Analyze Phase:

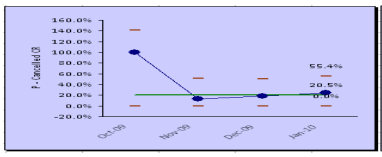
Failure Mode Effect Analysis (FMEA) was conducted to analyze the key failure points and their impacts. The failure points were observed to be aligned with CTQ's which could potentially be mitigated by improved integration and collaboration with AM team. Further we conducted a brainstorming to arrive at process that can facilitate better AD-AM integration and collaboration.

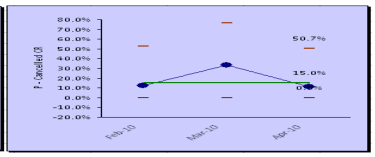
- Improve Phase:

The focus was to study the process performances in terms of CTQ's and compare results of piloting the recommended actions from the Analyze phase using hypothesis testing and phased control charts.

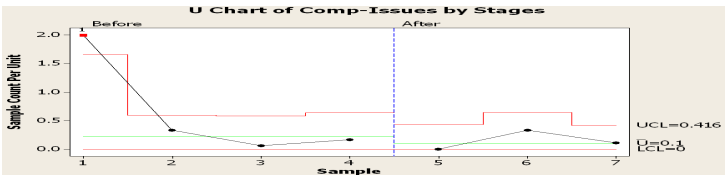








Mapping of CR in PROD and resultant CR as reworks		
PROD CR (Oct-Jan 10)	rework AM CR	
18	7	
	% AM CR as rework	38.89%
PROD CR (Feb-May 10)	rework CR	
13	4	
	% AM CR as rework	30.77%
	Diff (Improvement)	8.12%



- ControlPhase:

In this phase the recommended solution that was piloted was developed and elaborated for full scale socialization and implementation.

Benefits and Value Proposition:

Continuous improvement on projects performance in terms early delivery, reduced issues/complaint and cancellations as has been acknowledged by stakeholders and shown by statistical measurements given below indicates a successful piloted AD-AM integration that can be socialized widely and potentially implemented across the organization.

- ~ 8% reduction in rework which adds a capacity to deliver additional projects
- ~ 56% reduction in the no. of issues/Complaints per CR
- 5% reduction in no. of CR being cancelled.
- Delays (Schedule variation) improvement from +2% to – 15% with improved stability.
- This pilot has provided a cost saving opportunity of USD 110K annually for this client.

This means that additional work can be taken up and delivered with the same capacity thus contributing to the revenue growth/cost savings besides increasing customer satisfaction.

Our vision now is to launch further optimization of the AD_AM integration by eliminating wastes using LEAN.

Critical Defectives % Reduction In Credit Analysis

One of US's largest banks offering full-service commercial and retail banking services along with other financial services like insurance, investments, retail brokerage, mortgage, corporate finance, consumer finance, payment services, international banking, leasing and trust has outsourced some of its critical back end processes to TCS BFS BPO.

In one of the processes, TCS was entrusted to analyze and Spread (Populate) the client's end customers' financial documents into client specified templates. The entire process leads to loan disbursement for the end customer. Based on the Spreading inputs of TCS agents, the Credit team underwriters of the bank generate the financial ratios to arrive at a decision on the loan disbursement for the end customer.

The after effects of 2008 sub-prime crisis in the US had surmounted severe pressure on the entire gamut of financial services industry. And it was the conservative nature of the client as claimed by them that had helped them to survive the menacing financial turmoil. The process of Spreading had thus become extremely critical as it had a direct impact on the client's business of loan disbursement.

The process had got migrated to TCS towards the mid of 2008 and there were a high number of critical errors in Spreading in the initial few months. There was intense pressure from the client to improve the quality of Spreading. There was also a change in measurement metric in terms of measuring the Defectives % Score based on Requests from Spreads. As a result, the Critical Defectives % shot up significantly since a Request had an average of 4 – 5 Spreads. Hence, there was an urgent business need to reduce the rate of Critical Defective Requests to necessarily achieve client satisfaction.

The key stakeholders from TCS BFS BPO decided to deploy Six Sigma project adopting DMAIC Methodology to reduce the Critical Defective Requests. This project was perfectly aligned to the strategic imperative of the business.

Operational Definition

> Request and entries - Each Request from the end customer consisted of multiple financial documents. These financial documents had to be spread into multiple templates as specified by the client. Each template had multiple line items and each of these line items had multiple entries. These line items were categorized as Critical and Non-Critical. An error in even one of the critical line items turns entire Request Defective.

Critical Defectives % = Number of Requests consisting critical errors / Total Number of Requests Reviewed by the Client.

In the Define Phase, Baseline data was established between January 2010 to May 2010, and the Critical Defectives Requests stood at 23%. The goal of the project as per client expectations was to reduce the Critical Defectives Requests rate to 10%.

Gap Analysis was done to gage the differences between Internal and Client Quality Reviewers. Shift, Education, Vintage, Spread Type, Volume were shortlisted for Critical Factor Analysis and their impact was observed on the Spreading done by the agents. Further, root cause analysis helped identify logic to analyze the documents and transform the judgmental call to core rationale. Error analysis was done to identify them as Conceptual and Negligent. Brainstorming was done to overcome them with innovative techniques. The team worked on the work flow analysis to match the skill set of the agents and the type of documents they spread. To understand the finer aspects of the American Accounting standards, special training sessions were conducted with client support. After implementation, an effective control plan was put in place to ensure sustenance of improvements.

As a result, Critical Defectives was systematically reduced in a step wise manner to the client expectation of 10%.

This enhanced Client Satisfaction and the resulting promise led to increase in business. The client (Vice President – Operations, Service and Infrastructure) had given his appreciation when we had presented to them during the Improve Phase and wrote, "Thank you for the detailed analysis and the presentation today. You folks did an outstanding job on this. We are already seeing good results, and I am sure we will continue to see improvements. Please let us know how we can help."

The financial benefit was increase in the number of additional FTEs amounting to $ 800,000 to Spread additional volumes.

Firstsource Advantage Llc

Check-Return Rate Reduction Project

Firstsource is one of India's top five pure-play BPO companies, providing customized process management to global leaders in the Banking & Financial Services, Telecom & Media and Healthcare sectors. Among Firstsource's clients are Fortune 500 banks, telecommunications companies and healthcare companies. Firstsource's global delivery model includes operations delivery capability in India, US, UK and the Philippines.

The debt recoveries vertical (FSA) is centered in Amherst, NY (US) and utilizes a "rightshoring" model with delivery centers also in Colorado (US) and Mumbai.

The economic environment has negatively impacted the recoveries industry, resulting in low liquidation rates (dollars collected / debt) and high check-return rates – CR% (dollars returned [i.e. bounced checks] / dollars collected). In fact, FSA's top client experienced 10,000+ returned checks from 7/08-12/08, resulting in a company-high CR% of 12.7%. This translated to a little more than 1 in every 10 checks bouncing and being returned back to FSA due to the funds not being available in the debtor's account.

The voice of the customer highlighted this issue during internal and external reviews as FSA carried one of the highest CR rates for the client. Though cultural perception held that the CR% could not be reduced, a cross-functional team was created and given the task of reducing the client's CR% by 20%.

Since the client had two primary business segments that it outsourced to FSA, the team decided to measure and analyze the two segments separately. The LG segment has a baseline check-return rate of 12.5% and the P7 segment had a baseline check-return rate of 13.2%.

DMAIC was the clear choice for project methodology, since the team was undertaking the task of improving an *existing* process. However, using the target CB% average and standard deviation for process capability analysis, the LG segment was performing at a Z-Bench of -0.08 and the P7 segment at a Z-Bench of 0.70. It was clear that the team had a long way to go.

The team identified the root-causes of returned checks via process mapping, brainstorming, pareto analysis and the use of statistical tools (Chi-squared test and ANOVA). The team then piloted solutions created from best-practice sharing and solution-design with FSA's bank, effectively meeting the project target.

As signs of improvement were evident for both business segments, ANOVA testing was used to statistically validate the results. At the end of six months of consistent results, the LG segment was performing at a Z-

Bench of 5.76 (an average CB% of 8.5% – an improvement of 32.0%) and the P7 segment was performing at a Z-Bench of 3.82 (an average CB% of 9.7% – an improvement of 26.5%).

To ensure sustenance, the team utilized poka-yoke methodologies – such as automation and dashboards – and control charts on the project metric (y) and critical factors (x's). Theseimprovements lead to 11 straight months of hitting the targets (May '10), netting a totalfinancial benefit of over $400,000 (USD) and replication across all FSA sites and clients.

TCS E-serve Ltd

Reduction Of Errors In Critical Case Rewiew (Ccr)

Business Overview

Research Services is a 95 FTE Team with dual site operation across Mumbai & Chennai Having migrated in Jan 2007, the process involves working cases towards resolving customer queries and disputes, which would originate either thru Direct Correspondence, Contact Centers or Credit Bureaus.

While the quality measurement on the process is based on Defect Opportunities, calculated against a standard scorecard, the client wanted to also look at the quality performance based on %age defectives, in an attempt to raise the bar towards improving the overall customer experience.

Analysis Findings:

The project team arrived at the key impact areas, as below, using tools like Fishbone Diagram, ANOVA, Pareto Charts, Why Why analysis, etc.

- Domains and inquiry types contributing major error rate.
- Lack of effective templates while answering standard queries.
- Language competency of agents.
- Procedures Manual – Not updated/ followed
- Lack of On-floor support
- Non-response to multiple queries within email
- Human errors caused while completing Lengthy manual reversals

Key Innovative High Impact Solutions:

Equipped with the above analysis the project team in coordination with client implemented the following action items:

- Developed an effective inventory of templates, by creating 25 new templates and modifying another 21 templates, this helped minimize the requirement of free flowing text, while responding to customers.
- Mapping of agent profile to queue types based on complexity and requirement of language skills. 10 core data profile agents were switched with voice profile agents, post client approval. This improved the quality of responses that went out to the end customers.
- Designed and automation tool, which would scrap and post data on the production mainframe, thereby reducing the manual component within lengthy reversals.

Improvement & Benefits:

- Further strengthened client's confidence in TCS and the Research team, by achieving the raised quality expectations of < 5% on Percentage defective.
- Improved customer experience, which reflected better mortgage CSAT scores thru Q4, 2010
- Reduction in repeat customer request/ queries, thereby bringing down the overall inflow resulting in lower FTE cost.
- Building process and domain expertise within the team

TCS E-serve Ltd

Productivity Improvement In Check Operations

The check operation team is one amongst the many data entry processes in the banking operation arena. This process at TCS BFSI BPO went live in December 2008. The process involves enhancing the check images and providing details regarding check date, payee name and expense code of the customers. In simple words, an agent is expected to key in the check information within 14.5 seconds. While this may sound easy, reading handwritten checks takes significant time thereby impacting productivity. This team was under tremendous pressure to meet the client SLA, i.e., achieving productivity standards, maintaining quality and reducing the unreadable rate.

The key stakeholders from TCS decided to deploy six sigma project to increase the productivity. This project was perfectly aligned to the strategic imperative of the business.

The goal of the project was to increase the productivity rate by 15% (from 213 cases to 248 cases per hour) while ensuring that quality specifications (accuracy 97.5% & Unreadable 3.5%) are adhered to.

The project started in April 2010 and closed on Nov 2010. Thereafter, the primary metric was monitored to ensure sustenance of improvement achieved.

Root cause analysis performed during DMAIC journey helped identify the most significant causes for sub-optimal productivity. The team then brainstormed to determine potential solutions for each of the verified root causes. Post implementation, an effective control plan was put in place to ensure sustenance of improvements. This six sigma project resulted in a productivity improvement of 47% and 11 FTE save resulting in a cost save of $51,888.07. Cost reduction to the client was in excess of $103219.

Convergys - Orchid, Gurgaon

"Back To Basics" - Improving Csat For A Large Australian Telecom Client

Convergys Corporation is a global leader in relationship management with nearly 75,000 employees in over 70 countries, speaking over 35 languages, from 85 contact centres across the globe. In India we employ 10,000 people in 7 locations.

Our client is one of the largest telecom service providers in Australia, their range of services include fixed line, mobile and internet services and has for the first time outsourced its Customer Service & Semi-Technical support operations to an offshore location. The Six Sigma improvement project focuses on customer service & technical support for the Cable Internet Services LOB.

Customer satisfaction termed as "VOC" is the most critical performance delivery metric for Convergys from a contractual requirement and is often used as a measure for business growth and continuity. There is an

associated penalty clause in the contract; non attainment of which has a 3% penalty on the total revenue – an estimated USD 50,000 annually.
The business is over 3 years old in the Gurgaon location of Convergys. It was believed that we have reached maturity in terms of performance. The program has an average performance on VOC at 84.3% (Jan 09 to Jun 09) and has never met the client target of 86% (w.e.f. Jan 2010). Our need thus was to re-look at our business operations, go *"Back to Basics"*, *"Stabilize performance"* and *"drive Innovation"* to add value.
Our project was initiated based on strong VOC from our clients in the Q'2 2010 QBR where the concern was expressed around low performance on CSat (VOC). This was also substantiated through verbatim analysis on our VOC surveys with end customers (callers).

The projects criticality was further authenticated by statistically validating our actual performance against the goal using a One-Sample T test. The fact that the program had not met 86% in the previous 6 months also proved the complexity of the problem.

We used Six Sigma DMAIC approach with a blend of Project and Change management. A cross functional team was formed with clear guidelines and expectations on timelines and deliverables. Contrary to most Six Sigma project, the timelines in this case had to be crashed (because client needed quick results) for DMA phases and focus was laid on IC (Improve & Control).

During the Measure phase we observed that the process performance shows no significant Trends, Oscillation, Cluster or Mixtures, validating that the performance is Random and Stable. The shape however is left tailed, there is high variation with long term capability (-0.39 sigma level) demonstrating that on 76% of days the performance will miss the goal.

During brainstorming we identified 39 possible causes of low VOC. Using Multi voting we short-listed 11 as potential causes that required further validation. It is in this phase that we challenged the popular business beliefs and attempted to reinvent our business operations by going Back to Basics, questioning perceptions and proving wrong the usual hypothesis.

Our observations are as follows –

- High customer satisfaction, if you give a customer a cash refund (credit) – PROVED WRONG
- Communication is critical factor for higher CSat - PROVED WRONG
- Out of Support or Best Effort support causes low CSat – PROVED WRONG
- Low tenure has low & high tenure has high performance – PROVED WRONG

The above were "**Myth Breaking**" observations that paved way for our improvement strategy of **"Back to Basics"**.

Our improvement plan challenged the above business perceptions and reinvented our business operations. The results that were able to achieve were phenomenal. Our capability went up from a long term Process Sigma level of -0.39 to 0.54. In service industry, where targeted customer satisfaction is around 80% these Sigma level changes are fairly significant.

We recorded significant improvement in all parameters of our VOC (CSat) questionnaire. Our first call resolution showed a major increase and we were able to avoid a sizeable amount of revenue leakage from penalties.

In monetary terms, we have recorded annualized benefit of $ 52,000 and a client saving of $45,000 through this project. In times of recessionary sentiments, these leakages are quite substantial to the business bottom-line.

Tools utilized in the project have been Stakeholder Analysis, CTQ identification, Process Maps, COPIS, TDC, Quick Win Identification & Implementation, Operational Definition, Data Collection Plan, MSA, Run Charts, Normality Tests, Capability Charts & Box plots.

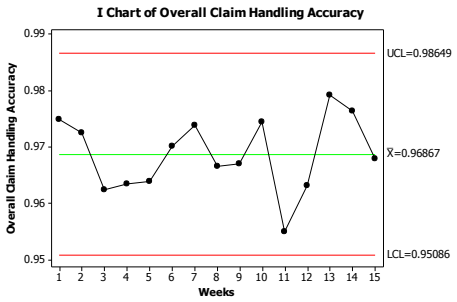
To validate causes we extensively used Homogeneity of Variance (HOV) & Non Parametric Tests (because the data was non normal) for Median along with Box-plots and Quadrant analysis, Scatter plots, Correlation, Pareto Analysis.

During Improve stage we used Solutions generation & Control Impact Matrix to prepare improvement action plan. The before and After comparisons have been done using Trend Charts, Box Plots, Capability Analysis, Two-Sample T test, and Control Charts.
And finally in Control phase rigorous use of Control plan have been used to ensure long term sustenance of the performance.

Wipro BPO

Improving Overall Claim Handling Accuracy

Business Case -
Mis-payment of claims has a maximum impact on the client bottom-line in the form of penalties, incorrect payouts and rework/re-adjudication of claims
Partnering with the client in an initiative to optimize their business will further enable Wipro to maintain a long term relationship and emerge as a service partner instead of a vendor.
The intent of doing this project is to improve the claim handling accuracy to 98% (statistically validated) post identification of root causes and hence reduce the financial impact to the client.
Project CTQ - Overall Claim Handling Accuracy
Problem Statement –
The average Overall Claim Handling Accuracy for the last 15 weeks is 96.87% which has resulted in a **financial loss of $616,705** to the client (15 weeks).
The Overall accuracy has never met the expected target of 98% in the last 8 months, which has not only led to financial losses to the client in the form of penalty but also mis-payment to their customers.
Baseline Data – 96.86% **Goal** – 98.00%



Project Benefits –
1. Reduction in financial impact to the client
2. Stay ahead of the competition
3. Reduction in factors of inaccuracy & revenue leakage
4. Client Satisfaction

Variation Sources –

1. Misinterpretation of policies and instructions
2. High Dollar Claims and aged ORS
3. Focus on Payment Accuracy only
4. Incorrect Markdown by Sam Auditors
5. Assumption based processing

Counter Measures Implemented –

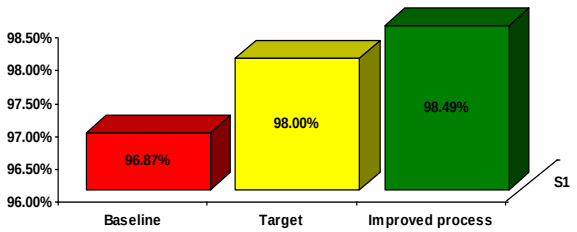
1. Special Processing Instructions (SPI) Vitality prepared and Implemented
2. Vitality module also includes Jargons and logical expressions (direct &multi level) to enable better understanding of contracts
3. Implemented Standard Work concept in Work Allocation
4. Developed Real-time monitoring(productivity, RTA and audit) tool for back-office
5. Redefined Internal sampling methodology basis strata of employees
6. Visual controls (Gemba) to control aged inventory
7. Daily Agenda in Shift end huddles to include floor level error trends irrespective of its type. Weekly assessments based on all daily agenda covered
8. Mistake proofing of errors by means of automated scripts controlling decision making and calculations
9. Variation based Team mix and Outlier Management

Sustenance Plan –

1. Daily Team Agenda and Shift End huddle for update dissemination.
2. Monthly Dipsticks to enable compliance check on Sampling plan implemented
3. Quarterly revision of outlier list and allocation to 1 QA and revisiting FMEA
4. Daily review of SAM errors by 1 dedicated resource following Reburtal SOP
5. Special Audits to continue, targeting anomalies in floor performance and spike in productivity and/or claim status
6. OJT processors on 100% Audits for 1st 2 weeks

Challenges faced/ Experiences –

1. Delay in availability of client data – post 24 hours
2. Development of OMEGA and culture shift



Improved Data –

Overall Claim Handling Accuracy – 98.49%

Claim payment Accuracy – 99.26% from baseline performance of 98.10%

Business Benefits –

1. Mis-paid amount of $616,705 reduced to $85,505 (15 week comparison). 86% reduction achieved in Mis-paid amount
2. Realized Financial Savings of $1,055,415 to the client and $201,000 to Wipro (gain share for business optimization) across the last 9 months

3. The project also won the Global Quality Challenge across all domestic, captive and outsourced locations of the client. The client senior leadership awarded Wipro a Trophy appreciating the efforts.
4. Synergy with the client to replicate best practices across their organization and credited as a "Partner" to the client and much beyond a "Vendor".
5. Currently in process of implementing OMEGA across client enterprise

Commendations –

"Your Quality is just too good. I mean How do you do that month on month. Let's have a summit to share the learning's across the UHG Global network"- VP (Client Org.)

Convergys India Services Pvt Ltd

Project Handshake

A large US-based **Multinational Technology Client** has outsourced a part of its Technical Support operations to the Convergys India Services – Bangalore Site.

The client was keen to add multiple levels and mediums of customer support, with a positive impact on the customer satisfaction scores.

Partnering with the client to improve the customer satisfaction scores was also profitable for Convergys as the program worked on a Bonus and penalty model on customer satisfaction performance

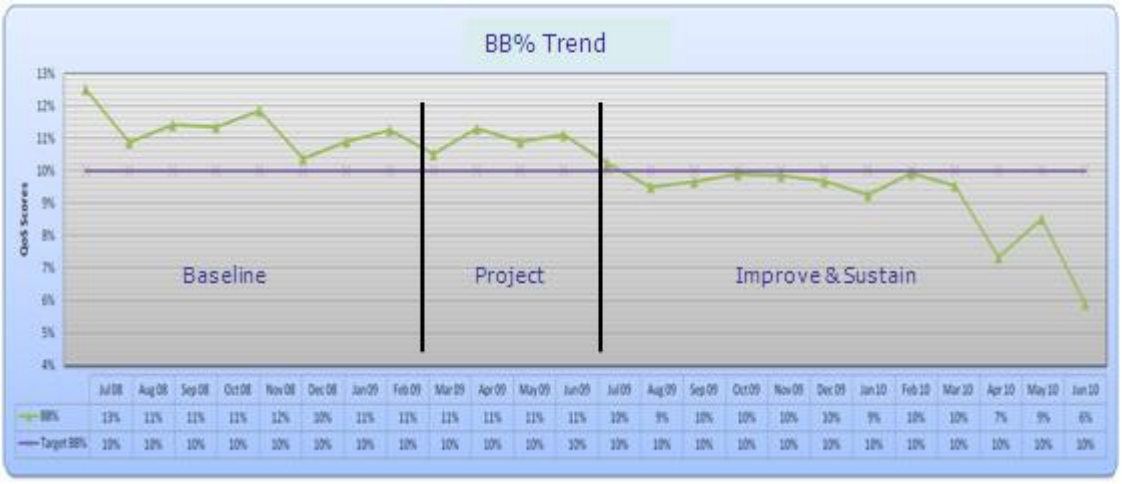
Problem Statement: The average Customer satisfaction score from July-08 till February-09 was 72% for top box (TB) and 11% for bottom box (BB) against the target of >=74% for top box and <=10% for bottom box. The client had indicated further increase in target over 2010.

Goal Statement: To improve the top box scores for top box from 72% to 75% and decrease the bottom box score from 11 % to 10% by 01-July-2010 and sustain the results thereafter

Root Causes Identified	Solutions Implemented

• Low rate of resolution on customer issues
  • Incomplete solutions delivered to customer
  • Low product/process knowledge among agents
  • Not understanding customer issue correctly
  • Long time to resolve customer issue
• Call model requires that the Customer is transferred multiple times during the call
  • Customer callback scheduled but not met
  • High handle time on calls
• Communication skills
  • Agent not able to set expectations with customer
  • Agent not educating customer on the progress toward resolution
• Web response – written skills requirement different from phone
• New hire learning curve negatively impacting
	• Case life management
	  • Call model change – Non-technical and technical call back steps removed from the call model, to avoid multiple hand-off of customer
	  • Complex call types to be handled by Tier 2 directly
	  • Case wellness report - All aged and open cases are scrubbed and daily report sent to ensure traction on older cases.
	  • Reopens Management - Root cause analysis of reopens done weekly and SOPs created on top reopens and issues
	• YB project initiated and closed to improve first call resolution
	• Performance Management - Differential Scorecard - tenure based targets identified
	• Targets based on tenure are developed. Based on these
	  • Targets agents are bucketed into A, B and C.
	• Customized templates and verbatim for different issues

the customer satisfaction performance	• Differential Scorecard – tenure based targets defined with lower targets for lower tenure and higher target for higher tenure agents • Low tenure agents handle single product calls • Skill set for web-response identified and job description re-defined
Results:	
Impact to client: • Program TB Improved from 72.16% (July 08-Feb 09) to 78.49% (Jul 09 – Sep 09). The programs met and exceeded target from Jul 09 onwards. • Cross sales initiated successfully through the existing team without additional cost.	*Impact to Convergys:* • Identified right skill set for new channel – Online Forum support. Tier 1 metrics met from the launch. • Additional volume from the new product support • Differential scorecard implemented across other programs • Additional revenue generated through bonus model (Annualized financial benefit – approx USD 350,000)



Reliance Consumer Finance Pvt. Ltd.

End to End Process Re-engineering – A Lean Six Sigma Initiative

Project Selection

The main objective of our organization is to process loan applications and disburse loans to suitable customers. To this effect the most critical and core process is **Login to Disbursement Process** which starts with Application Form Fill up by the customer and ends at loan disbursement.

During this entire process, we incur various expenses to process the loan proposal and to verify certain credentials (like customer eligibility, address/ site verification etc). These expenses are measured as credit cost per file which is one of the major components of our total cost.

The consumer finance industry operates on thin margins hence, it is important to keep the cost as low as possible so as to increase profits.

The senior leadership team led by our CEO concluded that

- It is important for us to reduce cost without impacting the customer delivery (TATs etc) – especially after the financial turmoil in 2008 and it was identified as a key priority for FY 09-10.
- Being a NBFC, we have a disadvantage of rates hence service is our USP.
- Reduction in opportunity lost would be an added advantage as it would lead to more conversions.

Most of our business is sourced through direct selling agents (DSAs). These DSAs not only sell our products but also of our competition. To judge the VOC, we did a survey with a sample of DSAs and realized that there are gaps in processes.

As per the Market Research done by our Marketing Team, the top 3 things that matter to the customers are Rate of Interest, TAT & Brand.

Hence, it was decided to drive this initiative thru a Lean Six Sigma Project to re engineer the end to end process of loan disbursement to identify and eliminate waste and enhance revenue, reduce costs, improve customer/ channel satisfaction and better the turnaround time (TAT).

Project Objective

The objective of the project was to reduce the file processing cost (credit cost) by at least 20% without affecting the turnaround time for loan disbursement (measured as TAT – Login to Disbursement)

Project Scope

All locations and all products @ Reliance Consumer Finance

Team Formation

The following team was formed under the guidance of our **CEO – KV Srinivasan**

- **Project Champions:** Group Business Head – Sachin Pillai and Chief Risk Officer – Sanjay Athalye
- **Quality Facilitator:** Head Quality & Knowledge Management – Sachin Bora
- **Project Leaders:**ZubeenMehrotra (representing Sales) and Manav Dave (representing Credit)
- **Project Team Members:** With representation from Sale, Credit, Operations, Quality & IT

Methodology Adopted for identification and resolution of problem

A combination of Six Sigma DMAIC & Lean Fundamentals

Tools used

- **D**efine Phase – Project Desirability Matrix, Project Charter & COPQ definition
- **M**easure Phase – Process Mapping, Measurement System Analysis, Muda (Waste) identification and classification
- **A**nalyze Phase – Spaghetti Chart, Motion Study, Pareto Charts, Fish Bone Diagram, 5 Why Analysis, Simulation technique and Cost comparison using Value Stream Mapping
- **I**mprove Phase – Process reengineering, Control – Impact Matrix, Brain Storming to arrive at Action Plan against the X's identified, Change Management and Waste elimination
- **C**ontrol Phase - Mistake Proofing & Business Process Management System (BPMS) for process standardization, implementation and sustenance/ control.

Key Steps taken for improvement

- Problem Definition & Team Formation with empowerment
- COPQ Definition and financial impact calculation to ensure focus of concerned stakeholders
- Visiting the Gemba (work place) and observing the activities
- As Is Process Mapping, Waste Identification, analysis and elimination
- To Be Process Map with cost – benefit analysis
- Stakeholder buy in on the proposed changes
- Pilot implementation
- Finalization of Process
- Training & Roll Out
- Changes in BPMS/ ISO documentation to sustain results
- Rewards & Recognition for Project Team Members

Results

CTQ Metric (credit file processing cost) – Reduction of **33%**vs a target of **20%** in cost

Additional Results –

- Reduction in rework on files submitted by sales (i.e. doing things right the first time). The First Time Right (**FTR**) improved from **18%** to **90%**
- Improvement in productivity
- Reduction in office space (For e.g. In Mumbai we could manage our operations within 2 premises instead of 3)

Consequential Metric – The task given to the project team was tough as they had to keep a tap on the turnaround time (i.e. TAT – Login to Disbursement). The metric on the contrary improved. The % of cases meeting the TAT went up by 13% thus leading to enhanced customer & channel satisfaction.

Channel Satisfaction – A survey was carried out post project which indicated that the channels and customers are more satisfied and they have seen a visible change.

Financial Impact – Signed off by CFO & CEO

Additional realized revenue of Rs 304 Crs (past 13 months)

Cost Savings of Rs 5.7 Crs (past 13 months)

Steps taken for sustenance of results

All the changes are part of the BPMS/ ISO 9001:2008 documents and systems. The results are being realized for past one year on a sustained basis.

HCL Technologies Limited

Reducing AHT

HCL BServ, a division of HCL Technologies Limited started its venture early in 2001 and is now a dominant player in the BPO field drawing revenue of USD 232.15 Million. With over 11,400 professionals operating out of India, UK and USA, HCL BServ runs 21 delivery centres, offers 24X7 multichannel, and multilingual support in eight European languages.

Business Case: Sahara (Pseudo Name) is a major provider of pensions administration and payroll services for some of the largest schemes in the UK. Pensions payroll services make payments totaling more than £7 billion to over 1.5 million pensioners and their dependants, in 189 countries throughout the world.

TPA Payroll Production is one of the Line of Business (LOB). Process of making payments to the members who are on the rolls or records of the clients. Our role is to reconcile the overall payments towards members for every clients/pay groups. Reconciliation have to be completed as per the SLA, if not the pensioners will not get their payments on the respective pay date, which may lead to financial implications.

Based on the current Average AHT, the impacts are:-

- Handling 75% of the pay groups on 3 days, without compensating on Quality & SLA. This leads to extending shift. Agents work for more than 12 hours on those days. Extension of shift leads to stress and more utilisation of the agents, which takes the chance in quality or rework of the same case.
- Reconciliation process deals with hundreds of reports; most of the reports are of pdf, notepads and excel spreadsheets. Working in notepads with thousands of member's data's leads to miss of any member, which again makes the case to rework by increasing the productive hours.
- This reconciliation process deals with payment of pensions, which has to reach the pensioners on time. We reconcile to penny. So, any misses on this might have a major impact of compensation.
- Any misses on numbers, will make the team to rework on the whole case, by repeating the equal amount of time spent on the same pay group.
- Completing on time (SLA) for payments is a must. If we miss, this may lead to compensation.

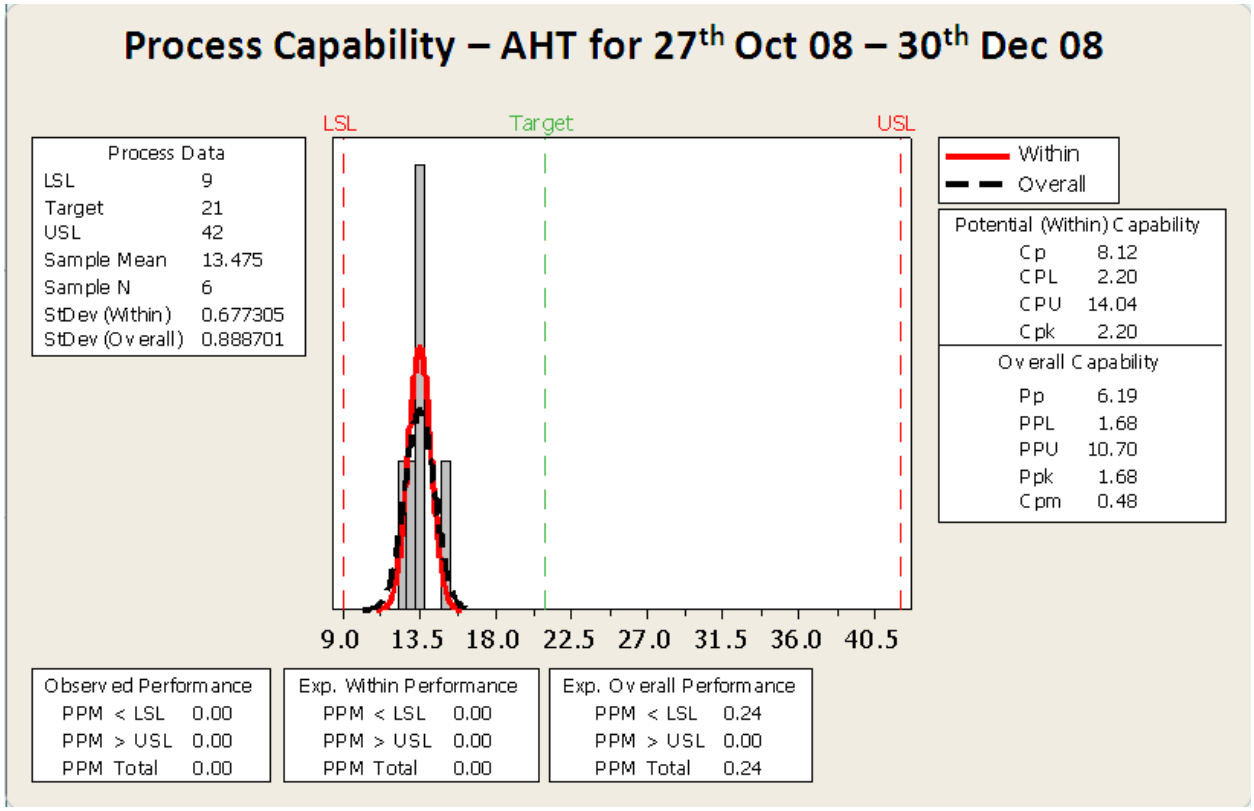
- Due to the time constraint if we are unable to complete the reconciliations, those cases are escalated to onshore as Red status, hence the problem area was identified as AHT.

Define Phase, We developed SIPOC and high level process diagram along with clear time lines of different stages of the project. CTQ's are derived from VOC which is collected from both internal and external customers. Identified team members cross functional areas.

Measure Phase: We arrived at Data Collection Plan with clear definitions of CTQs. Conducted Brain storming in groups. Came up with 55 causes out of which 11 causes that lead to increase in AHT. Developed Fish-Bone/ C&E diagram based on brainstorming points. The Process Capability at measure stage is at 0.16 and Process Sigma is at 0.48

Analyze Phase: We used IMR charts, Pareto Charts, FMEA, VA/NVA, Controllable & Non controllable charts, through which we found the deviations, steps that contributes more for increasing the AHT, the steps that leads to more RPN, Steps for which Value add can be done and factors that are controllable & non controllable. Based on the findings in the analysis stage we designed the steps of improvement.

Improvement Phase: We started implementing action plan on high priority items derived based on RPN from FMEA. The Top 6 critical X's are: 1) More number of members in Paygroup 2) Copying compare reports 3) Taking the member details from penserver 4) Negative values in P35 report 5) Calculations and data entry errors, 6) Reworking and renaming the reports. Action plan was derived.
Team had brain storming sessions to attack all the X's which has been found and came with the logical solutions based on the analysis done. Using Macros, SQL codes, Batch run programs, Lean process (value add & non value add, controllable factors) were designed to improvement the AHT. 68% of the steps were automated using macros. SQL codes were written to generate the details. DOS batch files were used to rename



and copy the contents; Calculations were brought in to the logical macros. All these showed a drastic improvement by reducing the manual interruption, Accuracy of the data, removed the rework, and reduced the effort and time taken for processing the work.

Control Phase: We designed control process to monitor factors daily / weekly/ monthly levels.

Aligned all the factors and the action plans were succeeded. The improvement in the process became STABLE in Control phase. The Process Capability at control stage is at 2.20 and Process Sigma is at 6.6.

Project Benefits:

1. AHT has been reduced from 42 to 14 Minutes (68% of AHT is reduced).
2. 68% of the steps are automated.
3. Very less Manual Interruption.
4. No Rework.
5. Very less chances for Escalations.
6. All the pay groups can be reconciled at a same time, without spending time for each and every pay group individually.
7. 100% accurate data/Quality.
8. 1 FTE cost is completely saved (Direct cost savings) and can be used in other team (Indirect cost savings) – Totally 2 FTE's.
9. Error free transactions.
10. SLA's are met much before the mentioned time lines.
11. Absenteeism can be handled on heavy pay group days.
12. 50% of the excess volumes also can be handled within the SLA.
13. Client satisfaction and appreciations through mails.
14. The same improvements can be used by client (Onshore) as they are also doing the same activities.
15. More Business / More Volumes
16. Can be tuned and used in other work streams.
17. $70,704 is the Annual Savings.

HCL Technologies Limited

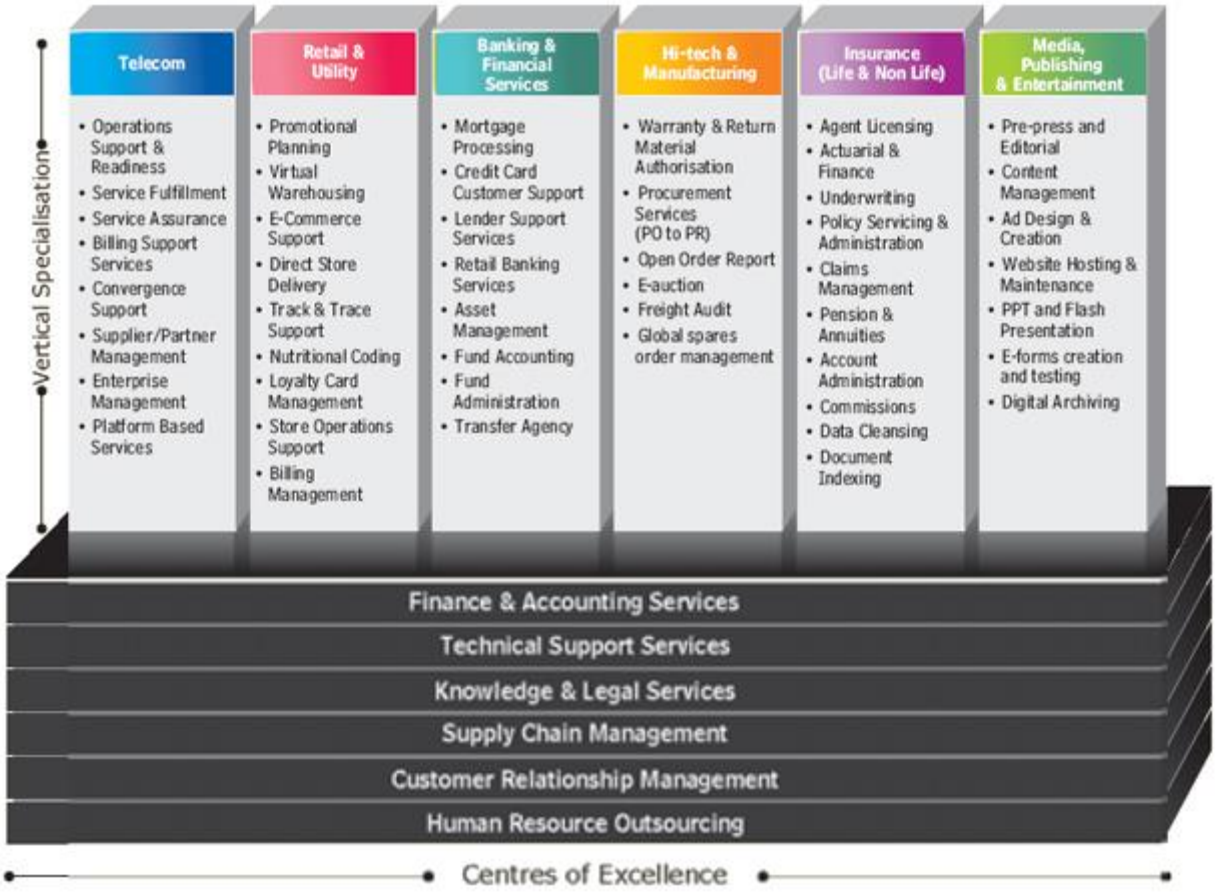
AHT Reduction in Death Activity

HCL Technologies Ltd. - BPO Services is one of the leading players in the BPO segments. The products and services offered cut across several industry verticals providing operational excellence, deep industry and functional knowledge to critical business processes. HCL BPO services customers in various industries – Telecom, Retail, Insurance, Banking & Financial Services, Hi-Tech & Manufacturing and Media, Publishing & Entertainment sectors. The company also services various areas of operations that include Supply Chain Management, Finance & Accounting Services, Knowledge & Legal Services, Customer Relationship Management and Technical Support Services. The services are tailored to suit each Client's specific requirement and integrated to provide end-to-end solution via multiple delivery centers all over the world.

Business Case:

- The client we serve is a major provider of pensions administration and payroll services for some of the largest schemes in the UK. Their pensions payroll services make payments totaling more than £7 billion to over 1.5 million pensioners and their dependants, in 189 countries throughout the world
- It is a client requirement to show improvement in productivity year on year and hence this project will help the process to cover more volume by reducing the AHT
- The AHT for the Death activity for the month of January and February are 27.25 and 27.27 respectively
- To reduce AHT by 40% (Average of 27.26 Mins to 16.36 Mins) for Death activity

HCL BPO Service Offerings



Define Phase:

- Death is an activity which falls under the complex category with high AHT (An average of 700 – 850 cases per month and the AHT varies from 27 mins to 25 mins)
- Because of its voluminous nature project was initiated by targeting AHT reduction with zero defects
- External voice of customer was captured from contract and Internal Voice of the customer was captured by having interviews to find out the constraint that lead to high AHT?

VOC –

Internal – "There are many non value add fields which can be reduced"

Client – "Need productivity improvement year on year"

Voice of the customer was translated to CTQ – AHT Reduction

- Data for AHT calculation was pulled out from work management system (AHT = Total time taken for processing / No. of cases processed)

Measure Phase:

- Brain stroming session conducted within the team to identify the pain area and reason for increased AHT
- X's were categorised into different buckets like process, knowledge, people,Environment,systems
- Analysis were done to reduce the large number of uncontrollable variation to a much smaller family of related varation
- With the help of the team we were able to identify the controllable and uncontrollable matrix
- Matrix's were differentiated based on the high and low impact
- FMEA analysis done to identify all the modes of failure of the process resulting in increased AHT which can help us to come up with a plan on process improvement
- Brainstroming session conducted to generate the list of failure modes
- Analysis done with control chart which showed process in control since there is no variation observed due to assignable cause
- Normality test showed a normal distribution since P value greater than 0.05
- Capability analysis done to evaluate the output of the process against the requirement. CPK value was -0.52 hence sigma value is -1.56

Analyse Phase:

- Pearson correlation done for absenteeism, productivity, agent knowledge and tool skills
- Absenteeism and agent tool skill does not have an impact but agent productivity have an negative impact
- Time & Motion study done for one of the high impact controllable variation

Improve Phase:

- To avoid manual entry in death record sheet an automation tool developed which will retrieve data directly from system
- If an user click the start icon in the spreadsheet the macro coding at the backend will automatically pull the data from the database
- The collected data will be fed into a checklist used to prepare the death letter which is again automated
- Finally a death letter is prepared using the same spreadsheet
- In addition the letters which was sent to the customer was also automated
- No manual entries hence zero defects
- Peer check removed
- Time and Motion study was done to check the process improvement after automation

Control Phase :

- Post FMEA done to check the process improvement, due to action plan the RPN value have come down

Success Stories:

- The sgima value has improved from -1.56 to 2.31 after implementing the automation tool
- Preparing death record sheet & death letter takes only 11.30 mins of AHT because of automation this doesn't include system amendements.

Client Feedback:

- This tool was presented before client during their quarterly visit and they were very happy to see such process improvement done by the team. Oral appreciation received from COO and service head – onshore team.

Employee Feedback:

- This tool had brought down the AHT drastically and error free processing . This was welcomed by the whole team.

HCL Technologies Limited

Reduction Cycle Time – WS Queue

Business Case: Process deals with technical assistance to International Consumer Broadband Users. Users call for technical assistance/Complaints/Compensation. We provide resolution to customers on technical query/Raise complaints appropriately.

Process line of business consists of Tier 1, Tier 2, Case management and Network Faults. As our client is looking forward to become No. 1 in customer service for which we require to resolve the customer's issues as fast as possible by abiding to process guidelines.

Incase customer's issue relates to network fault, after initial diagnostics Tier 1 team raises the fault to Engineering Team (Third Party) to fix the issue through CRM. Once the case is raised to Engineering Team, Case Management team gets the updates from engineering team and passes on the updates or retests with the customer. During this time, case is parked in WS Queue. Once the issue is completely resolved case would be moved to Awaiting queue for observation which would be closed automatically within next 15days. We track the CT of all the cases parked in WS Queue.

Average CT for WS Queue for Oct '09 was running on 7.7 Days which is very high and causing dissatisfaction in customer due to long time in resolution. Project's aim was to reduce Average CT from 7.7 Days to 6 days by Mar' 10. The cost saving comes to 2% of billing $10,200 per month and $122,400 per annum.

*In **Define Phase***, we developed SIPOC and high level process map along with clear time lines of different stages of the project. Collected VOC and mapped CTQ's to VOC's.

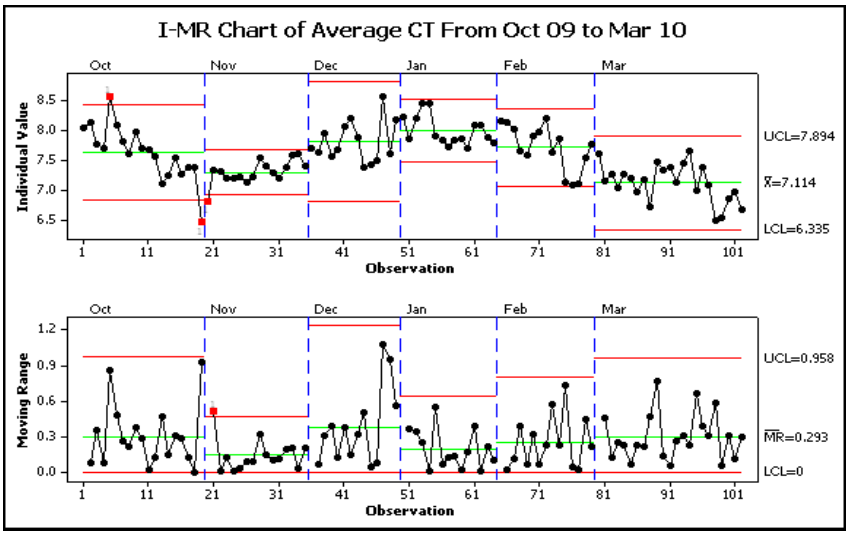
*In **Measure Phase***, we arrived at Data Collection Plan with clear definitions of CTQs. Conducted Brain storming with group of Agents/SME/TL/Ops manager and came up with 59 causes that leads to High Cycle Time in WS Queue. Developed C&E diagram based on brainstorming points. The Process Capability at measure stage is at -0.24 and Process Sigma is at -0.72

*In **Analyze Phase**,* we followed the **Approach of** Time & Motion Study and Correlation study for continuous data of Big Y (WS CT) and many X's; Observed high idle time between each event where we had great room of improvement. Identified wastages on process flow, Built a real time Queue & Break Management Tool to reduce the wastages & idle time between each event happening after moving the case to WS Queue.

*In **Improvement Phase**,* we started implementing action plan on high priority items derived based on RPN from FMEA. The critical X's are: 1) No visibility on Actionable Cases in Each Queue, 2) Ineffective Resource Management, 3) Less Cases Handled per advisor, 4) No Patterns were available for Case Inflow, 5) Incomplete Knowledge of Tools & Failure on OD Checks".
For Visibility of cases in each Queue, Queue & Break Management Tool was strictly used. Case inflow patterns were captured for effective rostering of resources. Initiated refresher training for knowledge on tools & Own Domain Checks, Started seeing significant improvement on Big Y. Made change in CRM so that any user should not be allowed to hold more than 2 cases on user ID to have right visibility of work load. Special Set of advisors was asked to work on case having more than 15 days CT.

*In **Control Phase**,* we SETUP control factors for regular monitoring at Daily / Weekly/ Monthly frequency, Mapped these factors as KRA for respective process Owners and MIS to continue to circulate dashboard on above critical factors.
Process became stable in March in Control Phase apart from month on month improvement. Process Sigma IMPROVED from -0.72 (Oct 09) to 1.47 (Mar 10).

Project Benefits: The cost saving comes to 2% of billing $10,200 per month and $122,400 per annum.



HCL Technologies Limited

Repeat Reduction – Tier1

HCL BServ, a division of HCL Technologies Limited started its venture early in 2001 and is now a dominant player in the BPO field drawing revenue of USD 232.15 Million. With over 11,400

professionals operating out of India, UK and USA, HCL BServ runs 21 delivery centres, offers 24X7 multichannel, and multilingual support in eight European languages.

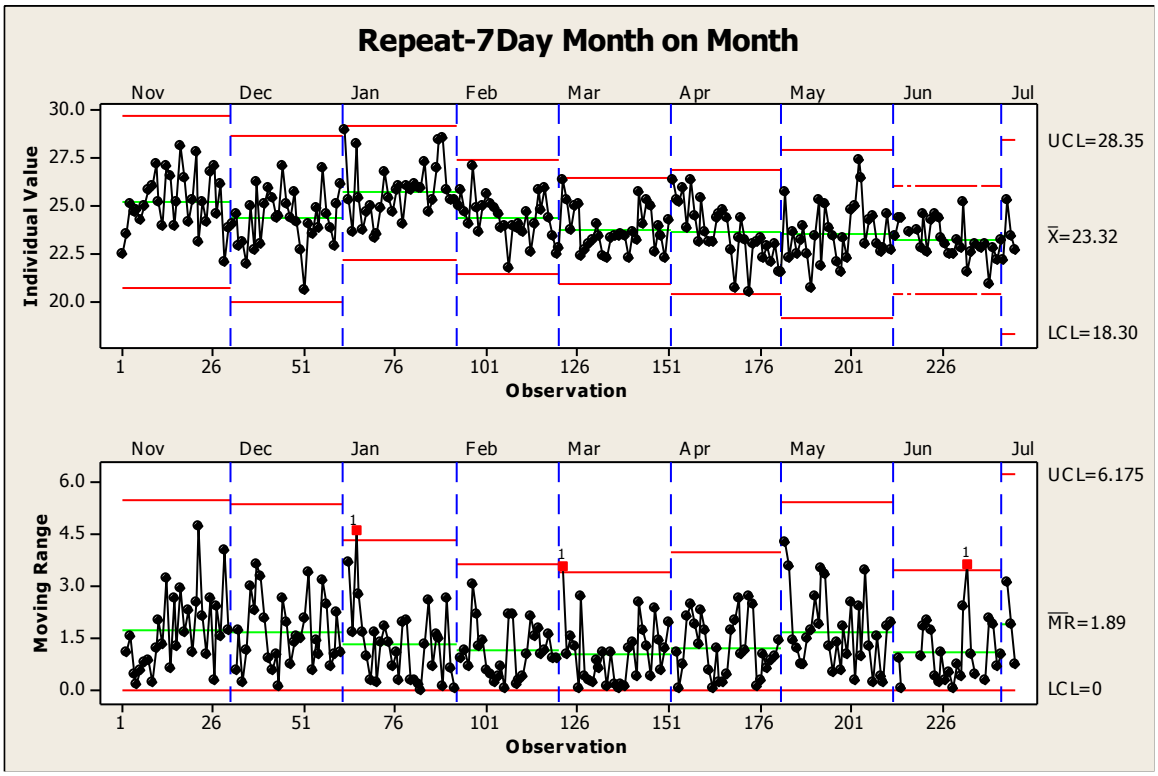
Business Case: Process deals with technical assistance to International Consumer Broadband Users. Users call for technical assistance/Complaints/Compensation. We provide resolution to customers on technical query/Raise complaints appropriately.

Kohinoor process line of business consists of Tier 1, Tier 2, and Case Management and Network faults. BT as our client is looking forward to become No. 1 in customer service for which we require to resolve the customer's issues as fast as possible. Reducing Repeats will increase Customer Satisfaction and OCR.

Average Repeats for Tier1 for OND' 09 was running at 25.24% which is very high and causing dissatisfaction to in customer due to issue not resolved on time. Project aim is to reduce Repeats to 22% by June'10. The cost saving comes to $122.4K per annum for HCL and $500K per annum for Clients.

Define Phase, We developed SIPOC and high level process diagram along with clear time lines of different stages of the project. CTQ's are derived from VOC which is collected from both internal and external customers. Identified team members cross functional areas.

Measure Phase: We arrived at Data Collection Plan with clear definitions of CTQs. Conducted Brain storming with 3 different groups in 5 batches covering Agents, SME, TL, Ops manager and support functions. Came up with 49 causes that leads to High Repeats. Developed Fish-Bone/ C&E diagram based on brainstorming points. The Process Capability at measure stage is at -0.37 and Process Sigma is at -1.11



Analyze Phase: We followed the Correlation study for continuous data of Big Y (Repeats) and many X's; conducted test of Hypothesis on work hours. Observed high Repeats in Evening intervals and strong correlation with Transfers, Resolve Usage and Productivity

Improvement Phase: We started implementing action plan on high priority items derived based on RPN from FMEA. The Top 5 critical X's are: 1) Invalid Transfers/ Referrals and escalations, 2) No confirmation of Resolution, 3) Unstated Need not addressed, 4) Non compliance to Resolve flow, 5) Failed to set right expectations. Initiated refresher training for knowledge on Resolve tool usage; COR and Unstated Needs; Started seeing significant improvement on Project Y; Additional Focus /support to bottom quartile agents; Launched Repeat Warriors & Floor walkers as task force to drive on repeat reduction.

Control Phase: We designed control flow process to monitor factors daily / weekly/ monthly levels. Aligned these factors as KRA for process SPOCs and continued to circulate dashboard on all above critical factors. Process became much STABLE in June in Control Phase apart from month on month improvement. Process Sigma IMPROVED from -1.11 (NDJ) to 0.36 (June'10).

HCL Technologies Limited, BPO Business Services

Improvement of Process CSR Utilisation

HCL BServ, a division of HCL Technologies Limited started its venture early in 2001 and is now a dominant player in the BPO field drawing revenue of USD 232.15 Million. With over 11,400 professionals operating out of India, UK and USA, HCL BServ runs 21 delivery centers, offers 24X7 multichannel, and multilingual support in eight European languages.

Business Case: The client is a leading telecom expense management company in US. The client manages telecom administrative functions of fortune 1000 companies whose annual turnover is over 5 Million Dollars. HCL team handles the entire invoice processing activity. The process team strives to improve the quality & productivity targets ; the process believes there is still ample scope for improvement In the CSR utilisation percentage which can further enhance the quality & productivity of the process.

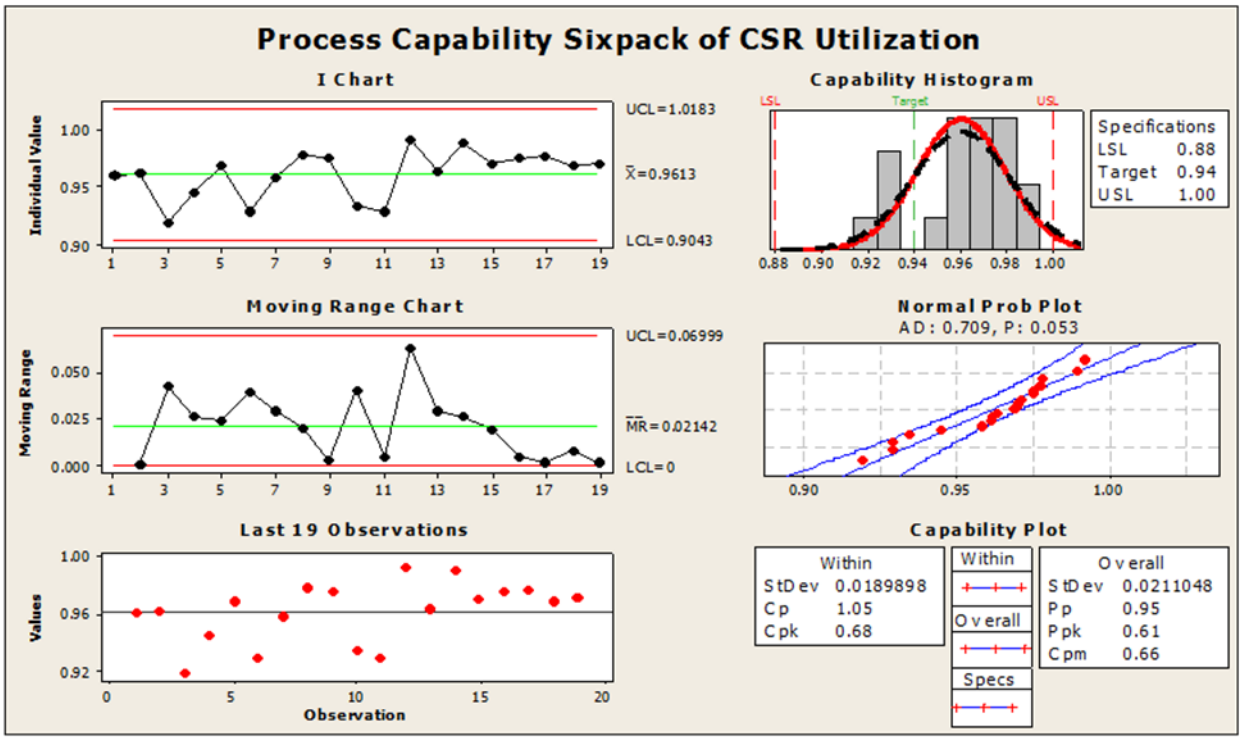
The Process CSR Utilisation % for the period Dec'08-Feb'09 was at 82% which was much below the CSR Utilisation % of 85% (per process requirements). The project goal was set to Improve and achieve the process CSR utilisation % from 82% to 94% by September'2010. The estimated cost benefit of HCL is US$ 24,800.

Define Phase: We developed SIPOC and high level process diagram along with clear time lines of different stages of the project. CTQ's are derived from VOC which is collected from both internal and external customers. Identified team members cross functional areas.

Measure Phase: We arrived at Data Collection Plan with clear definitions of CTQs. Conducted Brain storming with different groups in batches covering Agents, Mentors, TL, Ops manager and support functions. Came up with 29 causes that lead to High Dsat. Developed Fish-Bone/ C&E diagram based on brainstorming points. The Process Capability at measure stage is at -0.48 and Process Sigma is at -1.44

Analyze Phase: We followed the Scatterplot, Correlation study for continuous data of Big Y and many X's. Test of Hypothesis for discrete data. Major X's were identified during the analysis. 1) Low login hours due to leave not planned b) Late logins on late arrivals c) Prioritisation of personal work/leave d) Knowledge on tool used for capturing utilisation metrics. E) Tool adherence issues . Based on the failures solutions were generated to improve the utilisation scores.

Improvement Phase: We started implementing action plan on high priority items derived based on RPN from FMEA. The Top 5 critical X's are identified under two major classifications : 1) Factors influencing absenteeism 2) Factors influencing low login hours. A Focus group approach was initiated to improve the absenteeism related issues – Permissions & out of office was controlled, Unscheduled absenteeism was restricted and informed & planned leave was encouraged. HR related irritants were ironed out with joint sessions with HR. Conducted Leave Policy awareness, agents were given the option of spreading their 30 minute break time at their convenience. Due to these deployments we were able to see the Big (y) to improve in a positive trend.



CPK is 0.68 ; Process Sigma is 2.04

Control Phase: We designed control flow process to monitor factors daily. Everyday the data is published We aligned these factors as KRA for process SPOCs and continued to circulate dashboard on all above critical factors. Process became much STABLE in Oct'09 in Control Phase apart from month on month improvement. Process Sigma IMPROVED from -1.44 (Prior Mar'09) to 2.04 (Oct'09)

Project Benefits:

The process improved its margin by US$24,800 as 8# buffer resources were removed.

HCL Technologies Limited, BPO Business Services

THT Reduction to Improve Process Efficiency

HCL BSERV, a division of HCL Technologies Limited started its venture early in 2001 and is now a dominant player in the BPO field drawing revenue of USD 232.15 Million. With over 11,400 professionals operating out of India, UK and USA, HCL BSERV runs 21 delivery centers, offers 24X7 multichannel, and multilingual support in eight European languages.

Business Case:

OPAL is a leading Telecom Expense Management (TEM) with 60+ clients. It caters only to Fortune 1000 companies whose annual Telecom spend is over $5M. HCL provides significant back office work to OPAL in Invoice Processing activity. The process can be further optimized to increase the efficiency and utilization of a CSR by initiating VSM lean principles.

The average transaction handling time taken for the teams to complete 16 tasks is 3.85 min / invoice (Jan – 3.89 mins ; Feb – 3.97 mins ; Mar – 3.68 mins). The process efficiency can still be improved and optimized by reducing the transaction handling time.

The Project's aim is to reduce the average Transaction handling time from 3.85 mins / invoice to 3.70 mins/ invoice (by reducing 20 hrs of THT/day)

Define Phase:

We developed SIPOC and high level process diagram along with clear time lines of different stages of the project. CTQ's were derived from Voice of the process. Team members for the project were selected from all tasks.

Measure Phase:

We arrived at Data Collection Plan with clear definitions of CTQs. Conducted brain storming sessions covering Agents, SME, TL, Ops manager across all tasks. Developed Fish-Bone/ C&E diagram based on brainstorming points.

The Process Capability at measure stage is at -0.12 and Process Sigma is at -0.36

Analyze Phase:

We followed the Correlation study for continuous data of Y and many X's; Identified the major factors (X) affecting Y.

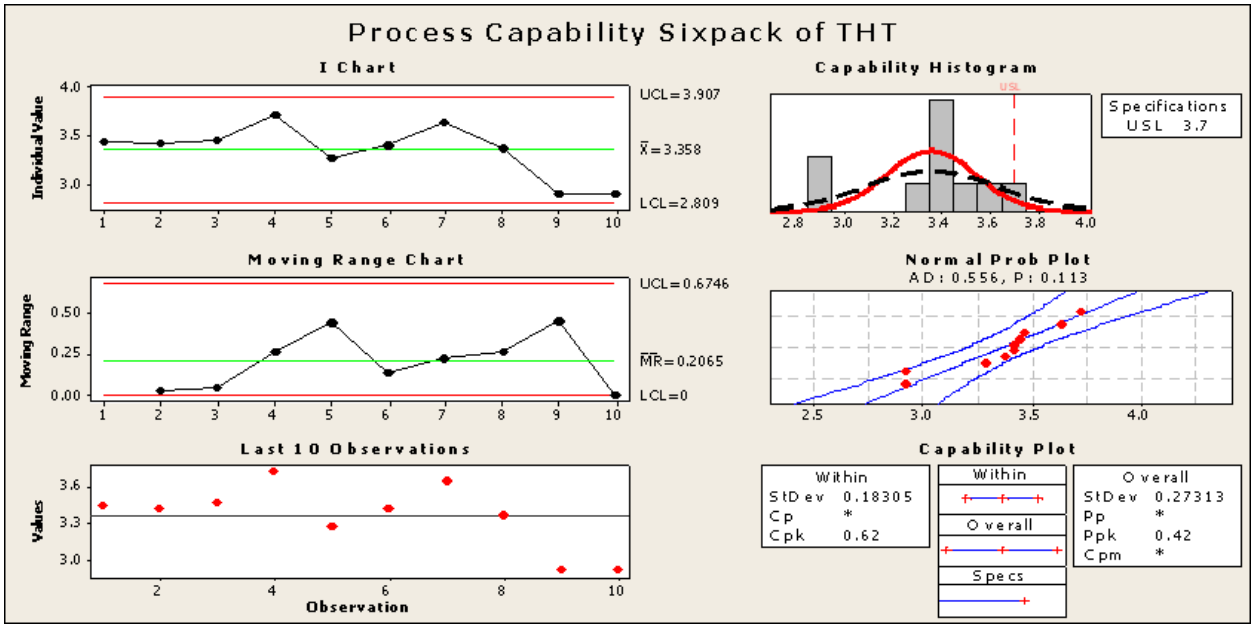
Improvement Phase:

We started implementing action plans on high priority items derived based on RPN from FMEA. Action plans like daily typing test & refresher training for knowledge issues were initiated. Different shortcut steps followed to process the invoices. Eliminated the unnecessary steps involved in processing.

Control Phase:

Variance between agents THT compared to control the We designed control flow process to monitor the factors.

Process became much STABLE in Oct'09 in Control Phase apart from month on month improvement. Process Sigma IMPROVED from -0.36 to 1.86.



CPK = 0.62; Process Sigma = 1.86

WIPRO BPO-division of Wipro Limited

Financial Loss Reduction for US Retail Client

Wipro Supports for Back office processing for a US Retail Major for Accounts Payable, Account receivable, Retail accounting Claim Processing & Credit Card dispute resolution & Chargeback retrieval and store support, Pharmacy receivable and Physical Inventory Exc.

- Client is US fourth largest broad line retailer with 3,900 full-line and specialty retail stores in the United States and Canada Annual Revenue of 44B$ & 350,000 + Employees the leading home appliance retailer as well as a leader in tools, lawn and garden, home electronics and automotive repair and maintenance and US largest provider of home services, with more than 12 million service calls made annually.
- **Problem Statement:** Key Business challenge for Client in 2010 was **"Reduction of Operating Expenses"**. Wipro identified this as a key value add theme and decided to improve the same through a coordinated project approach cutting across different functions.
- **Project Goal:** Financial Loss Reduction for Retail Client By 2M$ (Annualized) by 30th Oct-09
- **CTQ Prioritization:** **Y1: Loss Reduction in Credit Card Chargeback** **Y2: Spend Reduction in News Paper Advertisement** **Y3: Scanning Cost Reduction**
- **Y1. Loss Reduction in Credit Card Chargeback Avoidance Rate** **Problem Statement:** Financial Loss to Client due to credit card chargeback is estimated to be about 1.5 Mn USD p.a. Chargeback reversal rate for ABC Credit Card is 4~6% due to stringent guidelines. Average Charge back avoidance rate is 79% of Overall disputes received. This leads to continuous financial loss to Sears. **Project Goal:** To improve the Charge Back avoidance rate from 79% to 89% by Sep-2010.

- **Operational Definition of Project CTQ:** This measures as [1-(Total disputes converting into Chargeback (in Value) divided by the Total disputes Received in Value from ABC Card provider)*100]. Defect Definition: if a disputes converting to Chargeback which is considered as Defect. USL: 89%
- **Data Collection Plan:** Source of Data is Customer Tool (Access Database) which provides all the transaction information required for analyzing the case. Agents / Leads can pull the data from Customer Tool.
- **MSA:** Data source is customer tool (Access Database) which is already calibrated. Hence there is no requirement for Gage Repeatability & Reproducibility
- **Root Causes Identified**

1.Delay in sending response to provider & Store

2.No Response / Incorrect response received from stores

3.Insufficient documents to provider

4.Credit not Issued on Time

5. .More Variation Across the Associates

- **Improvement Solution:**

1.Improvement in Process Lead time to avoid delay in sending response to provider & Store

2.Implemented the Case Expiry Tracker and follow up

3.Standardization of Case resolution approach

4.Avoid early response to provider, thereby giving reasonable time to the stores to resolve the issue with the customer to prevent Incorrect response received from stores

5.Tracking CN conversion to CB cases, to know the failure points which can be fixed in future.

6. Send right fax to Amex on Fatal CB, if sufficient documents are available.

- **Y2: Spend Reduction in News Paper Advertisement**
- **Business Challenges:** Client has 963 Vendors for News Paper Advertisement across US. During process Audit, the following points are observed for over payment.
- **Root Causes:**

1. Contracts were executed late on account of pending approvals. These dates are well over the effective date of contract.
2. News Papers were billed on Old rates
3.Credits given in the invoices were not properly noted and availed

- **Solution:** 1,All the newspaper vendors are to submit their invoices on time Rates matched with estimated rates in the system and rates mentioned on the invoices submitted by the vendor &2. Verification and approval made mandatory for payments

3.All corrected and approved payments would come to the AP team as a feed for payments

- **Y3 :Scanning Cost Reduction**
- **Root Causes/ Wastes Identified**

- From the analysis of Blank envelope processing, It was found that more than 97.3% of blank envelopes have no Value addition to the Business . This process has potential scope for reducing the man hours spend in processing and Scanning cost of envelope

- **Solution:** implemented the screening process at Dallas NSC Team to secregate the Value add Blue Envelopes and send for scanning

- **Benefits**

- Losses Reduction in Credit card Chargeback: $ 0.74 Mn p.a.
- Scanning cost Reduction: $ 0.131 Mn p.a.
- Spend Reduction on Newspaper advertisement: $ 2.8 Mn p.a.

Total Annual Financial Saving to Client $ 3.15 Mn
(150% achieved against the Target)

HCL Technologies Limited, BPO Business Services

Operational Excellence with a human face – application of psychological and production theories to back office operations within a Lean cum Six Sigma framework

Achieving **employee satisfaction**together with **operational excellence** and **customer delight** through lessons from the famed Toyota Production System's 'cell structure', 'single piece flow' and 'stop-correct-proceed' concepts woven with the lessons from the Theory of Cognitive Dissonance and Hawthorne effect.

These simultaneously reduced defects and turnaround time in a sustained manner and increased job satisfaction. This also resulted in substantial bottom line financial benefits of **USD 10 million dollars** to the client 3M Innovative Properties Company in its GCS Division in its complex order management process. **This is a Lean cum Six Sigma case study.**

Brief write-up on the award winning project

Prior to the engagement with HCL, 3M's global order management process had a turnaround-time of around 24 hours with and a 95% quality score. HCL accepted an SLA at 99% quality in order entry and a significantly reduced turnaround time of 4 hours.

Though this was initially achieved through best practices, it could not be sustained as the employees interpreted the system as being intrusive and reducing their job satisfaction. This posed a real challenge of aligning good people with best practices. The case study shows how the Lean cum Six Sigma approach aligned with theories in psychology (Hawthorne effect and Cognitive Dissonance Theory) and production (Toyota Production System) helped us to root cause the actual problem, define a strategic way forward and then implement the holistic solution that gained employee engagement, improving their satisfaction and paved way for exceeding the client expectations and delighting them in a two-year time frame. The result was a huge improvement in the visibility, velocity and reliability of 3M's global supply chain with identifiable bottom line benefits of USD 10 million per annum.

Eminent quality experts have commented that they found HCL's diagnostic approach, the methodology for implementing the solution, its sustainability, wider applicability and the economics of quality as a whole to be of practical relevance across the entire services sector.

3M's Business Process Manager Tim Marks remarked that working with HCL has inspired them to challenge their teams to look for opportunities to replicate HCL's approach and outcome in the US operations as well.

Lean cum Six Sigma approach:

How the Lean cum Six Sigma approach helped us in defining, measuring, analyzing, improving and sustaining improvements over the long haul is explained in detail in the enclosed presentation.

HCL Technologies Ltd

Reduction of AHT in death activity

Business Case: The clientis a major provider of pension's administration and payroll services for some of the largest schemes in the UK. The company provides pension administration for public Sector clients. Their pension payroll services make payments totaling more than £7 billion to over 1.5 million pensioners and their dependants, in 189 countries throughout the world.

The Admin activities for Deceased Pensioner in the process are a complex activity, where AHT is very high. It is a client requirement to show improvement in productivity year on year. This Project has reduced the AHT from 33 Mins to 18 mins, which has improved the productivity. The cost savings comes to **$5811**

Define Phase: We developed SIPOC and high-level process diagram along with clear time lines of different stages of the project. CTQ's are derived from VOC, which is collected from our process resources. Cross-functional team members were identified for the project.

Measure Phase: We arrived at Data Collection Plan with clear definitions of CTQs, Conducted Brain storming with all the team members came up with 27 causes and developed the Cause and Effect (Fish-Bone) diagram based on brainstorming points. Process capability compares the output of an in-control (Stable) process to the specification limits (Target) by using capability indices. The Process Capability index at measure stage was at - 1.63 . Failure modes and effect analysis (FMEA) - evaluates risk priorities, and helps through remedial actions to avoid identified problems was done.

Analyze Phase: We made a hypothesis testing for

- **AHT vs manual entry**, we inferred that the Manual Entry do have Positive Correlation with the total AHT of the activity,
- **Case investigation time vs AHT**, we inferred that the Investigate time have Positive Correlation with the total AHT of the activity and
- **Email Drafting time Vs AHT,** we concluded accept alternate hypothesis i.e. the transaction with Email has Impact on overall AHT

Improvement Phase: We started implementing below action plans on high impacting X's which was identified during analyses phase.

1. Macro Created to pick the details from the E-Form
2. Macro Created to fill the Overpayment letters form

3. New Sub Status "2nd Level Auth" is added in the XP Xtreme
4. Requested onshore on alternate method to escalate cases instead of sending Emails. The alternate method suggested would be entering the reason in the Application (Diary Note) and moving into their Queue
5. NI Number is uploaded in the XP Xtreme
6. The two stages of the case are allocated to the same user

Control Phase: The above measures brought-in break through improvement and the AHT reduced from 33 Mins to 20 Mins during March 2010. The AHT continues to be below 20 Mins till now.

Cognizant Technology Solutions Ltd

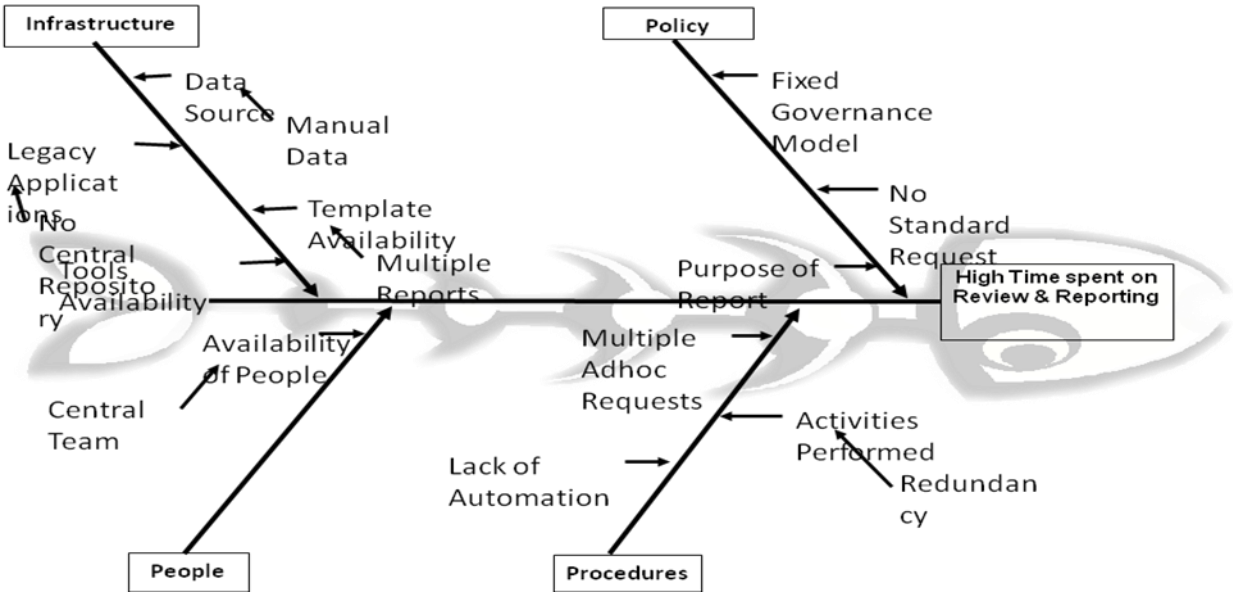
To Improve Middle Management Business Intelligence

Overview: We at Cognizant engage a global pharmaceutical on application development, production support, testing and maintenance of the client legacy applications. For this customer/account, we have a strong team of 1500 plus FTE's (full time employees) spread at various locations globally with 75 plus associates in the management cadre. This group had a qualitative notion that 60 – 70 % of the time is spent on report creation & review which is required by various internal & external stakeholders- They were also frustrated with the amount of time they were spending on data collection/collation. This project was taken up with the following objective.

- Quantify time taken for creating reports
- Identify and Eliminate redundant reports
- Reduce time taken for creating reports

The management team fixed a cap of 3 hours (37% of time) of effort per day for the purpose of reports.

Key Observation: The Measurement system was placed to quantify the effort spent on reporting and was found to be 4.9 hours (61% of 8 working hours) per day



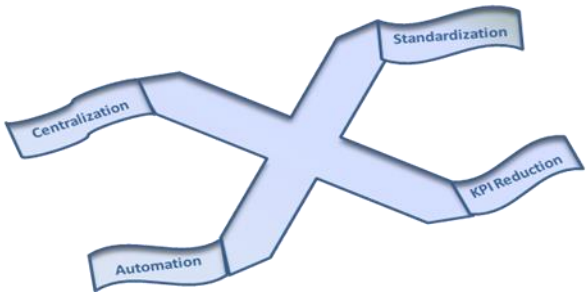
It was observed that:

- *6 Different processes were being followed for different types of reports.*
- *There are peaks observed during Month Begin & Month end. This is because of multiple internal and external review with lot of redundancy resulting in high effort*

- *The effort depend on the report type, Division, Monthly Report and activity performed*
- It is clear that customer reports, MRL & Ops Team, Monthly Reports and data collection take the maximum effort

Solution: A 4 Dimensional approach to reduce the effort spent on reporting

- Report Type
  - » Combine customer reports within same information (Eliminate redundancy)
- Division
  - » Division owners to be responsible for all reports



- Reporting Frequency
  - » Centralized database of all report columns
  - » Tools Consolidation
  - » Real time data feed from Team

Benefits: A Cost saving of **$ 1,001,490** has been achieved from the project. Also, it has enhanced the "Business Intelligence Skills" of the middle management and empowered them to take decisions based on information. It also significantly enhanced the morale of the team as the project managers used that extra bandwidth to resolve other challenges faced by the team

Learning's from the Project:

- The benefits of standardization in a global account like this where there are multiple teams and multi locations!
- Various statistical tools help in smoother decision making and a good work life balance!
- Clarity to middle management on data, information and when it becomes a decision!

Generic framework that can be re-used for any account/group that has large amount of data, information needs!

DMAIC MANUFACTURING

Reliance Industries Limited

Project Title : **Reduce Breaks per Ton in Polyester Filament Yarn**
Expected Saving : **Rs 45 Lacs / annum**
Black Belt : Shri. ShriBalaramPatil
Quality Leader : Shri. Sharadchandra D Karve
Champion : Shri. Dilip D Deorukhar
Process Owner : Shri. Vasant K Patil
Team Members : ShriNilamber B Tawde (Spinning Operations)
Shri.VenkateshJadhav (Technical Services)
ShriAtulNachane (CP Operations)
ShriArunPatil

Company Description:

A 200 Acre Patalganga (PG) manufacturing unit was established in 1982 in the state of Maharashtra-India. RIL-PG is an integrated Petrochemicals unit manufacturing with following Products

- Polyester Staple Fiber [PSF] :106 KTA
- **Polyester Filament Yarn [PFY] : 232 KTA**
- Linear Alkyl Benzene [LAB] : 116 KTA
- Purified Terephthalic Acid [PTA] : 270 KTA
- Paraxylene [PX] : 180 KTA

It is a vital link in the vertically integrated manufacturing chain across RIL sites – right from Crude to Fabrics
.

Need of the Project :

Polyester Filament Yarn (PFY) manufacturing is an continuous process. Terephthalic Acid (PTA) and Mono ethylene glycol (MEG) under go poly condensation reaction to form a polymer. The polymer melt then extruded to from a thread line.

Any interruption in winding a thread line will reduce the efficiency of the Process and have impact on Customers.

- **External Customer is a Textrisers** - wants bigger bobbins, so that no. of change-over will reduce and their efficiencies will improve.
- **Spinning Manager** -Each interruption increases the Down time in the process and affects % Yield.
- **Packing Manager** - Producing of Lower weight bobbins will increase Packing Cost
- **Logistic Manager**- Packing of Lower weight bobbins will increase Transportation Cost.
- **Machine Operator** -Rethreading of position increases Physical &mental stress

Define :

The Daily Data for Breaks /Ton was collected for the period Mar 09 – May 09. The mean was 0.92 with Std. Dev.-0.30 .Sigma level was calculated using Process Capability method and it is +0.13.

Measure :

We have an Data acquisition System installed on the machine , with the help of this system using sensors , all the data is generated automatically. No of breaks and Production in MT is also available using same system, same data was used for the project.

Analysis :

The total process is divided in three Sub steps –

1. Continuous Polymerisation.
2. Spinning.
3. Winding.

Continuous Polymerisation – The process has 8 sub steps . After brainstorming with the technical team , Potential X's were selected at each sub step of CP operations i.e 55 Potential x's were selected. Correlation analysis was carried out were we find out 32 parameters as significant. One of the main parameter was through put and many of the parameters were found unidirectional with Through put. A regression equation was set up for main two parameters (reactor level and reactor Temp) which are manually changed when through put is changed. Other parameters gets adjusted as they are in cascade mode with these two parameters.

The Regression Equation is

CP- Throughput MTD = - 294 + 46.8 Ratio (MTD/Level)+ 1.01 Temp^{0}c

Three parameters (Stability EG , Antimony and DEG) remained after the second screening. No interaction was confirmed by Planning Design of Experiments. As direction was already known using correlation, same was implemented in steps. The Final step was taken based on Other limitations of the Process. The results were confirmed statistically using One way ANOVA.

Spinning.

Similarly in Spinning, Potential X's were selected at each six sub step of Spinning operations. Correlation analysis was carried out for 15 and only One (Block temp) was find out as significant. As direction was already known using correlation, same was implemented in steps. Optimum was found out statistically using One way ANOVA.

Winding

Similarly in winding , Potential X's were selected at each Five sub step of winding operations. Correlation analysis was carried only One was find out as significant. This could not be implemented as it will affect the constraint or Secondary CTQ of the Project. Pareto analysis was done to understand impact of package weight and break. It was observe that more breaks are occurring at less than 2 kgs. The amplitude variation was studied and we could correlated the breaks with Helix angle amplitude variation. A technical solution was found out to avoid the same variation.

(explained in the Presentation using Graphs)

Total 75 Potential x's were screened and 8 were selected for action.

Improve : After implementation of all the above actions.

Improvement was confirmed using Hypothesis Testing.

	N	Mean	St Dev	SE Mean
Breaks per ton Mar - May 09	81	0.917	0.305	0.034
Breaks per Ton Oct - Dec 09	91	0.530	0.128	0.013

Difference = mu (Breaks per ton Mar - May 09) - mu (Breaks per Ton (Oct 09-Dec09))

Estimate for difference: 0.3868 95% CI for difference: (0.3145, 0.4590)
T-Test of difference = 0 (vs not =): T-Value = 10.61 P-Value = 0.000 DF = 104

Control : Control Plan and Project hand over was done .
Specialty Production % increased from 6.5 % to 16.3 % will bring more revenue to the organisation.

Actual Benefits from the Project for one of the CP line is –
Rs 41.7 Lacs /Annum. (Validated by Plant Head Signature)
Excellent Translational Opportunity Savings will be Rs.2.0 Cr /Annum for Reliance Patalganga we have total Five lines at PG

Reliance Industries Limited

Improve Spin Pack Life In CP4 Polyester Staple Fibre(PSF) Plant

Reliance Patalganga unit is producing over 1.0 lac MT of polyester staple fibre every year.
Spin Pack consisting of filtration media & Spinneret. Filtration media consists of different types of sands, Alumina material & metal screens. Spin Pack is called as " Heart of Spinning "
Any deterioration in quality of Spin pack will directly causing the discontinuity of filament production & affecting the quality of filament produced. Increase in Spin pack life, will directly increases % first quality, % Yield as well as better Downstream performance.

DEFINE:
This project was taken up in response to the Voice of the internal Customer. Pack Life in hrs was chosen as the Critical to Quality (CTQ) parameter. Impact of project is identified on cost, specific consumption, delivery cycle time & environmental aspect & estimated a financial impact of Rs.1.0 Crore/annum. A cross functional team was formed and the project charter was prepared with benefits, scope, constraints CTQ & timelines.
MEASURE
The baseline was determined and defect definition is clearly stated .Process capability analysis done after conducting the normality test & base line sigma level was calculated to be -0.61.
ANALYSE:
All potential causes were identified using a Round robin method of brainstorming technique. Further Cause & effect matrix is used to find out the causes which are having high impact on low pack life. Following causes were identified as vital few from trivial many
IMPROVE:
X1- Pack Formula (Combination of powders, screen, and alumina): Different pack formulae used & their effect on pack life identified. It was statistically confirmed higher pack life in S3 formula using
One Way ANOVA Analysis. Formula optimised toS3.X2-Quality of Wiping: Poor wiping results into frequent position break & lead to pack change. Operator wise quality of wiping is studied & found persons with short stature were having low success rate in wiping, Different solution were thought & finally job wise planning done to avoid conflicting situation & without disturbing the morale of employees. The same included in HR Recruitment policy.
X3-Different spinning parameters studied for correlation with pack life. Spin block temp. & poly at tee temp were found having correlation with low pack life .DOE carried out with this two parameters at three different levels & optimised the settings after confirming the positive results in trial.

X4-For Low high pack leaks, detailed why-why analysis & all pack consumable study w.r.t dimensions & objective is carried out. To avoid cold pack, detection method improved.

X5-For slow hole reduction, innovative approach used & developed a special jig for removing the embedded black particles.

CONTROL:

A transparent Control Plan is prepared & Continuous monitoring of "Y" as well as vital X's was started using Control Chart and is reviewed by Production Manager in the daily morning meeting and rack-up meeting.

Project Improvement Summary:

Tangible Benefits : Rs 75.6 Lacs/Annum

Tools Used:

Cause &effect Matrix, DOE, ANOVA, Control Charts

Essar Steel Limited

Elimination of Hot DRI vessel jamming

The Quality Circle project "Prevention of HDRI vessel jamming" has been successfully completed through basic quality circle concepts and tools as explained further.

In the year beginning of 2010, steel melt shop was facing a serious problem of jamming/choking of bottom of Hot DRI (Direct reduced iron) vessels that were received from Module 5. As the loss incurred due to the dumping of HDRI material (@ 2 tons of hot material wasted from 50% of 35 vessels) on the ground was to the tune of Rs 5 lakhs per day, the top management insisted on forming a Quality circle to solve this issue as soon as possible.

A dynamic quality circle leader who is analytically and logically capable enough was selected and assigned the task of resolving the jamming problem. The leader formed a team with the members who had a common goal of attacking this problem. The quality circle concept used was DMAIC (Define, Measure, Analyze, Improve and Control).

After defining the problem, in the measure stage, the quality circle tool "Mapping/Graph" was used to identify the time when the problem had started and also the quantum of problem on day basis.

Taking ahead, an Ishikawa diagram was framed in the analysis stage with all the causes that could lead to the problem. A solution was implemented for every potential cause. In spite of these solutions (nitrogen purging in HDRI vessel, reduction of temperature of HDRI to reduce draft, improvement of cold crushing strength of pellets to reduce fines), the problem persisted without any change. A brainstorming session was conducted to think of out-of-the-box ideas for the causes and solutions. A probable main cause was identified and a scatter diagram was used to find the relationship between the cause and the quantum of HDRI vessel jamming. A perfect relationship could be established in the scatter diagram which made the way for easy solution. The cause was carbon-monoxide and hydrogen in the seal gas that was being fed to the bottom of furnace as bottom seal gas, which travelled into HDRI vessel. The evolution of CO and H_2 in seal gas (a part of flue gas from reformer) was due to the incomplete combustion in the reformer which is 100m away from HDRI vessel area.

In the improve stage, the oxygen level in reformer was increased to 1 to 1.5% to ensure complete combustion and hence eliminating HDRI vessel jamming problem. The operation SOP was revised to maintain oxygen level more than 1% in reformer in the control stage.
The project was named "EDISON" keeping in view that success was achieved in spite of many failures and continual commitment to solve the problem.

Intangible benefits:

1. Risk on safety of personnel (hot material interaction) during resolving HDRI vessel jamming problem was eliminated.

Tangible benefits:
Around Rs 5 lakhs per day.

Mirc Electronics Limited

To increase steam to fuel ratio of a fire tube boiler used for thermocole manufacturing.

INTRODUCTION:

We are manufacturing CRT & LCD Television sets along with home appliances. For this we manufacture in house Thermo Cole as packaging material. For manufacturing Thermo Cole steam is required for indirect mixing & for extracting Thermo Cole from shape mould. It was observed that, Fuel consumption had suddenly increased from Oct-08 up to Feb.-09. Hence to save the amount of non renewable fuel (F.O.) required, this project was initiated.

We are generating the steam required for Thermo Cole manufacturing using Thermax make SM-30Boiler, of fire tube type in which furnace oil is being used as fuel.

As mentioned in the project title, Steam to fuel ratio means amount of steam generated when 1 kg of fuel (furnace oil) is burnt. Hence target is to generate max. possible amount of steam for burning 1 kg of fuel.

PROCESS DESCRIPTION:

Steam generated from boiler is used for –
Manufacturing Thermo Cole, by shape moulding method where in steam is used for
Ejecting Thermo Cole from shape mould at the end of the cycle.
Also, steam is ejected in the shape moulds through steam jets to achieve indirect mixing.

PROJECT CONCEPT:

To reach to the bench mark value of S/F ratio is basic idea behind this project.
To achieve this target, it is necessary to obtain max. possible combustion efficiency of boiler with minimum unburntcarbon & stack gas temp.

Also, water being fed to the boiler for combustion should be of best quality. Preferably demineralised (D.M.WATER) with pre-treatment of chemicals need to be used. Modulation also needs to be proper so as to provide adequate amount of air required for combustion. Best quality of pretreated furnace oil needs to be used so that, contamination in fuel should not affect flame quality & combustion should take place efficiently.

In order to study the effect of each of the above parameters on steam to fuel ratio & to obtain max. combustion efficiency so as to save on energy cost , This project was taken. Apart from achieving economy in fuel cost this project also ensures good combustion quality, prolonged life of boiler, uninterrupted steam supply to the consumer, & overall improved boiler efficiency.

PROJECT RESULT:

After completion of project we are consistently achieving Steam fuel ratio very close to international bench mark on monthly average basis from 10.58 to 13.5 since, Feb-2010. This has resulted into

- Saving of energy cost Up to Rs.26 Lacks per annual as compared to the month Jan-10.
- Improvement in Product quality,
- Efficient running of boiler.
- Best flame quality.

Uninterrupted supply of steam to consumer.

Mirc Electronics Limited

Air freight cost reduction.

INTRODUCTION:

We are manufacturing CRT & LCD Television sets along with home appliances. We procure the various raw material & standard / tailor made parts which requires for the manufacturing of TV. The total buying value is more than 500 Cr. INR & we procure this material from both Local (Domestic) as well as Import (Overseas) vendors / Business partners.

The Imported parts are brought by both the transport channels like Air as well as Sea. The Air Freight charges for Air shipment parts are around 4% of total material value which is a huge amount, affecting the profitability of the overall manufacturing process.

PROJECT CONCEPT:

This project is taken up to reduce the Air Freight charges from 4% to 3% level.

The % Charges are calculated on Total Freight cost / Total Material cost. Scope of the project is limited to CTV and LCD raw material procurement. The major forces behind the Air shipment of the material are Fluctuating demand forecast due to dynamic market situation, more lead time of the parts due to International shortages, Technical issues like MSD etc.

If the Air freight is reduced from 4% to 3%, the organization will get benefit of around Rs. 50 lac annually.

TOP 5 PARTS:

- Electrolytic Capacitor
- Power S/W
- IC's
- FBT
- Remote

ACTIONS INITIATED:

1) Electrolytic Cap, Remote, FBT shifted to Sea shipment with advanced planning
2) Delivery terms changed from Ex Works to FOB
3) Single port location for majority of vendors to achieve better negotiation

4) Shipment consolidation

PROJECT SAVINGS:

Rs. 18.33 Lac for three months (Aug'09 to Oct'09)

Reliance Industries Limited

Reduce Waste /Interruptions In CP4 Polyester Staple Fibre (PSF) Plant

Reliance Patalganga manufacturing unit is producing over 1.0 lac MT of polyester staple fibre every year. It is a continuous process involving Continuous polymerisation, Spinning, Draw line & Baler department.

Spinning is a process where polymer is converted into filament. Any interruption in filament formation will directly generate the waste & impacting the profitability of Plant. There are two ways to improve the yield. Our project scope is to reduce the cycle time per interruption.

DEFINE:

This project was taken up in response to the Voice of the internal Customer. CTQ identified as Time per interruption. Project charter was prepared with a clear problem & goal statement as reducing time per interruption from 983 seconds to 600 seconds per interruption. Team selected using ARMI model & for smooth functioning of team, roles & responsibility were clearly defined.

MEASURE

In measure phase, defect definition defined & current baseline performance estimated using process capability study. Process was having poor capability.

Sigma level estimated was -5.86.

ANALYSE:

To improve the process capability, Team studied sequential activity required for attending the break position. Further time motion study carried out to identify the value added & non value added activity. Team used the interrelationship diagram to find out the relationship of different causes. All seven ways of waste (WORMPIT) generation is identified in the process & action plan made for each type.

IMPROVE:

Waiting: Detection system (PLC based) installed to detect the break position.

Overproduction: To avoid simultaneous break & hence delay in attending the break position, Polymer quality improved by modifying the spray condenser design.

Rework: Two machine hardware, throw down valve & Tie in device cutter modified to reduce time for string up after attending the break position.

Motion: PEEP concept implemented to reduce unnecessary motion. Trolley designed to store the diffuser at the workplace location.

Inappropriate Processing: SOP revised for string up of position after temp.study of each break position w.r.t temp. Of running position.

Transportation: To ensure the availability of machine operator, frequent transportation of can is reduced by optimising doff cycle.

Sigma level improved to -0.89 from -5.86.Time reduced to 612 from 983 Second/interruption.

CONTROL:

A transparent Control Plan is prepared clearly assigning the responsibility, control type & control method. Continuous monitoring & reviewing of Waste/interruption started every day.

Project Improvement Summary:

Tangible Benefits : Rs 23.5 Lacs/Annum

Tools Used:

Interrelation Diagram, Time-Motion study, Different types of waste

Cummins India Limited

Reduction in internal rejections from 40000ppm to 10000ppm at Con rod machining stage without affecting deliveries

Team :

Pradeep R

Swaroop S Urala

Members from Supplier's organization

Background:

Project was initiated at Supplier's organization. The Supplier manufactures Connecting rods which is then exported to Cummins US. The focus of this project was to reduce the internal rejections at supplier.

- Aligned to Cummins Operating System
- Treat preferred suppliers as partners
- Project undertaken as part of Risk mitigation on Quality front
- DMAIC approach used

Methodology:

Project charter was launched with the supplier. Tracker was filled in.

Tracker gives a guideline for the completion of the phases during the project.

Operation wise rejections were studied. Top 4 rejections contributing to almost 80 % of the rejections were focused. (80 – 20 rule applied).

A Process map was done. All Key Process Input Variables (KPIV's) were listed.

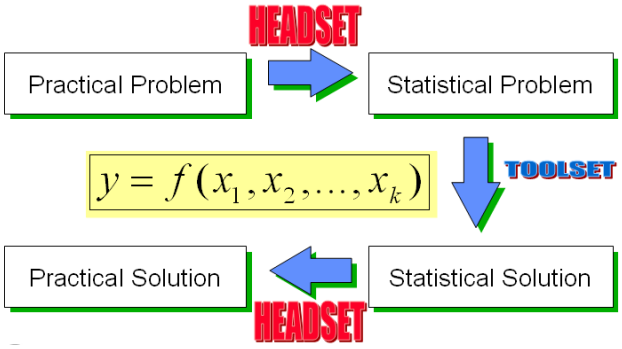
With the help of tools like Cause and effect matrix, FMEA funneling was done.

After the funneling MSA (Measurement System Analysis) was conducted for the gauges being used.

Quick improvements were done based on the expertise available in the team.

Multi-vari study was conducted for "width not Ok". This helped the team in deriving at the actual root cause. It showed that the "time and the component" are the contributors. Initially the team felt that these are not the causes. This study gave a direction for fixing the causes.

Actual problem was converted into a stastical problem. It was then solved statistically. Statistical solution was then converted into actual solution.



All actions were implemented based on the analysis.

Results:

- PPM reduction from 40000 to 18000.

Lessons learnt:

- Problem solving through 6 Sigma.
- Involvement of each project member is important
- Increased morale among associates because of their involvement in the project

Statistical tools guide in taking the correct decisions.

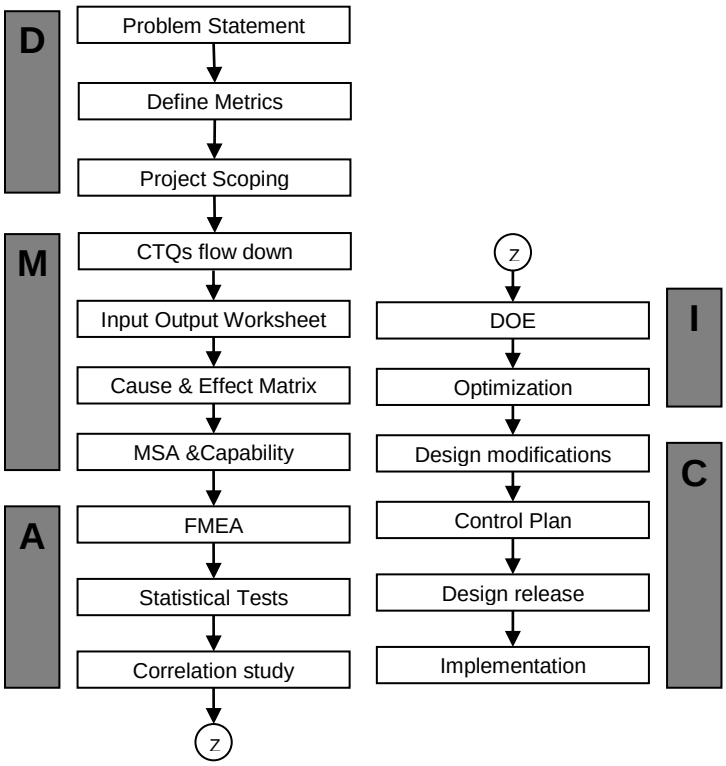
John Deere India

John Deere Global Hydraulic Lift System Improvement

Overview

John Deere Private Limited is a subsidiary of Deere & Company, USA in India. The factory, located near Pune, manufactures 5000 Series agricultural tractors. The factory has 3 Business Units viz., Engine, Transmission and Vehicle Assembly.

John Deere Hydraulic Lift System i.e. Rockshaft is being used in domestic & export market. Function of Rockshaft/ Hydraulic lift system is to control all functions of agriculture implements in field e.g. raise & lower of implements, cultivation & ploughing etc. High claim per tractor & customer dissatisfaction were observed in different markets due to Rockshaft parts failures. This problem & its resolution called for structured approach for identifying and optimizing the design parameters, hence six sigma methods used to resolve these failures.



Team

A Six Sigma team was formed to work on identifying the causes and improving the Rockshaft design. A Green belt was the leader and the members constituted from the cross function like Supply chain, Manufacturing – Assembly, Product testing, Quality, and Design.

Methodology

The problem was approached in DMAIC methodology.

Problem Statement

High claim per tractor & customer dissatisfaction due to high Rockshaft failures in domestic & export market

Project Scope

To find failure root cause analysis of hydraulic cylinder, Crank, torsion bar & review strength of other structural components

Statistical Goal Statement for the Project

Reduce 5E Rockshaft FPM from existing 0.014 to 0.005

Primary Metric for the Project

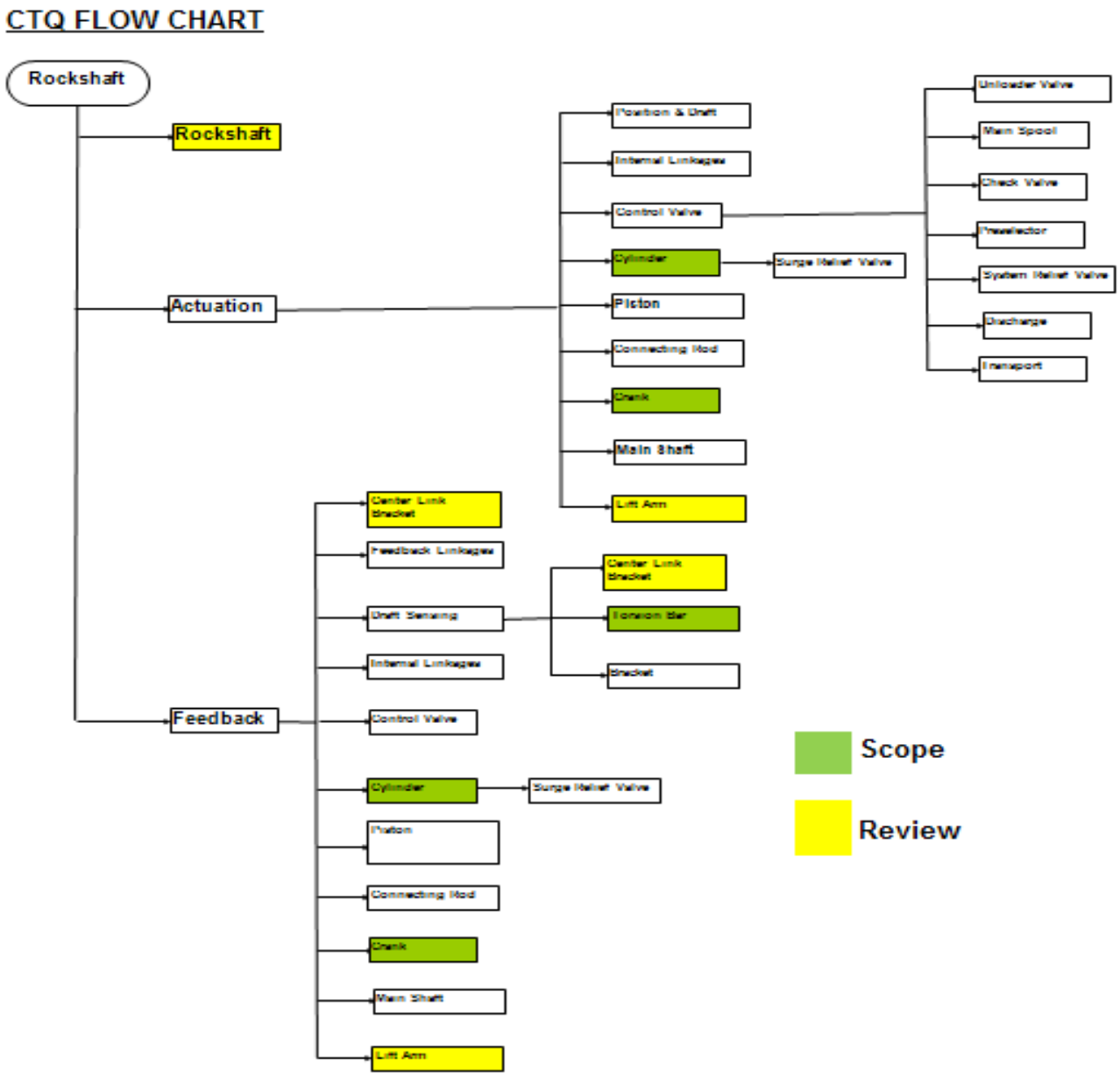
Reduce failure per machine

Financial Metric for the Project

Reduce dollar cost per tractor

Process Map (CTQs Drill Down)

Different sub systems identified in hydraulic system. For each sub system identified the important components which might contribute to failure.

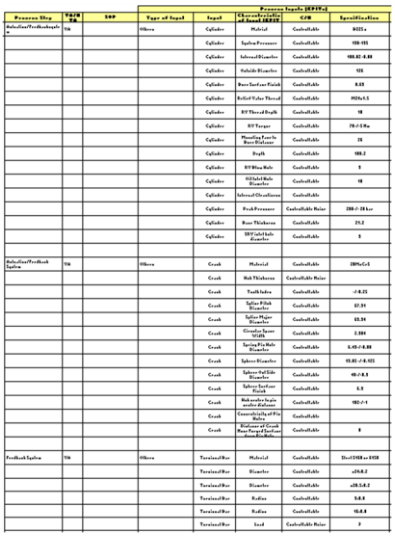


Identification of Key Process Input Variables (KPIV)

The KPIV identifies all the characteristics of the Input variables of Cylinder, Crank & Torsion Bar (Xs)

The KPIV includes

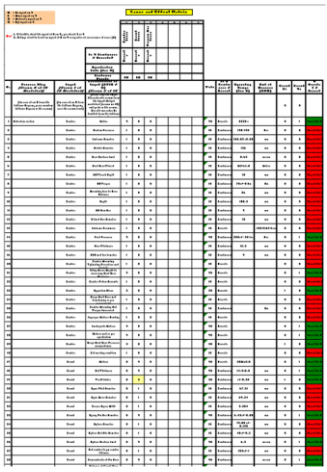
- Sub system (Process Step)
- Component (Input)
- Design parameters (Characteristic of the Input)
- Whether Controllable / Noise
- Current Specifications



Cause and Effect Matrix

The Cause and effect matrix was done to find the relationship of the all the identified input variables (x) on the Output variable (Y).

This was done to identify and prioritize the input variables for further evaluation and corrective action as necessary.



Failure Modes and Effect Analysis (FMEA)

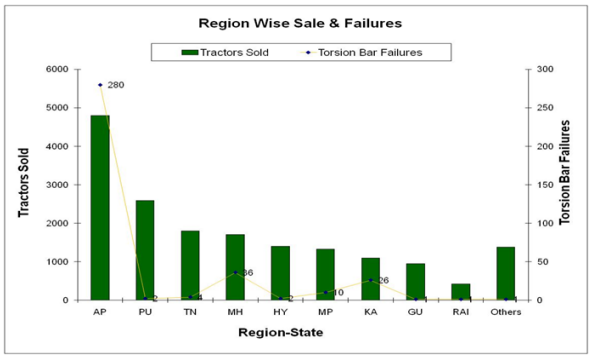
FMEA was done to identify the failures modes in each process step and its causes.

- Total 8 parameters with RPN>125 were identified & taken for further analytical and statistical study.

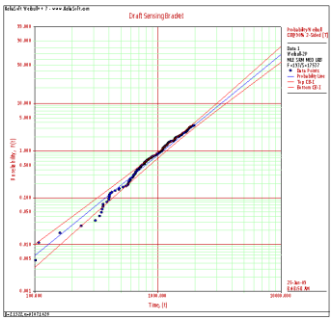
Analyzing of Potential Causes

Torsion Bar

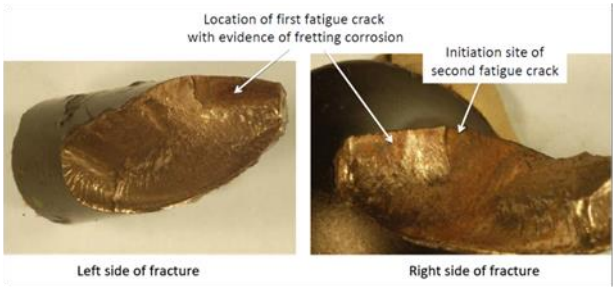
1. The analytical study of torsion bar revealed that failures were observed in states with hard soil. It was concluded that high draft forces caused more load on torsion bar, resulting in failure.



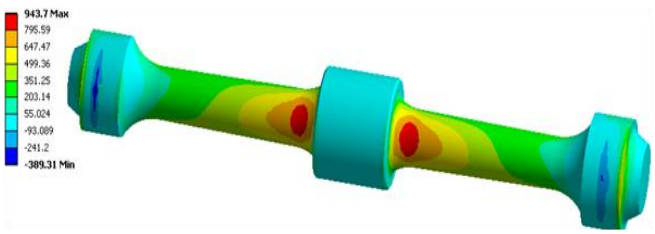
2. Reliability analysis showed no earlier failure but wear out failures



3. Metallurgical analysis at Moline Technology center revealed fatigue failure. Crack initiation was due to machining mark left by turning process

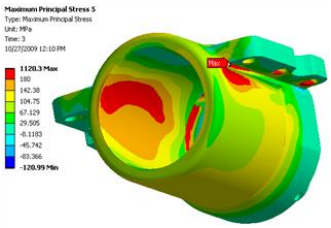


4. Field data acquisition shows field forces in the range of __KN in center link. FEA of torsion bar shows very high fatigue life due to polish surface finish. So it was decided to improve surface finish & add shot peen.



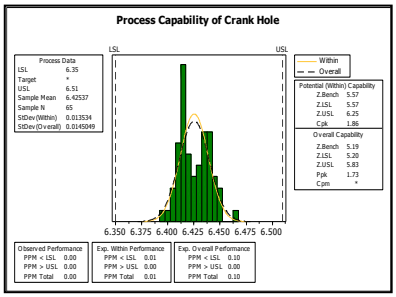
Cylinder

1. Field data acquisition in India shows maximum peak pressure higher as against designed pressure . High stresses observed in cylinder during FEA.



Crank

1. Process capability analysis of Crank revealed very good sigma level of project. But it was observed that for standard spring Pin, crank hole dimension was not respecting standard recommendation



Final DOE of torsion bar to evaluate improvements from Analyze phase

DOE Design

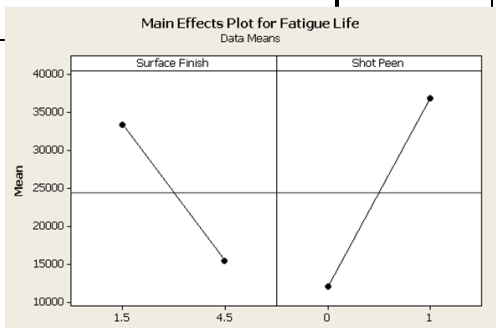
Factors	Response
• Surface Finish • Shot Peen	Torque
	Runs $2^3 = 8$
Levels – 2	

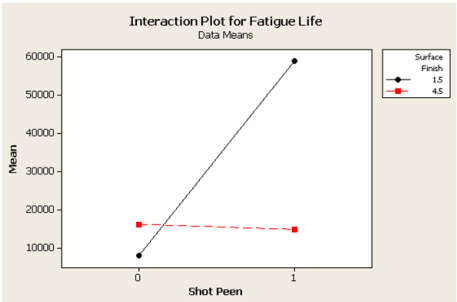
Factorial Fit: Fatigue Life versus Surface Finish, Shot Peen

Estimated Effects and Coefficients for Fatigue Life (coded units)

Term	Effect	Coef	SE Coef	T	P
Constant		24441	2543	9.61	0.001
Surface Finish	-17946	-8973	2543	-3.53	0.024
Shot Peen	24745	12373	2543	4.87	0.008
Surface Finish*Shot Peen	-26083	-13041	2543	-5.13	0.007

S = 7192.69 PRESS = 827756672
R-Sq = 93.98% R-Sq(pred) = 75.91% R-Sq(adj) = 89.46%





Final Improvements and one time Design changes & Implementation

The following actions taken as per final improvements

- Torsion bar – Surface finished improved, Shot Peen added
- Cylinder- Material changed from Grey CI to SG Iron
- Crank- Hole diameter modification

Benefits

- Business Metric

- $ cost per tractor reduced by 0.74
- Primary Metric
  - Reducing 5E Rockshaft failure from 0.014 to 0.005
- Financial Metric
  - Annual saving of $ 14800

Larsen &Tubro Medical Equipment Division

Improve Yield Of Motherboard Of Medical Equipments From 82% To 92%

The Company

L&T Medical makes available world-class state-of-the-art medical equipment to the Indian medical fraternity at an affordable total cost of ownership for the entire life cycle of the product, thus giving its customers the best value for money. It is among the leaders in terms of market share with a large installation base of its products, patronized by most leading hospitals in Indian metros & cities.

The Need

Motherboard yield was low due to poor solder ability. It lead to 2.7% warranty failures along with an annual rework cost amounting to approximately $ 43K. Our aim was to push the yield up by at least 10%.

Defining the Scope

The scope of the project spanned the initiation step at vendor of issuing the stencil and inspected components to the PWA testing stage after stuffing. After issue of components the PCB goes through solder paste printing process and followed by visual inspection. Then all boards went through flow soldering for SMD and Manual Soldering at 280 degrees for PTH. On completion the boards are inspected and tested before dispatch to us.

We incorporated Pareto Analysis and found that "Solder Short" contributed to almost 75% of failures. CTQ table was drawn from VOC as "Defect free PWA" and two CTQs were identified – 1. Re-flow as per IPC standards. , 2. Solder paste thickness continuity during screen-printing.

Measuring the defects

On the basis of a data collection plan 250 samples were tested and we found 45 units defective giving our sigma level to be 2.42 initially. Gauge R&R was done.

Analysis

We formed a "Fish-Bone" Diagram to zero in on the causes of the effect. Through a Normality Test we could establish our mean paste thickness as 7.8 mil compared to the industry standard of 4.5 to 7.0 mil for a stencil of 5 mil thickness. Process capability test yielded a value of Cpk = -0.24 with 80% of process outside USL. The Ramp-To-Spike (RTS) temperature profile was also analyzed for the re-flow process.

Improvements Done

A Cause-Solution Matrix was made with focus on the risks involved and how to close them. Stencil cleaning frequency was increased. 5% reduction was brought about in aperture. Soldering profile changed to Ramp-Soak-Spike (RSS).

As a result of the improvements the thickness lying outside USL has reduced to 13% from 80% and process Cpk has improved form –0.24 to 0.35. Mean paste thickness was also brought down to 6.0 which is well within the industry standards.

Process Control

I-mR Chart implemented as Vendor self certification for monitoring of Paste thickness. Regular monitoring and vendor audit with focus on these parameters has been introduced.
Horizontal deployment in other motherboards and critical PWA processes are already in motion.
One More Stepping Stone
We have successfully improved yield from 82% to 94%. The Sigma Level has improved from 2.4 to 3.1.

Kansai Nerolac Paints Ltd

Productivity Improvement Through Tinting Stroke Reduction

Diagnostic study is done to identify the bottleneck in the paint processing. Tinting process is identified as a bottleneck area. Tinting is a process of Shade (color) matching with respect to Customer standard. The number of times of addition of colorants (stainers) to achieve the optimum shade is known as Tinting stroke. The final output of paint production is largely depends on the speed of tinting process in turn the less no of tinting strokes by which the net throughput can be enhanced further. To debottleneck the Tinting process project is initiated on the basis of Lean Six sigma with the objective of reducing average tinting strokes from 3.5 per batch to 2.0 per batch.
Pareto analysis was done to identify the products which are having tinting strokes more than 3 and data is stratified with different tinting strokes. From the stratification data it is observed that 56% of products are having 4 tinting strokes. Attribute Gauge R &R study of Tinting cell operators is done to find the repeatability and reproducibility. Box plot is used to find the performance of particular operator on particular product category.
DOE (design of experiments) is carried out to standardize the First stroke stainer addition and revised the formulations so as to reduce the stainer addition at Tinting stage by increasing the pigment quantity at earlier stages.
With the above implementations the project helped us to reduce the average tinting strokes from 3.5(Jan-09 to July-09) to 2.02(Aug-09 to Feb-10) with an increase of throughput by 20%.

Sandvik Asia Pvt. Ltd.

Improvement Of Tube Deburring Process

This report discusses the details of the improvements done in tube deburring process. The purpose of this initiative is to improve the quality of deburring and reducing the cost of consumables like wire brush, rotary burr and also increase the productivity. This was done by first identifying the present problems and then finalising the solution to resolve those problems.

Standard problem solving tool like why-why analysis was taken into consideration to find the root cause of problem. Once the root cause was identified definite time plan was prepared to achieve the result within the decided time frame.

Special care has been taken to avoid any major investment as company was undergoing financial crisis. During the data collection it was seen that cost of deburring was around 2 million rupees. To keep the operational cost at minimum level the target was set to save at least 1.07 million rupees by improving the deburring process.

Whole improvement program was completed within 6 months and the result was beyond expectation. Cost saving in wire brush and rotary burr was 0.498 and 0.244 million rupees. If the cost of manpower is deducted than total saving sums up to 1.32 million rupees which is nearly 22% more than the projected saving.

The project was boon to SandvikMehsana as it not only reduced the cost but also improved the quality of deburring which resulted in zero customer complaint in 2010 as compared to three complaints (4047 tubes).

This improvement project has give birth another project which can save an amount of 0.3 million rupees per annum.

John Deere India Pvt Ltd

Establish Rops Welding Process At Supplier End

Cost of Imported welded part is High. Presently this is imported to India. As this is critical / safety part, the Manufacturing process is critical. This is the first time we are trying to do it in India. The inventory is also a big thing, as the lead time for this part is around 90 days.

The Scoping is done for the Welding Process at Supplier end. Process Flow Diagram & Fishbone Diagram Tools are used to take each and every designed process steps into input output Sheet. Then the prioritization was done with the CE Matrix by rating the Xs by 0,1,3 &9. We have also done Gauge R&R for the Inspection Method. And Found that the Present Measurement System used is not satisfactory. This needs to be improved.

The short listed ones from the CE Matrix are taken to the FMEA. This is where we are in Analyse Phase.

The Identified high RPN are taken for the further study for validating. By the use of tools such as 1 Sample T, 2 Sample T, Box Plots, ANOVA, Scatter Plots & Regression, we were able to identify the significant factors & also it helped in discarding the In-significant. Then those Significant Factors were taken for further optimizing it in DOE.

The DOE helped in Optimizing the process and get the best setting for the process.

Those Significant & optimised Factors are added into the Process specifications in Control Charts. Also the FMEA with the new Controls was revisited. Mistake proofing techniques are used to control it better.

The results were Statistically proved & the rejection till date is Zero for the Same.

This project learnings were horizontally deployed in other projects & also the learning were used in the regular running parts to optimize the setting

John Deere India Private Limited

Reduce Rear Oil Seal Leakage Defects

Engine Rear oil seal leakage is the top issue affecting the process first pass yield. The defects were 25093 PPM. This significantly affected the flow of the manufacturing and disrupted the delivery to the customer and cost of poor quality.

The issue was complex in nature and warranted use of statistical tools and robust problem solving methodology. A DMAIC project was initiated to eliminate this issue. The goal was statistically set using the entitlement of the process using the historical data. The objective of the project was to reduce the defect PPM of rear oil seal leakage from 25093 to 300 PPM.

Key Process Input Variables were identified in the MEASURE phase. These KPIVs were rated for their impact on the output variable using a Cause & Effect Matrix. This was the first stage of funnel reduction. Measurement System Analysis was done on the output variable and the process capability was studied.

The identified KPIVs were further funnelled down using FMEA in the ANALYZE Phase. Necessary corrective actions were initiated based on the RPN rating. Key actions include packaging improvement, storage methodology and improvements on the chamfer of the housing & crankshaft were done. Further statistical studies were carried on to find the impact of the process variables like Hydraulic Pressure, Seal rotation.

In the IMPROVE phase identified corrective actions were implemented and the process variables like Pressure & Fixture were optimized to improve the capability of the process.

To CONTROL and sustain the results all the actions were incorporated in the control plans, TPM audits and process audits.

The project offered good opportunity to have a greater and in depth knowledge and learning about the rear seal assembly, technology and the sealing process in a nut shell. The project also yielded a opportunity to go and probe deeper into understanding & implementing different statistical tools like t-test , graphical testing, capability studies and measurements system analysis.

The bottom line is the project not only improved the primary matrix but also improved the rework cost substantially. Also the warranty complaint on rear seal leakage was eradicated.

John Deere India Pvt Ltd

Reduce Tractor Leakage Issues In Pfpy

During the initial goal setting programme, a QFD was conducted with production to address their assembly line issues. One of the major cause for their dis-satisfaction was rework time consumed due to leakage issues. Hence project idea generated from the same exercise.

Warranty issues due to leakages were also noted. This created an opportunity to take the issue on priority & project was rolled.

The QFD and Fishbone & input output diagram tools were used to identify the sub systems affected and the important system and part characteristics to take care during further processing. Process flow diagrams made to understand the details of each activity at supplier as well as at In-house. All the identified potential causes were prioritised using cause & effect matrix. Finally 15 parameters were filtered with PFMEA Activity.

Mainly oil lines are being processed at supplier end. Hence supplier process improvement was taken on priority. Brazing is the most important activity for the production of oil lines. Through various trials initial screening of the parameters done. Final process parameters freezed for brazing operation after conducting the DOE. Process parameters were optimised for desired output. Statistical validation of the result was done with 2 proportion test. Validated parameters were utilised for continued operation at supplier end.

Other improvement actions were also taken like defining of critical torques, tooling, inspection equipments for oil lines etc. Some of the major process improvements on assembly line were done through deep analysis & process flow study. Process flow sequence changed to address the assembly issues. With all these improvements desired primary metric & business metric were met with no consequential effects.

Larsen & Toubro Ltd

C POWER Air Circuit Breaker

This project covers introduction to our Standard Product- C- POWER Air Circuit Breaker, problem observed during final inspection & DMAIC methodology to resolve this chronic problem.

In any Auto/ Manual Product it is expected that manual feature also must work as and when required. Our C- POWER ACB also experienced similar defects of not functioning (Main Spring not charging manually) in manual mode. This was a very chronic problem & was not getting detected during assembly. ACB needs to be rejected completely for this defect at final inspection stage.

Different tools taught in DMAIC methodology were used like SIPOC, CTQ identification, FMEA, DOE (Shainin approach), Ishikawa diagram & cause solution matrix.

We tried to combine Lean methodology to achieve desired results. We implemented PEEP (Place for everything & everything in its place) at vendors end and POKAYOKE was used for the sustainability of our project.

We could able to achieve 5.08 Sigma from earlier 3.87 and able to sustain / improve. It gives us immense pleasure to submit this project for such an honorable event.

Skf Technologies India Pvt. Ltd.

Reduction In Molding Scrap Rejection Of Svbah0031-Hub Seals From 5.44 % To 2% (63% Reduction)

Black Belt: Nitin Desai; Sponsor: G. Sitaraman; Date Completed: 29.08.08 # months to close the project: 6

Problem Statement:

In Channel group- B, molding rejection of SVBAH-0031 is 5.44% from Sept-07 to Feb-08 & due to its high production volume the molding loss is more (2.647MINR)

Goals:

CTQ	Baseline (Y's)	Project Goal by end date	Actual after the completion
Molding Rejection	5.44 %	2.00 % (63% reduction)	1.88 % (65% reduction)

Customer Satisfaction Benefits:

- Reduction in SLR
- Financial Benefits:
- Hard Savings : 1.01 MINR
- Soft Savings : 1.15 MINR

Project Summary:

Measure/Analyse

- P-Map . Process Capability- Attribute
- C & E Matrix . Chi-Square Test,2 Proportion Test
- PFMEA . Multi Vary Analysis
- MSA- Attribute. Pareto Chart
- I-MR Chart

Improve

- Ultrasonic mold cleaning frequency from 14 days to 10 days
- Change in Rubber Preform mean weight from 4.65 to 4.45 gm
- Controlling Molding Temperature
- Operator Training
- Training on Mold release agent spraying
- Excess rubber flash & condition of mold cavities-Close monitoring

Control

- Detail Control plan
- Training record sheet
- RACI Matrix

Horizontal deployment for SVBAH0030 (Hub Seals)- Green Belt Project
Green Belt - M K Bhaskara
Sponsor - S Ponnivalavan

Database learning's & contacts :

- Use of proper Six Sigma tools
- Team work

Visual Standards