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# AAROHAN 2019

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15<sup>th</sup> Edition

of

LEAN AND SIX SIGMA EXCELLENCE AWARDS

## **THE EVENT**

The ‘Lean and Six Sigma Excellence Awards’ is an effort from SCMRD to recognize and honor the Corporates 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 panelists, followed by the official invitations to the Corporates for participation. The projects received are then evaluated by the panelists 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 Bengaluru and Pune. The best projects under each category from the regional rounds are then shortlisted and invited to make the presentations at the final round at SCMRD, Pune, where they go through a final round of scrutiny. At the concluding day of the event, the winners are felicitated.

In our fifteenth 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.

This year the 15<sup>th</sup> edition of Lean and Six Sigma Excellence Awards would be based on the following theme:

**Applying Operational Intelligence to enhance customer value in the era of  
Globalisation**

## **From the Desk of the Chancellor, Symbiosis International (Deemed University)**

Dear All,

It gives me immense pleasure in welcoming you to the ‘Lean and Six Sigma Excellence Awards, 2019’.

Given today’s economic scenario, when organizations across all sectors are making an effort to minimize the effects of the slow down on their day to day operations, it is Six Sigma concepts that hold special importance for one and all. Consistency in quality while minimizing waste is what will help us all in this trying period.

Six Sigma is not only about correcting errors but also about continuously innovating 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 endeavors.

Best Wishes,  
Dr.S.B.Mujumdar  
Chancellor,  
Symbiosis International (Deemed University)

## **From the Desk of the Pro Chancellor, Symbiosis International (Deemed University)**

Dear All,

I am pleased to welcome you all to the ‘Lean and Six Sigma Excellence Awards, 2019’.

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

I am happy to see the respect, this institute, as well as this current event has drawn from the Corporate. My best wishes for all your future endeavors.

Best Wishes,  
Dr. Vidya Yeravdekar  
Pro Chancellor,  
Symbiosis International (Deemed University) & Principal Director,  
Symbiosis

## **From the Desk of the Vice Chancellor, Symbiosis International (Deemed University)**

Dear All,

I am delighted to welcome you to ‘Lean and Six Sigma Excellence Awards 2019’ 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 who is 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 better quality tomorrow.

All the very best to all of you!

Best Wishes,  
Dr. Rajani R Gupte  
Vice Chancellor,  
Symbiosis International (Deemed University)

## **From the Desk of the Director, Symbiosis Centre for Management and Human Resource Development**

Welcome to SCMRD ‘Lean and Six Sigma Excellence Awards, 2019’.

In today’s crisis struck world, very few think in terms of growth. One needs to consistently improve quality while aggressively reducing cost. Lean and six sigma methodologies empower organizations to achieve these goals even in adverse economic situations. The sooner we realize this, the better.

We strongly believe that Six Sigma is not just a methodology, but a way of life. The organizations 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 SCMRD, constantly strive for perfection in every endeavor 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,  
Dr. Pratima Sheorey  
Director,  
SCMRD



## Enhancing Group Ops Customer Experience

### **Abstract:**

Group Business is one of the key contributors to ABSIL top line. Providing a premium Customer Experience to our group customer has always been one of the key management agenda. Meeting performance SLAs and delivering best in class service is the key to improve and enhance the customer experience. The project is aimed to review end to end group processes and revamp the same. Through this project, we have also explored the possibility of automation of the process along with improvement in TAT and CSAT. The Structured Six sigma approach helped us to reduce the Turn-around time and increase the efficiency of the processes. After the completion of the project we were able to maximize the utilization of resources even as scalability increased.

### **Problem & Scope:**

Analysis of policy data for the period reveals that the 90<sup>th</sup> percentile TAT is around 62 days and New Business and Renewal at 9days and 7.5 days, respectively. The preliminary study also reveals that the base system used for both the processes is not scalable & the processes have lot of non-value-added activities. The delay negatively impacts the brand image of the organization & presents many business risks. Moreover, the inefficiencies in the system & processes lead to lower productivity, thereby impacting the organizational bottom line  
In Scope: Group Ops Operations & Service.

### **Objective/Need/Purpose:**

ABSIL has seen a robust YoY growth of 33% in the business volumes thereby leading to increase in members count. Moreover, current process involves attending client's requests within T+4 days and due to manual interventions and increase in business, this was taking longer TAT resulting into poor customer experience and business loss.

Purpose of this project is to build scalable and sustainable processes for enhanced customer experience and for business growth.

### **Methodology (in detail):**

The project kick started with formation of A cross-functional team comprising of Operations team, Service Team and IT, along with the Quality team. Team captured the voice of the customer / broker and the results helped us to finalize the CTQs which were: Transaction Processing TAT, Quick Service and Accuracy of Data entry. A detailed project charter was prepared with a clearly defined project scope, problem statement, goal statement and milestones. Team then moved to a measure phase wherein they finalized the data collection

plan and mapped the high-level process using SIPOC. As a part of Analyze phase team carried out Value Stream Mapping to identify VA/NVA activity. The FMEA was created to identify the potential risk in the current process. Team finally arrived at the following Key Root causes using Why-Why Analysis.

The Root causes identified are listed below:

- Monotonous excel based task consuming considerable time & prone to error
- End to end workflow unavailable
- Highly personnel dependent process with manual intervention
- System (Talisma/ Compass) was not user friendly
- Lack of experienced processor & Team handling multiple activities
- No process in stock to track complaints
- High system down time & Parallel batch runs were not possible
- Absence of MIS and reporting system.

## **Data Analysis/ Results:**

In order to work on the above root causes, the team did a detailed brainstorming session to generate ideas. Some key ideas that came out during the discussion were RPA Implementation, CRM workflow and Time & Motion study.

These were used to generate resource estimation effort and vendor approach for RPA and workflow implementation. This was followed by a detailed business plan which was then presented to all stakeholders and Senior Management for deliberation and subsequent approval was sought on this. Once approved by the stakeholders, the team prepared the implementation plan with defined roles and responsibility, as well as target date which were tracked and reviewed by stakeholder at defined timeline. The pilot was being carried out before full scale launch and addressed all potential issues using risk mitigation tool. Team validated the improvement results using Hypothesis testing followed by sustenance plan.

## **Impact/Improvements:**

### Tangible Benefits

- At 90th percentile, Policy Servicing TAT improved from 62 days to 4 days and NB TAT improved from 9.5 days to 3 days and Renewal from 7 days to 5 days.
- Monthly regulatory reports creation & submission TAT reduced by 2-3 days.
- Human Efforts reduced ~70 hrs. To ~15 hrs.

### Intangible Benefits

- Improved Customer satisfaction through faster servicing
- Improved Process Efficiency & Accuracy
- Higher volume of task managed with allocated resource

## **Conclusion:**

Under Operations, Group Team was the first to introduce RPA solutions whose implementation resulted in a WOW moment to the customer.

## **Challenges faced:**

- Internal Stakeholder Management
- Managing Timelines
- Vendor Management
- IT support
- Team management

The above challenges were successfully handled using stakeholder impact analysis, devising communication strategy, toll gate and Senior Management review.



## Creating a Robust Process for Service Level Assurance

### **Abstract:**

Service NXT Operation center is Wipro's next-generation Integrated Services Platform for Remote Infrastructure Management where we cater managed services for 90+ client, 13+ technical domains, 20+ services across 24\*7 for India & Middle East business. We have experienced scenarios of having certain stringent SLA targets in accounts supported in shared model. Therefore, the team has felt the need of developing a robust process on SLA management and standardizing the same across shared services.

### **Problem & Scope:**

Overseeing the dynamics of business needs from various clients and considering the uniqueness of support in a remote and shared model, the team planned to develop a robust process for handling the scope creep and deliver agreed service levels, which will in turn ensure high availability of Customer Infrastructure and improved CSAT.

For one of the Insurance major client, we had a clause that SLA breach by 5% or more for continuous two months may lead to termination of contract. Also, in the revised contract, critical service level & objectives made it more stringent. The team had foreseen the challenge in delivering revised service levels and holistically worked on following DFSS methodology to manage the change in customer expectation with a scope creep.

Data Center Agreed Resolution Service Levels taken under scope to work on.

### **Objective/Need/Purpose:**

Overall Objective of this project was to improve SLA commitment adhering by laid down process and best in class productivity. Doing which we intend to assure high availability of Customer Infrastructure and improved CSAT

1. Contractual Resolution SLA commitment for IM & RF for P1, P2, P3 & P4.
2. To ensure adherence to existing process, Process Adherence Check scores (PAC)
3. Engineer Productivity

**Methodology (in detail):**

Phase	Method	Actions																												
Measure	Data Collection, Current State and Process Baseling	Anderson -Darling “Normality Test”, the P-value is > 0.05 Run chart, As all the P - Values are >0.05																												
	Process Capability Studies	<ul style="list-style-type: none"> <li>▪ P1&amp;P2 - 4.36 Sigma &amp;Cpk = -1.45, P3 &amp; P4 - Sigma Level: -4.18 &amp;Cpk = - 1.39</li> <li>▪ PAC Score: Sigma Level: - 4.35 &amp;Cpk = - 1.45</li> <li>▪ Productivity Baseline : 16 Tickets/Engineer/Day</li> </ul>																												
Analyze	<u>Cause Identification:</u> - Brainstorming & Fishbone <u>Cause Classification:</u> - Qualitative - Multi-voting Quantitative - <ul style="list-style-type: none"> <li>▪ Pareto</li> <li>▪ Trend Analysis</li> <li>▪ ANOVA, Chi-Square</li> <li>▪ Regression</li> </ul>	<ul style="list-style-type: none"> <li>▪ Overall 15 causes were identified from brainstorming</li> <li>▪ Surface level cause prioritization performed by Pareto</li> <li>▪ Trend analysis &amp; Anova helped in conforming the significant cause</li> <li>▪ Chi-square -Major Contribution from Server, Security and DB Oracle</li> <li>▪ Regression Analysis – Predictive equation built for 3 significant cause</li> </ul>																												
Design	<ul style="list-style-type: none"> <li>▪ Robust Engineering</li> <li>▪ Automation</li> <li>▪ Workload Levelling</li> <li>▪ Visual Controls</li> <li>▪ Standardization</li> </ul>	<ul style="list-style-type: none"> <li>▪ P diagram</li> <li>▪ Factorial Plot</li> <li>▪ Taguchi Method adopted</li> <li>▪ Signal to noise Ratio analysis</li> </ul>																												
Verify	<u>Validation of X's and Y:</u> - Capability study & IMR chart	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">SLA</th> <th colspan="2">Cpk</th> <th colspan="2">Sigma Level</th> </tr> <tr> <th>Before</th> <th>After</th> <th>Before</th> <th>After</th> </tr> </thead> <tbody> <tr> <td>P1 &amp; P2 SLA Comp %</td> <td>-1.452</td> <td>0.615</td> <td>-4.356</td> <td>1.844</td> </tr> <tr> <td>P3 &amp; P4 SLA Comp %</td> <td>- 1.394</td> <td>1.741</td> <td>-4.181</td> <td>5.223</td> </tr> <tr> <td>PAC Score</td> <td>-1.064</td> <td>0.293</td> <td>-3.191</td> <td>0.880</td> </tr> </tbody> </table>					SLA	Cpk		Sigma Level		Before	After	Before	After	P1 & P2 SLA Comp %	-1.452	0.615	-4.356	1.844	P3 & P4 SLA Comp %	- 1.394	1.741	-4.181	5.223	PAC Score	-1.064	0.293	-3.191	0.880
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**Data Analysis/ Results:**

- Cycle Time of AD ID creation is reduced by 88%
- Process re-engineering –ID management has helped intern in improving process efficiency
- Process re-engineering – Event Management Process
- Process re-engineering – Incident Resolution Process
- Visual control established at SLA tracking level

## **Impact/Improvements:**

Overall Improvement in P1-P4 SLA:	11% Improvement
Productivity (efficiency):	25.4% Improvement
Process Adherence Score (Quality):	From 96.3% to 99.3%
Incident per CI for account:	From 2.43 to 0.84
CSAT Score for Client:	8% Improvement
Monitory Benefits (Cost Avoidance):	<u>INR 0.83 Million</u>

## **Conclusion:**

With the help of DFSS (DMADV) framework, we were able to build a robust process for SLA adherence with improved Engineer productivity. Team was able to improve the Overall SLA performance by 11%.

This project has helped in improving the service quality and has helped in improving the CSAT.

## **Challenges faced:**

- Implementing the solutions in the shared DC Support.
- Coordination delay between multiple teams involved.



## ETL Batch Optimization

### **Abstract:**

Large global banks are shifting their focus on IT strategy and business transformation, while delegating “run the bank” to trusted IT partners who are able to provide excellence in service delivery and improve productivity through solution that would lower costs and reduce risks. It is key for the IT partners to proactively understand the challenges, take active measures and optimize operations in order to be able to cater to large data volumes that arise due to the growing business and inefficiencies in the existing architecture, processes and tools.

### **Problem & Scope:**

- Prior to the contract with CGI, a large international bank has been running its IT operations through multiple IT vendors who were working in Time & Material mode where additional work translated to additional business for the vendor.
- CGI offered Managed Services approach and was awarded the contract; the following issues were identified right during the transition period:
  - There were challenges in generating Liquidity Coverage Ratio reports on time due to extended and long running sequential batches for the Global Risk Management applications.
  - There were delays in MIS (Management Information Systems) reporting leading SLA breaches from the bank’s IT, thereby resulting in escalations from Business teams.
  - Existing application architecture was not adequate to run the batches in parallel.
  - Reject analysis was taking more than 4 hours during batch failures due to non-optimized application architecture.
  - Manual code reviews were leading to inconsistent outputs and also adding additional effort and cost.
  - There were no tools or processes in place to trace the actual execution status of applications along with the relevant details required for auditing.
  - Integration and Regression testing consumed up to 8hours due to manual batch execution.

There was a tremendous need to optimize application architecture as well as automate several processes, reduce human intervention and gain back the trust on the IT team from the Business teams.

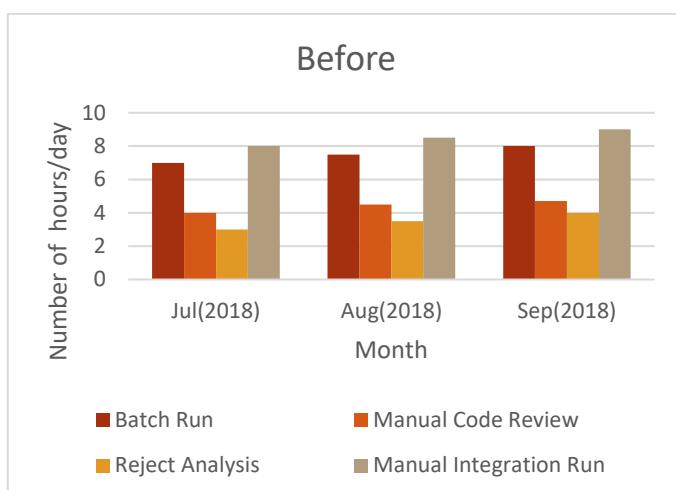
## Objective/Need/Purpose:

- Faster time to release.
- Improved productivity.
- Enhanced operational efficiency.
- Incident backlog reduction leading to cost savings.
- Generate value by gaining trust from Business team and enhance customer satisfaction

## Methodology:

- Extensive brain storming sessions were conducted between CGI and the Bank which comprised of technical architects, analysts and developers to identify an optimized way to strengthen the architecture and making it more robust and user friendly so that applications can run independently.
- Several approaches were considered; however, based on the complexity and interdependencies between applications, databases, etc., a step by step exhaustive DMAIC approach using Six Sigma principles was adopted along with a clear roadmap and timelines.

## Data Analysis:



Data captured from client incident management tool for the quarter July 2018 to September 2018 and FMEA technique was used to analyze the data

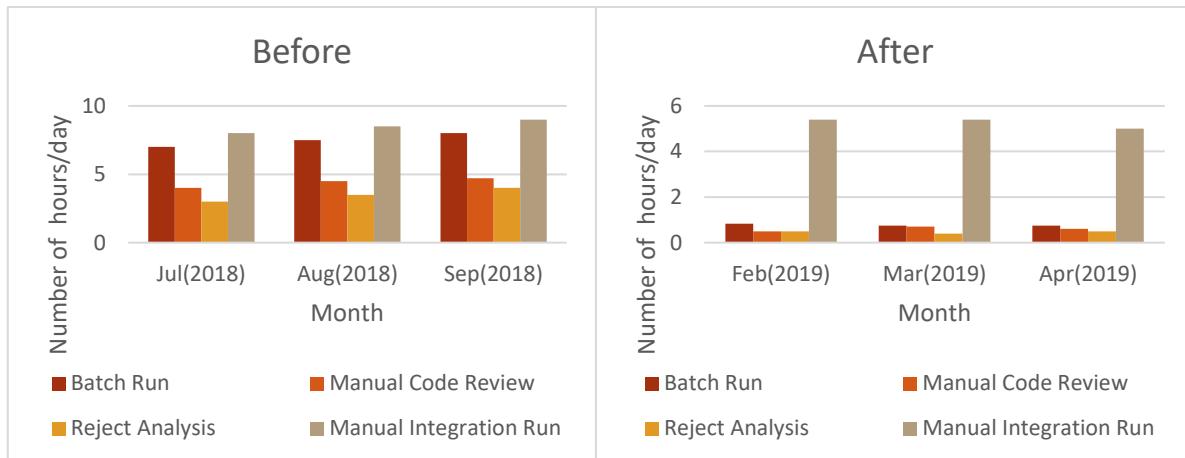
## Improvements:

- Re-designed and implemented the sequential architecture to parallel architecture in ensuring an optimized approach of running applications independently, enhancing faster delivery and increased operational efficiency.
- Implemented an automated batch execution for integration testing using DataStage as the ETL (Extract, Transform, Load) tool and DB2 as database.
- Designed and implemented VBA (Visual Basic) based automated tool to perform the standard and parametrized code review checks with flexibility for changing parameters thus ensuring reusability with other similar requirements.

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- Implemented an automated reject reason capturing feature during batch failures in database and ETL DataStage thus enhancing faster delivery and enhancing user experience.
- Implemented an audit trail process to perform live tracking of batches and making it available on the portal.

## Conclusion:



## Benefits Achieved:

- Productivity gain by as much as 60%
- Accuracy of data, Human Error Prevention, Reduction in manual effort, Capability to handle large volumes of requests, ease of use, etc.
- Improved Code quality tremendously resulting in reduction in number of incidents.
- Satisfaction of Business stakeholders on IT.
- **Re-usable code** that can be used in other projects.

CGI considered trusted partner for additional projects

## Challenges faced:

- Quickly learning and adopting the technologies used for automation.
- Creating a parallel testing environment similar to production.



# Robotic Process Automation in Aditya Birla Housing Finance Operation

## **Abstract:**

ABHFL is growing bigger with every year, both in terms of Customer base and Loan size handling. The current portfolio as on 31<sup>st</sup> Mar 2019 is Rs. 11,405Cr with a customer base of 42K. As this Industry is competitive and customer centric it is of utmost importance for us to create a superior customer experience at every stage of the customer lifecycle by providing the efficient services in terms of Lower TAT translating into faster Transaction processing and extra mile approach towards enriching the Customer service experience. Robotic process automation project thus helped the ABHFL to create competitive advantages in terms of cost-efficient processes as well as customer service experience in post disbursement services.

## **Problem & Scope:**

Higher TAT in service delivery due to low level of automation in processes. Average TAT for following post disbursement processes for the period Jan18-Jun18 were as below

Processes	Avg processing TAT by Operation team	Processes	Avg processing TAT by Operation team
Welcome Letter	35 min/case	Part payment	54 min/case
CERSAI charge creation	27 min/case	Foreclosure Request	78 min/case
NACH Processing	55 min/case	Dunning Letter	120 min/month
ROI	36 min/case	Refund processing	12 min/case
		CERSAI charge release	35 min/case

Average automation index for the period Jan18-Jun18 was only 24%. Moreover, considering significant growth in business (25% YoY), current model of increasing manpower is not sustainable and scalable.

**Scope of the project:** Post disbursement processes.

## **Objective/Need/Purpose:**

In housing finance business where margins are thin, delivering services in quicker SLA is the only source to create competitive advantage in long run. At ABHFL, with venture of Affordable housing, the portfolio grew multifold and thus the transactions and servicing count also grew by 10X which has impacted negatively on higher manpower requirement, lower productivity. It was the business need to create scalable operations while maintaining cost efficiency thus creating the right blend of man and machine involvement in processes.

The Objective of this project was to fully eliminate the activities which are repetitive in nature and thereby increase the productivity of team by at least 50%. This project will aim to reduce the process turnaround time by at least 50% and thus create superior and consistent customer experience at every touch point of post disbursement customer journey.

## **Methodology (in detail):**

- Team adopted structured Lean methodology to implement this project. Cross functional team were formed including subject matter expertise on IT, operation, customer service and Quality. A well detailed project charter was developed including timelines and toll gate review. Team collected baseline data on overall number of transactions as well as Turnaround time for completion of process.
- Team started “analyze phase” with high level process mapping using SIPOC tool followed by value stream mapping to identify VA, NVA Activity. Meantime quality team designed and developed Automation index matrix to calculate automation level of each process. Team sat together and prepared detailed L3 level process mapping and classified all L3 processes as manual, semi-automated and automated basis weighted score. Thus, they arrived on final automation index of process at L1 level as well as at L3 level.
- Team finally identified RPA opportunities basis criticality rating as well as % of routine transaction with no or less human decision using prioritization matrix. Post finalization of RPA opportunities, team completed vendor and infrastructure finalization wherein team used mind-map technique to list down all possible requirement from process side, infrastructure requirement, MIS, Dashboard, Reports, SOPs etc. This is followed by actual deployment and testing of RPA bots.

## **Data Analysis/ Results:**

Team deployed RPA bots in UAT environment and carried out scenario-based testing. Basis identified issue, team prepared detailed design FMEA wherein all potential failure modes were identified, and action plan prepared to eliminate causes. Operation team worked in synergy with IT team to fix all errors and bugs. Team observed improvement in accuracy of the bot from 48% to 88%. This is followed by stakeholder sign off on roll out plan, preparation of training manuals & SOP and imparting training to all Operation team who manage these processes. Post full scale roll out, team observed improvement in process TAT which was validated using hypothesis testing. Overall automation index found increased from 24% to 78%. Further to sustain the results as well as increase accuracy of bots further to 100 %, failure alert as well as feedback mechanism is built into the system wherein continuous feedback is being used as input to bots and development of logics accordingly thereby improved accuracy of bot to 95%.

## **Impact/Improvements:**

- Deployment of overall 30 RPA in key post disbursement processes such as part payment, foreclosure, ROI Change, Cersai charge creation, Cersai satisfaction, Welcome Letter, EMI banking, NACH Mandate management, Loan rescheduling, dunning letter and refund processing.
- Increase in overall automation index from 24% to 78%.
- ABHFL Operation team is able to handle 25% increase in volume & moreover with better TAT (67% improvement in TAT without additional increase in manpower thus made process scalable/sustainable with this Robotic Process Automation.
- Savings of 1.6 Crore/Annum.

## **Intangible Benefits:**

- Scalable & Sustainable model
- Increase in Customer NPS on disbursement and post disbursement
- Higher accuracy %.

## **Conclusion:**

Project Echo was started at the very right time when we ventured into the affordable housing space and our business transactions started to increase. This project involves smart Robotics technology which caters to automate the repetitive and logic-based processes. Major target of Robotics Process Automation project was to create the blend of man and virtual machines at work and increase the efficiency and productivity of the work force. RPA has not only increased the productivity level in team operations but has also increased the scalability in terms of handling increasing transactions thus creating a 24x7 BU.

## **Challenges faced:**

- Time management – Deployment of 30+ bots in tight schedule of 90 days was bit challenging but team did successfully by following PMP (PMP training was imparted to team before kick starting the project. Team also followed Toll gate review mechanism.
- Vendor Selection – As many vendors are available in market on RPA, it was challenging to find suitable vendor. Team adopted vendor evaluation model and carried out Cost benefit analysis to select best vendor.
- Stakeholder/Vendor management – Multiple stakeholders including Sales, customer service, Ops & Quality were managed using Stakeholder Resistance plan.



# Productivity Improvement in Business Operations

## **Abstract:**

BUSINESS OPERATIONS Department (BO) had been improving the processes since long, however as we grow, the complexity in the organization, we are faced with new challenges. Some of the challenges that were being faced by BO team included surge in trade volume, account opening @10% month on month basis, low accuracy leading to customer dissatisfaction, low team morale as they need to often hear the stakeholders who are at high pitch considering process failures, high infant attrition, late seating and workings on Saturday's, managing team escalations with very limited bandwidth for solving end client queries.

## **Problem & Scope:**

Employee Utilization is at 60% and around 1750 activities were identified where manual handshakes were required and lot of processes required input from other processes (Triggers) which significantly lead to increase in wait time for the completion of the processes. This resulted in Employee's late seating as well as employees were required to come on Saturday's though it's officially a holiday. This raised to lot of Queries from customers as they were not able to find real time information and in turn led to stoppage of trading activities in the following activities. Queries received on call are time sensitive and hence this directly impacted customer / business partners, leading to escalations, resolution of which requires management bandwidth to be shifted from routine jobs to resolving issues.

## **Objective/Need/Purpose:**

- Reduction in Manual Activities performed by the Process users which is leading to manual errors delay in process, monotony which impacts the end Customer, Brand Image, Profitability.
- Follow-up Communication to end Clients
- Improvement in Work Life Balance
- Reduction in Human Dependencies.

## **Methodology (in detail):**

Project followed lean six sigma methodology. Lean methods: ESCAP (Eliminate, Simplify, Combine, Automate, Parallel), Process Mapping, Value Stream Analysis etc.

## **Data Analysis/ Results:**

Data analysis was done at each step to co-relate factors and confirm improvement.

### Project Results:

% Reduction in TAT – by 50% (VA- Value Added)

Query Reduction – by 20%

FTE (Full Time Employee) saving – Around 34 FTE's

70000 System Driven Communication to end Clients

Cost Saving – Around 1.5+ crore and recurring

% Increase in Efficiency – by 55% (NVA – Non Value Added time elimination)

Productivity improved by +50%.

## **Impact/Improvements:**

From the successful implementation of RPA, following processes got automated: -

- Overall time saving of 255 hours' daily
- System Driven Communication (Time Saving daily of 145 hours)
- All Reconciliation processes (Time Saving daily of 30 hours)
- All upload/ download activities/ processes (Time Saving daily of 15 hours on Daily basis); MIS/ Reports;
- Data Punching, BPMS and certain Approvals
- Query Reduction by 20%

## **Conclusion:**

In our Journey with Continuous Improvement, we encountered many Challenges and Opportunities. Definitely there are many areas where there are tools or techniques which can be used for improvements but in the financial sector, there are many changes which Impact the way we work, resulting in frequent review of our Continuous improvement initiatives.

## **Challenges faced:**

There are 2 types of Challenges – Technical and Regulatory (External)

Technical Challenges

- Captcha/ Regular changes in Source Websites

Regulatory (External)

- Change of rules
- Implementation of new rules.



## Reduce the Onboarding Turnaround Time

### **Abstract:**

Capgemini is supporting one of the top premium retail companies in UK. It has its presence with more than 40 Department stores. Capgemini Technology Services is being engaged with their Partnership service IT and supporting HRMS, CRM, Finance and BI Applications with 24/7 support. Capgemini provides Application Maintenance & Support.

### **Problem & Scope:**

For the baseline period from November 2018 to January 2019, The client had hired around 15 resources to the team. With new resource on boarding's challenges have seen that getting the resource aligned with customer setup and project requirements along with ensuring required access and account for the resource is available has a huge Turnaround time. This in turn affects customer business.

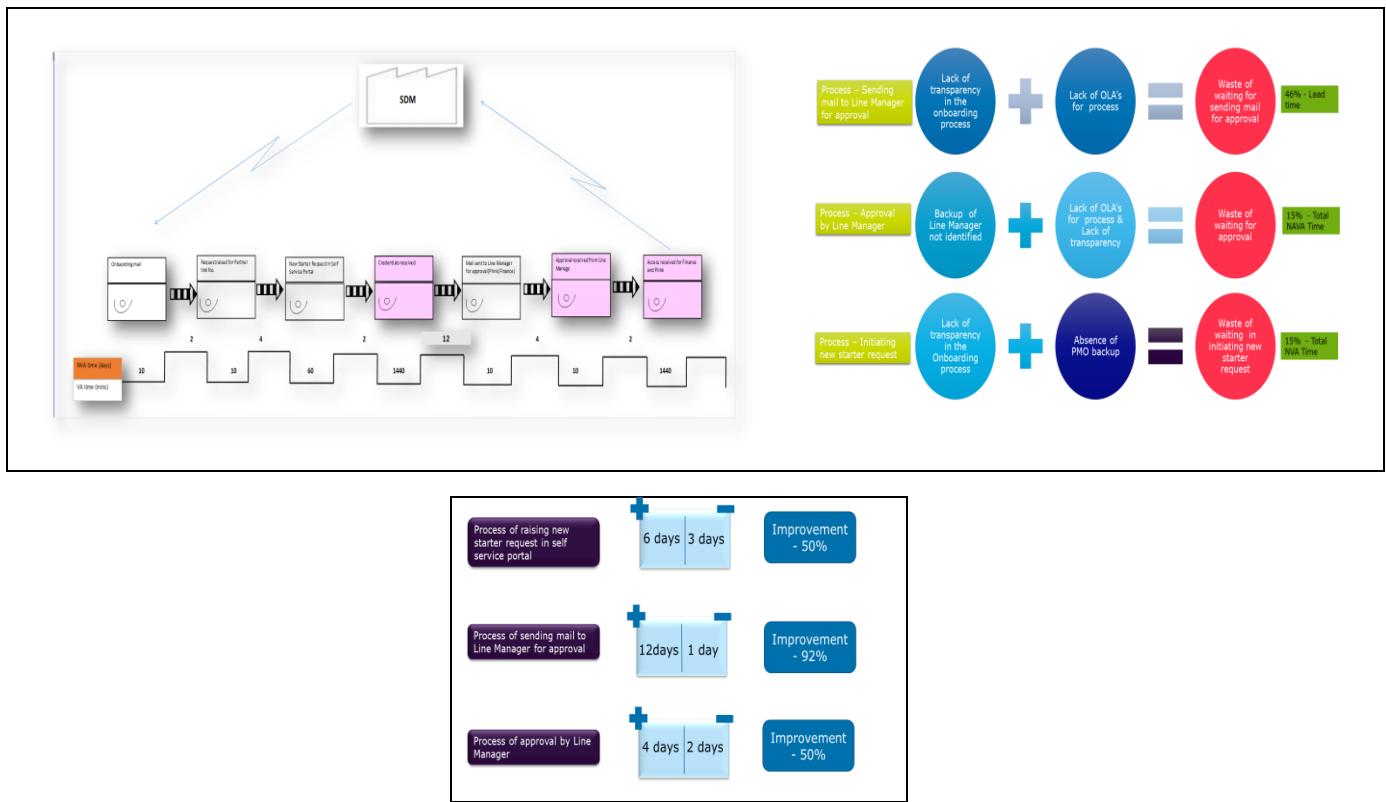
### **Objective/Need/Purpose:**

The Objective is to reduce the onboarding time from 26 days to 10 days by Mar'19. Achieving this objective is necessary as not doing onboarding on time can impact the Service level agreement with the client and hurt the top line of Capgemini.

### **Methodology (in detail):**

- Baseline the process using Value stream mapping
- Categorize the VA and the NVA wastes
- Root cause analysis
- Solution design using Scamper
- Implement the solutions
- Measure the improvement with the help of Future State Map

## Data Analysis/ Results:



## Impact/Improvements:

- The Onboarding Turn Around Time was reduced by 61%
- Cost savings/ month ~ EUR 1500.

## Conclusion:

The Lean tools of Value Stream Mapping, Kanban and poka yoke have been effective in reducing the Turn Around Time.



## Business Optimization using Advanced Data Analytics (AI/ML)

### **Abstract:**

Our client is one of the leading NBFCs in the country, lending money to two-wheeler buyers and is a part of INR 50 billion group. With the field team consisting of 8000+ employees and 110offices, the client serves more than 1 million live customers (i.e., cases).

### **Problem & Scope:**

The client approached SKP to address two critical challenges:

- High bounce rate of representation process (driven by customers' behavior pattern)
- High cost of collection (on account of employees' behavior and inefficient internal processes)

### **Objective/Need/Purpose:**

Our objective was to reduce bounce rate and optimize field productivity with the help of process optimization and advanced data analytics (AI/ML).

### **Methodology (in detail):**

#### Our Approach

- **Understand Client's Business:** "As Is Situation"
- **Discovery of real problem:** Generally, the root causes are different than the apparent ones
- **Ideation:** Multiple ideas to influence the driving factors of the root causes
- **Shortlisting Improvement Projects:** Cost benefit analysis, Project duration
- **Pilot for Proof of Concept:** Establish the solution on a limited sample before taking it on a full scale
- **Stakeholder Management:** Buy in and cooperation of multiple stakeholders is critical for results.
- **Plan for Implementation:** Detailed planning is a must!

## **Data Analysis/ Results:**

### Our Observation

On detailed analysis of representation process, we observed that

- The process was spread over 18 days, thereby impacting productivity of the field team
- It involved a lot of manual data consolidation with involvement of multiple teams
- The process lacked scientific filtration of cases for re-presentation, thereby leading to low realization (10%) and high cost of re-presentation

### Our Solution

- On mapping the re-presentation processes, we identified non-value adding activities involved in the process and modified the process to eliminate these activities.
- Further, to filter out cases likely to bounce, we built a predictive model using Ensemble Model approach. While building this model, we also had to ensure that there should not be drop in the existing collection amount. The model considered various variable parameters such as customer's profile, historical performance, payment features etc. to study the patterns.

## **Impact/Improvements:**

- Our model driven by AI/ML had resulted into ~33% of realization rate compared to the company's average rate of ~10 %. Thereby saving cost of representation by around 70%
- Significant improvement in the field productivity, as field team gets additional 10 days to collect cases that are dropped from representation

## **Conclusion:**

Scientifically filtered representation cases can not only save the significant representation cost but also free up 80,000 man-days (per month).

## **Challenges faced:**

- Getting buy-in from multiple teams
- Cross functional co-ordination



## Abrasive cost reduction for TRB by 10%

### **Abstract:**

TRB factory, Abrasive cost was one of the major contributors to shop supplies cost, which was 2.2% with respect to deliver value for the project baseline period. It was 25.3% of the total shop supplies cost. High variable cost of shop supplies leads to high standard cost of the product. Hence, the project has been taken to reduce the abrasive cost in TRB factory.

### **Problem & Scope:**

The problems identified were the following:

- High abrasive cost in TRB factory (56.5 MINR) which is 2.2% of the shop supplies cost.
- Project boundaries include abrasive supplies, purchasing and manufacturing.

### **Objective/Need/Purpose:**

Variable cost with respect to deliver value was high, i.e., 8.82%. High variable cost of shop supplies affects the business KPI like sales volume and profitability. It is a major focus area to improve “value add”, enhance the customer value.

Contribution of abrasive cost in shop supplies cost cake is 25.3%. Reduction of the abrasive cost by 10% is the prime objective of the project.

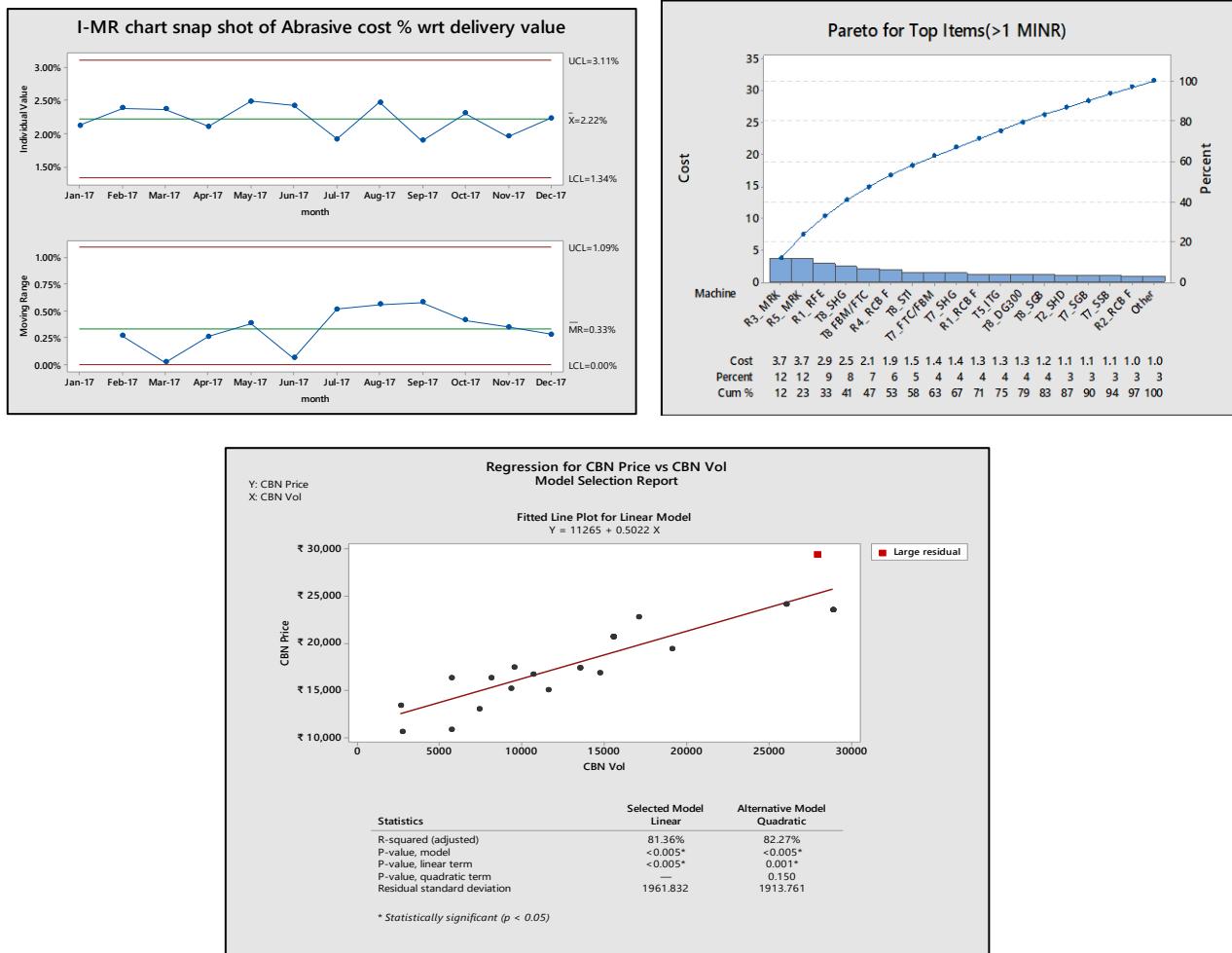
### **Methodology (in detail):**

**Define:** Project charter was approved by the management. SIPOC diagram was done to understand the relationship from supplier, process to customer. CFT was formed and was driven by BB supported by sponsor. Review structure was finalized with all stakeholders.

**Measure:** Project base line study was done. High focus areas for cost were arrived with Item level Pareto. Process mapping was done with identification of KPIV's and KPOV's listed 20 potential causes which were further refined using Cause and effect diagram. FMEA was done with expert team which refined the potential factors from 15 to 6.

**Analyze:** Six sigma methodology was used for funneling the X 's and the effect of the various input variables on output variables was studied using regression analysis, multi vary analysis.

# AAROHAN 2019



## Impact/Improvements:

- DOE done to optimize parameters for grinding abrasive.
- Abrasive pricing strategy evolved as a function of abrasive volume.
- Enhanced abrasive usage with tooling design optimization.

## Conclusion:

- Cost reduction by 6.6 MINR which is 11.6 %
- Sustenance system established with standardization, control plan

## Challenges faced:

- High lead time for abrasive development.



## NIRMANA- The Scan Model

### **Abstract:**

ABSLAMC is the investing arm of ABC (Aditya Birla Capital) and is the 4th largest mutual fund having an AAUM of 2650 billion in India with an impressive mix of reach, a wide range of product offerings across equity, debt, balanced as well as structured asset classes and geographical presence in over 300 locations across India.

AMC currently manages 7.1 M n investor folios with multiple customer touch points for transaction and servicing such as website, contact center, AMC branches, and CAMS centers. Branches being the largest touch points for customers, AMC has set up dedicated CRE (Customer Representative Executive) to provide excellent customer experience. CRE plays a vital role in end to end customer servicing which includes transaction processing, query, request and complaints handling. However, currently 50% of their time is being pushed towards data entry leading to adverse impact on the quality interactions with the customers, (which is the need of the hour).

The Structured Six sigma approach helped us to reduce the Turn-around time and increase the efficiency of the CRE. After the completion of the project we were able to release the 50% of the CRE time for the quality interactions with the customers.

### **Problem & Scope:**

**Problem:** The CRE productivity at PAN India level for the period January 19 to March 19 was 75 interactions per day. Average transaction processing time during the same period was 8 minutes per transaction which was on a higher side and more importantly affecting branch CRE bandwidth for customer servicing which was ultimately impacting the customer satisfaction.

**Scope:** Branch touch point.

## **Objective/Need/Purpose:**

ABSLAMC has seen a robust YoY growth of 25% -30% in the business volumes which leads to increase in CRE count. Moreover, current process involves sending the customer transaction request to CAMS on the same day before 5.0 PM and we used to get remediation or Correction confirmation by next day, resulting into loss to customer in terms of returns (NAV allocations) and loss to business in terms of rejections. The purpose of this project is to build scalable and sustainable branch servicing model for customer delight and better efficiency of the business.

## **Methodology (in detail):**

The project kick started with formation of A cross-functional team comprising of

- Branch Ops
- Operational Excellence
- Customer Service and IT
- Quality Team

Team captured the voice of the customer through branch CRE and NPS (Mission happiness survey). These results helped us to finalize the CTQs which were:

- Transaction Processing TAT
- Remediation resolution
- Accuracy of Data entry.

A detailed project charter was prepared with a clearly defined project scope, problem statement, goal statement and milestones. Team then moved to a measure phase wherein team finalized the data collection plan and mapped the high-level process using SIPOC. As a part of Analyze phase team carried out detailed Value Stream Mapping to identify VA/NVA activity. The Fishbone Diagram was created to group the NVA activities under '*Process*', '*People*', '*pain areas*' and '*Peculiarities*'. Team finally arrived at the following Root causes using Why-Why Analysis.

The Root causes identified are as below –

- Incorrect execution of request
- Delay in status updating
- Delay in data entry in Vision
- Piecemeal resolution
- Quality check not being done by CRE

Team concluded that a design change is required to build scalable and sustainable model so decided to adopt the DMADV approach

## **Data Analysis/ Results:**

In order to work on the above root causes, the team did a detailed brainstorming session to generate ideas. Some key ideas that came out during the discussion were eScan model for branches, digital adoption and Feet on Street model.

Team then used Pugh matrix to select best ideas for implementation, which was eScan model with Digital Workflow System. This was followed by a detailed business plan which was then presented to all stakeholders for any resistance and to seek approval. Once approved by the stakeholders, the team prepared the implementation plan with defined roles and responsibility and target date which were tracked and reviewed by stakeholder at defined timeline. The pilot was being carried out before full scale launch and addressed all potential issues using risk mitigation tool (FMEA). Team validated the improvement results using Hypothesis testing followed by sustenance plan.

## **Impact/Improvements:**

### Tangible Benefits

- Reduction in Transaction time -> 8 minutes per Txn to 5 minutes per Txn
- Increase in CRE Productivity: 50%
- Reduction in number of FTE effort - 55 FTEs
- Potential Savings due to reduction in FTE Effort 16.5 Mn/ annum

### Intangible Benefits

- Over the counter remediation
- Customer Delightful Experience towards branch Servicing
- Better Net Promotor Score (NPS)
- Higher volume transaction with same manpower

## **Conclusion:**

With the successful implementation of the project, the company became the industry pioneers to start eScan time stamping with digital workflow which enabled CAMS to handle live transactions rather than during a bulk/batch processing in the past. Moreover, we have created a WOW moment to the customer by providing Instant Gratification

## **Challenges faced:**

- Internal Stakeholder Management:
- Managing Timelines
- Vendor Management
- IT support
- Team management

The above challenges were successfully handled using stakeholder impact analysis, devising communication strategy, toll gate reviews, RACI model for mobilizing commitment & teamwork and Project management using CPM (Critical Path Metric).



## Robotics in AP – VSC

### **Abstract:**

JSW Global Business Services (JSW GBS) is a subsidiary of JSW Group situated at Belapur, Mumbai, the shared services centre supports multiple businesses such as Cement, Energy, Steel, Infrastructure etc. by primarily delivering Finance and accounting processes such as Accounts Payable, Accounts Receivables, Record to Report and Vendor Support.

JSW GBS is embarking on a transformation program as part of its productivity agenda by leveraging Robotic Process Automation (RPA). JSW GBS is exploring automation possibilities in Accounts Payables and Vendor Support Cell in Wave 1 implementation of RPA, however, the current focus of this document restricted to activities in Vendor Support.

### **Problem Statement:**

The below were the major problems faced:

- Higher SLA & TAT
- Unstructured - Email Response
- High Information Gathering time
- Not meeting agreed SLA

### **In Scope**

No. of Tickets received via Email.

### **Objective/Need/Purpose:**

This project is taken to ensure

- Improve Productivity and TAT
- Automation in Vendor Support Cell Process
- Improve C-SAT & Vendor Satisfaction.

## Methodology (in detail):

Considering the above situation, we decided to transform the process first and then implement the Robotics.

**Transformation:** Instead of focusing on developing our on-field operations, we decided to transcend the material world and use the powers of digital realm to solve our issues. We planned to build a digital platform for our vendors. Through this, we were able to provide them a customized and extremely intuitive interface which could be used to check invoice status at each stage of the process. The portal also allowed us to implement a ticketing tool that would help vendors maintain a track of their queries and the responses from VSC. This allowed us to log and track the query tickets online.

Thereafter the launch of RPA process and response to vendor queries by Robots started in May'19. Using AI based concept, the BOT reads intent of the email basis which it replies to the vendor.

## Data Analysis/ Results:

Data Analysis reflected high SLA & TAT time on response provided to vendors & internal/external stake holder

Email TAT: 2.18 Days

SLA – 71%

<u>Tangible Savings</u>			
No.	Item Thought to Have the Largest Impact	Response Rate	Remarks
1	FTE Savings	67%	FTE Savings : 4 FTE Cost Saving : 40 L Per Annum
2	Improved TAT	84%	All tickets are responded on the same day or within 4 hours. (TAT-2.18 Days) based on the nature of tickets
3	SLA	25%	SLA Improved by 25 %
4	Potential Benefit in discounted purchase	2%	Basis on samples taken post improvement

Intangible Benefits:

- Standardization of the processes.
- Common template & common response to vendors.
- High Vendor satisfaction shared during vendor connect programme.

## Challenge Faced:

1. Change management



## Improving the DP TT MCB first pass yield from 44% to 80%

### **Abstract:**

Wipro was facing a seasonal demand for TT DP MCB MCBs, which is our Niche product. We were unable to execute the market demand due to low First Time Yield (FTY) in daily production. To meet market demand, we need to deliver at 2000 pcs/day from current speed of 500pc/day. Hence, this project is taken up to improve FTY which thereby increases the daily production.

### **Problem & Scope:**

The problems faced were:

- The company was not able to meet market demand of Double Pole tiny trip MCBs which is seasonal
- Sales of our Tiny trip segment is badly hit due to non-availability of Quality products on time
- Market demand increases in season, resulted in need to increase production capacity from 500 to 2000 MCBs/day.
- Hence taken the scope as “Improvement of First Time Yield (FTY) of DoublePole (DP) MCBs from 44% to 80% ”.

### **Objective/Need/Purpose:**

The objective was to meet seasonal market demand by increasing production. The Constraint towards achieving the objective was the low yield on double pole TT Assembly line. On analysis, we found major challenges to increase yield as it included working on reduction in MT failure and thermal failures which are significantly high. Hence, we took these two areas for our improvement challenges.

### **Methodology (in detail):**

The team used six sigma DMAIC methodology for the improvement.

During study of TT DP process / product, we have done multiple trials with different specification of components and by changing assembly setup to identify the actual cause of low yield in TT DP MCB.

Major actions to achieve improvements of FTY 80% is given below:

1. Improved carrier support band.
2. Improved Axle fitment with chassis slot.
3. Improved lever plate Centricity.
4. Improved supporting plate length

## **Data Analysis/ Results:**

As Is: FTY at April'18 – 44.4%

Target: FTY at July'18 onwards->80%.

## **Impact/Improvements:**

- Increase in Production from 492 to 1980 MCBs/day
- Total Savings of 1.0 Mn/Year

## **Conclusion:**

- This project has given us the confidence that we can crack any issue, with the proper usage of DMAIC tools.
- Team morale has lifted up to challenge our own benchmark and helped us in improving profitability of location

## **Challenges faced:**

- Low skill level of manpower during assembly and testing, as we were operating on temporary manpower



## Go Green Transportation

### **Abstract:**

ABFRL is having 9 manufacturing units in India and CCL is Suit Manufacturing Unit Situated at Anekal , Bengaluru which produces 4000 Suits/day.

ABFRL is a brand that highly focuses on its supply chains as they reach out to a diverse network of demographics. They usually use corrugated boxes to transfer finished garments from their plant to central warehouse. Suits, being the high premium product, presentation of the product plays the major role. Presentation of the product regularly gets disturbed due to flat pack, high stack level and jerks in transit of the Corrugated Boxes. Due to this, the finished goods were getting crushed, which resulted in high consumption of corrugated box. Corrugated boxes are made from trees. On analysis, it was found that 17 trees were required to make 1 ton of corrugated carton box.

This project was initiated to eliminate corrugated box usage and move the products through customized trolley and modified vehicle. This will lead to save at least 1275 trees/year, 3975 KL water and 4077 Kilowatt hour of Energy (required for paper manufacturing).

### **Problem & Scope:**

Problem: High consumption of corrugated carton box due to damage during transit of finished Garments from factory to central warehouse.

Scope: To avoid cutting of trees by eliminating the usage of corrugated carton boxes for shipping finished Garments from manufacturing unit to central warehouse, reduce rework due to crushing of finished Garments. Improve the presentation quality and reduce the fatigue of loading and unloading employee.

### **Objective/Need/Purpose:**

- To eliminate corrugated carton box usage
- To avoid Crushing of Finished Garments (Suits)
- To reduce fatigue of loading and unloading employee

## **Methodology (in detail): PDCA**

The plan drafted was termed as “PDCA” which is described in detail below.

### **Plan**

To eliminate usage of corrugated box

### **Do**

Designing customized trolley as per product requirements, loading and unloading arrangement and vehicle modification to accommodate trolleys.

### **Check**

Chances of finished garments falling from trolley and movement of trolleys in side vehicle during transit.

### **Act**

Locking arrangement of finished garments in trolley and locking arrangement of trolleys inside the vehicle.

## **Data Analysis/ Results:**

<b>As per Environmental Protection Agency (EPA- USA) 17 tree and 26.5 kl water is required to produce,1 ton corrugated carton box</b>	
Total Pcs use to transfer / year	8 Lakh
Total Carton box required to transfer 8 Lakh Pcs (@10 Pcs/Box)	80000
Assuming 1.5 times reuse of corrugated box ,then total Box required	60000
Total Weight Carton box in Kg (@ 2.5 Kg / Box)	150 ton
No. of Tree Required to Produce 150 ton	2550 trees
No. of tree required assuming 50% recycling	1275 trees
Water required (@26.5 KL / ton)	3975 KL

### **Cost savings:**

**60000 box X Rs 106 = Rs 63.6 lakh / Year**

## **Impact/Improvements:**

- Positive impact on Environmental due to stopping trees cutting and water saving
- Fatigue reduction
- Quality improvement.

## **Conclusion:**

Save Paper Save tree and water by eliminating Paper usage (For corrugated Box).  
Reduced re- work and Improved product presentation

## **Challenges faced:**

Designing of Trolleys suitable to product and vehicle Modification.  
Loading and unloading arrangement.



## Increase service availability

### **Abstract:**

BFSI customer, which is the financial power house with a giant employee base of 20,000 people and has its presence across 1400 locations in the country with a reach customer base of 10 million.

Today's dynamic business landscape Organizations have the need to overcome numerous challenges at a rapid pace. Technology is the foundation of all successful organizations & our customers expect their IT infrastructure landscape to run smoothly with minimal disruption.

With this in mind, increased service availability initiative has launched to increase same day incident closure which shall result in increased service availability of customer, increased customer satisfaction & improvement in cost of delivery by applying a systematic service Improvement approach.

### **Problem & Scope:**

Measured over the last 3 months, month on month the incident backlog of end user support domain is increasing. The Mean of same day incident closure is around 45% which is 25% lower as per customer expectation. The customer expectation is 70% of incident should be close on same day.

### **Objective/Need/Purpose:**

- Increase service availability
- Increase customer satisfaction

### **Methodology (in detail):**

#### **DMAIC**

##### **Define Phase:**

1. Explore voice of customer
2. Define Project charter
  - 2.1 Define Problem statement
    - 2.1.1 What is wrong or not meeting your customer's needs?
    - 2.1.2 When and where do the problems occur?
    - 2.1.3 How big is the problem?
    - 2.1.4 What is the negative impact of the problem?
  3. Project scoping and verification - Project scoping describes the elements that will be covered in the project deliverables.

- 3.1 Longitudinal Scoping - SIPOC is used to understand the process better and do the longitudinal scoping of the project.
- 3.2 Lateral Scoping - Lateral scoping is done on the breadth of the process.
  - 3.2.1 Scoping verification through below check point.
  - 3.2.2 Is the scoped process being within the control of the GB / Team?
  - 3.2.3 Is the pain area lies within the scoped process?
  - 3.2.4 Is the scoped process being narrow enough?
  - 3.2.5 Is there are enough transactions to measure (at least 20 transactions per month)
  - 3.2.6 Is the scope is still aligned with the Internal CTQ / CBP
  - 3.2.7 Is the scoped process would still result in achieving the objectives set for the project?
4. Team composition

## **Measure Phase:**

1. Establish CTQ characteristics
  - 1.1 Operational definition of
2. Data stability check through run chart
3. Data normality check through Normality test
4. Process capability check to identify current capability and sigma value
5. Target validation through 1 t test validate the target

## **Analyze Phase:**

1. Fishbone diagram
2. Multi voting for cause prioritization
3. Correlation to identify relation between Y and identified X's
4. Regression Analysis to examine the influence of one or more independent variables on a dependent variable
5. Scatter plot to show how much one variable is affected by another
6. Why to explore the cause-and-effect relationships underlying a particular problem

## **Improve Phase:**

1. Action identification and implementation
2. Statistical improvement validation of Y (Target) and Identified X's.

## **Control**

1. Create Project sustenance plan

## **Data Analysis/ Results:**

1. Measure Phase: Normality test - P value is greater than 0.05 hence the data is normal
2. Measure Phase: Sample 1 t test - P value is less than 0.05 which means target is significant
3. Analyze Phase: Fishbone diagram to brainstorming to identify possible cause, categorizing the potential causes in order to identify its root causes. Identified 10 causes.
4. Analyze Phase: Cause Prioritization Using Multi-voting. Finalize 5 causes out of 10 identified.
5. Analyze Phase: Correlation test: Out of 3 Xs, 2 have p value less than 0.05. Xs have p value less than 0.5 consider for Regression Analysis.
6. Analyze Phase: Regression Analysis: p value less than 0.05. R-sq.(Adj.) is greater than 80%

7. Improvement Phase: Before/After I-MR chart: Same day incident closure (Y)  
Standard deviation reduced by 42.8% ( $p < 0.05$ ). StDev reduce from 6.61 to 3.37  
Process is significantly higher ( $p < 0.05$ ). Mean shift from 45.037 to 77.259
8. Improvement Phase: Process capability Cpk shift from -1.26 to 0.63 post improvement
9. Improvement Phase: Process mean shift from 45.037 to 76.926
10. Improvement Phase 2-sample T test: p value is less than 0.05 to conclude that old means before improvement is less as compare to post improvement data.

## **Impact/Improvements:**

- Customer Metrics improved- Count of backlog on daily basis
- Business matrix improved – Increase customer satisfaction
- Project Matrix improved - Same Day Incident closure
- Financial Benefit - 1155828 rational benefit (For 6 months)
- Reduce chances to miss the incident resolution SLA

## **Conclusion:**

- Robust governance model helps to track the productivity of resources in regular basis
- Periodic review of SOP as well as creation of new SOPs helps to decrease the resolution time and increase in consistence of solution provided.
- Incident management process with all good number of categories helps to analyze the tickets and assigned to appropriate resolved group.
- Periodic refresher training helps to reduce the escalation.
- Enhanced skill helps to increase the customer satisfaction on service provided.
- Presence of skilled resource helps to increase brand image of Wipro in front of customer (end users).

## **Challenges faced:**

- BFL employee scattered across PAN India.
- 1000+ branches across pan India and 65 locations have dedicated engineer
- Increase in number of resources (Assets) every month.
- Continuous increase in number of Incident received throughout the year.
- Customer denied approving Additional Resource Cost to sustain delivery.

# Crankshaft Die Life Improvement for Jaewoo press line

## **Abstract:**

With the need for improving Crankshaft Die Life for Jaewoo press line, Lean Six Sigma - DMAIC methodology has been found to be the most effective way to include all issues. This ensures the maximum scope of improvement. The analysis of data with this specific methodology has given a positive result of 60% improvement in Crankshaft Die Life.

## **Problem & Scope:**

There was continuous pressure on die shop manufacturing & CAM machining setup to improve of Die Supply on time with improvement in overall Die life performance. As an internal customer, noise level is increasing from Jaewoo Forging Press line for incidences of die life variation and also downtime of line stoppages due to Die life inconsistency issues happening in the last few setups. There was a strong demand to improve on Die Life, which is having direct impact on product Quality, Line Stoppages, Line Production loss hours as well as increase in Die Pull out incidences. So, Die Shop CAM Manufacturing unit decided to drive Six Sigma project for Die Life Improvement.

## **Objective/Need/Purpose:**

- Increase in Forge Line Stoppages:  
Due to variation in Die Life Performance, incidences of intermediate production stoppages increased
- Increase in Die Machining Demand:  
Due to variation in Die life, demand on Die Manufacturing is increased on CAM CNC machining setup & dies are getting queued.
- Increase in Die Defect trend:  
It has been observed that the die life failure having various defects which impacted on the product surface quality as well as die reconditioning which was getting critical as it was a time-consuming process.

## **Methodology (in detail):**

### Define

The problem and scope is the work effort of the project team. The description of the problem should include the pain felt by the customer and/or business as well as how long the issue has existed. Hence, identify the customer(s), the project goals, and timeframe for completion. The appropriate types of problems have unlimited scope and scale, from employee problems to issues with the production process or advertising. Regardless of the type of problem, it should be a systemic part of an existing, steady-state process wherein the problem is not a one-time event, but has caused pain for a couple of cycles.

### Measure

Measure the current process or performance. Identify what data is available and from which source. Develop a plan to gather it. Gather the data and summarize it, telling a story to describe the problem. This usually involves utilization of graphical tools.

### Analyze

Analyze the current performance to isolate the problem. Through analysis (both statistical and qualitatively), begin to formulate and test hypotheses about the root cause of the problem.

### Improve

Improve the problem by selecting a solution. Based on the identified root cause(s) in the prior step, directly address the cause with an improvement. Brainstorm potential solutions, prioritize them based on customer requirements, make a selection, and test to see if the solution resolves the problem.

### Control

The improved process or product performance to ensure the target(s) are met. Once the solution has resolved the problem, the improvements must be standardized and sustained over time. The standard-operating-procedures may require revision, and a control plan should be put in place to monitor ongoing performance.

## **Data Analysis/ Results:**

- P Diagram
- Functions Decomposition to Failure Modes Matrix
- Prioritization of Functions Decomposition to Failure Modes Matrix
- Pareto Analysis for Failure Mode Analysis Prioritization
- List down funneling “KPIVs”
- Design of Experiment
- 2 T Test
- CAD / CAM / CAE Design – Simulation Analysis
- TRIZ
- ANOVA
- Ishikawa Cause & Effect Diagram
- Initial MSA for Z-Reference Dial Pre-Setter

- Tool Height Measurement Kaizen
- Process Capability
- Why Why Analysis, Kaizen

## Results:

- Avg. 60% Die Life Improvement
- Reduction of Scrap by 20%
- Reduction in Tool Cost by 50%

## **Impact/Improvements:**

- Hard Saving up to 10.5 Million INR per year.
- KPI improvement in terms of Product Quality improvement, Productivity Improvement & Reduction in Die Set Inventory

## **Conclusion:**

- Die Surface Roughness improved
- Part Scrap Reduction reduced
- Quality of product improved in terms of surface finish
- Die Stickiness issue eliminated
- Machining Process Capability improved
- Die Life / Zrun improved by 60%
- Cost saving Die Manufacturing + Forging Process
- Die Machining per die avg. reduction by 25
- Die Exchange Changeover extended by 50%, Press line utilization improved
- Reduction in defects and improved product quality boost the Die Machining & Forging operator's moral high

## **Challenges faced:**

- Manpower constraints
- Lengthy validation process



# Ticket Inflow Reduction in Application Support Engagement

## **Abstract:**

Wipro is involved in a Multi-year contract with one of the major Electronic Equipment Vendor for providing support for all the Applications of the Electronic Equipment.

## **Problem & Scope:**

Due to increase in the number of customers and due to increase in the number of applications supported by the Electronic equipment, there was huge increase in the Support Tickets for the product. This resulted in an urgent need to improve the overall ticket resolution process and scope to reduce the inflow of the tickets.

## **Objective/Need/Purpose:**

This DMAIC project started to analyze the inflow tickets and come up with the plans to reduce the inflow and improve the Overall Customer Satisfaction.

## **Methodology (in detail):**

- DMAIC Methodology has been used to Analyze the as-is Process.
- Impact on the Business Critical parameters like Application Stability and Customer satisfaction have been analysed.
- Root Cause analysis has been conducted and arrived the potential causes
- Multilinear Regression model developed to arrive at the vital few causes
- Improvement Actions identified based on the drill down analysis of each cause
- Improved results are collected and verified using statistical techniques
- Control and Sustenance actions are implemented; Improved Process has been rolled out

## **Data Analysis/ Results:**

- Baseline data is collected and 1-sample t test conducted to arrive at the Target
- Baseline Inflow: 1200 Tickets per week, Target to achieve  $\leq$  1100 Tickets per Week
- RCA conducted and identified the potential causes, conducted Control Vs Impact Analysis.
- Data collected for the controllable parameters, arrived at Multi-Linear Regression model.
- Improvement actions implemented for all the Impacting causes.
- Ticket Inflow after implementing the Improvement Actions have been measured and verified using 2-sample t test
- Sigma Level Improved by 1.6.

## **Impact/Improvements:**

Ticket Inflow reduced by 100 per week, leading to significant improvement in Customer Satisfaction and reduced cost of 22 Person months in a duration of 6 months.

## **Conclusion:**

Ticket inflow reduced, Improved Application Stability and Improved Customer Satisfaction.

## **Challenges faced:**

- Changes in the application priorities
- Data availability
- Competency Enhancements in new Applications
- Implementation of Long term fixes.

## Forging Process design for New product - Integral Knuckle at FMD-III

### **Abstract:**

A new Integral Knuckle has to be designed so that the design limitations from the VOC is taken into consideration and that the customer demands are met.

### **Problem & Scope:**

The customer demands were not being met due to design limitations.

- Tie rod & Stem parts manufacturing and assemble separately
- High Costlier items
- Less rigid and complex to assemble
- Low Strength & fatigue life
- Overall assembly weight is high

The establishment of Integral Knuckle will eliminate this design limitation and the demand of the customers will be met.

### **Objective/Need/Purpose:**

- New Product Development
  - VOC – Customer expectations for New Design:
    - Tie rod & Stem are integrated parts as ONE
    - Economical and efficient solution
    - High rigidity & Strength
    - Improved fatigue life
    - Light weight as compared to earlier design.
    - Ease to assemble
- New business Opportunity of complex Integral Knuckle
- Improved relationship with existing customers by fulfilling the new requirement.
- New Challenge to prove BFL capabilities for complex forging production.

## **Methodology (in detail):**

DFSS DMADV Roadmap:

### Define

Define the project, develop charter, prepare project plan, organizational change plan and identify risks, tollgate review

### Measure

Determine customer requirements and wishes, understand the Voice of the Customer, translate to requests (CTQs), Prioritize CTQs, and Reassess risk, Tollgate Review

### Analyze

Identify functions, Generate and select concepts. Identify key functions, Prioritize the functions, generate concepts, Evaluate & Select concepts, Review Concepts, Tollgate Review

### Design

- Develop design, test/optimize design components and complete design.
- Identify and Prioritize High-level design requirements
- Develop design requirements
- Develop high-level design
- Test high-level design
- Identify and Prioritize design elements
- Develop the detailed design
- Test detailed design
- Develop Process Management Plans
- Review Pre-Pilot Design
- Tollgate Review.

### Verify

- Verify design performance
- Implement design.
- Conduct and Evaluate Pilot
- Implement the design
- Close the project

## **Data Analysis/ Results:**

Data Analysis:

1. Requirements flow down overview.
2. Quality Function Deployment- QFD1/QFD2/QFD3/QFD4
3. Concepts Selection
4. Pugh Matrix
5. Risk Analysis
6. TRIZ Solution
7. CAD / CAM / CAE Design – Simulation Analysis

8. P Diagram -Transfer Function  $Y=f(X)$
9. DOE for Upsetting
10. ANOVA: Upset Diameter versus X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>...../Finisher Flash Thickness versus X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>.....
11. Test for Equal Variances: Location 1,2,3
12. Blocker Transfer Function  $Y=f(X)$ /Finisher Transfer Function  $Y=f(X)$
13. DOE for Blocker Simulation/Blocker Hold up versus X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>...../DOE for Finisher Simulation
14. Residual Plots for Key Parameters
15. Contour Plot for Critical Parameters
16. Multi Vari Chart for Position Thickness
17. Process Capability- Six Pack: Validation
18. MSA- Kappa Analysis for Visuals.

## **Impact/Improvements:**

- BFL earned Customer confidence and satisfaction.
- Knuckle part orders received for next 4 Yrs.
- Another enquires were received of same type of knuckle.
- Export business for these knuckles was gained up.
- Our Internal capabilities were increased.
- CFT had gained a confidence to develop the critical part by using Six Sigma methodology.
- Top Management appreciated efforts taken by development team.

## **Conclusion:**

The Design and development of forging process for the new product- Integral Knuckle as per customer specification

## **Challenges faced:**

- Forging Process design & develop for new Product with intricate shape of knuckle
  - integrated with tie rod
  - King pin height more than normal.
  - Long length spindle or stem.
- To provide cost effective solution
- To develop process flow from existing resources.
- To fulfil customer functional and quality requirements



## One step Towards Sustainability-PVC Free Manufacturing

### **Abstract:**

Our project is talking & sharing about Wipro's step towards sustainability. We have targeted eliminating PVC (Poly Vinyl Chloride) from our plant and replacing it with eco-friendly alternative. In the recent times, environmentalists have critically highlighted the adverse impact of PVC on environment and as a responsible company this is our effort in the same direction.

### **Problem & Scope:**

PVC was an essential material used in almost all our packaging material in factory due to its incredible versatility. It has found application in most of the industries and it is the 3<sup>rd</sup> most used plastic worldwide. Toxic components are released in the atmosphere during manufacturing, usage, as well as disposal of PVC.

Our project scope is limited to eliminate PVC in all packaging material of our products as well as repackaging of raw materials.

### **Objective/Need/Purpose:**

Our primary objective is to eliminate PVC from all packaging material with better eco-friendly substitute. We need to achieve this objective as this is our duty as responsible citizens to protect the environment for our future generations.

### **Methodology (in detail):**

We adopted **DMAIC** methodology for doing better analysis and getting deeper insights for achieving our goal. We worked on team formation headed by location head and have set the timelines for achieving the goals.

Brainstorming sessions were conducted for finding available alternatives which can be used to replace PVC. Based on availability and other desired operating parameters, we shortlisted three alternatives for PVC – PETG, POF and PE. Finally, we decided to go with PETG due to its favourable parameters and initial trials done.

This transition from PVC to PETG was not an easy change. We had to use many tools including Brainstorming, Why-Why, DOE & Fishbone Analysis to identify root causes and best suited parameters/solution in existing machines' setup for our products.

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After getting identified issues, we had done multiple improvements at shop floor with our team to make this transition successful.

For ensuring that we remain PVC free, we are conducting regular audits and reviews across multiple departments.

## **Data Analysis/ Results:**

This project is now successfully implemented not only in Haridwar factory but also in other factories of WIPRO by end of Q2 (FY 2019-20)

Key results as below: -

At Haridwar location, we have successfully come down in PVC consumption from using 14.35MT in 2018-19 to nil in Q-2 of 2019-20

Across other locations, PVC consumption has been reduced from 67.25MT in 2018-19 to 1.22MT in Q-2 of 2019-20.

## **Impact/Improvements:**

Impact of this initiative is that we are now PVC free in all packaging material at Haridwar location. Also, all of our other locations have followed this path and are on way to become PVC free

PETG is much better alternative compare to PVC as it can be 100% recycled whereas currently less than 1% PVC is being recycled. PETG emits only H<sub>2</sub>O and CO<sub>2</sub> without any toxic chemicals unlike PVC during disposal.

## **Conclusion:**

We have successfully completed this environment friendly initiative at Wipro Haridwar location within given timelines.

## **Challenges faced:**

Main challenge during implementation in this project was to align cross functional teams because of high stock of PVC & maintaining aesthetic look of product like in PVC packing.



# CRAFT – Collection Risk Analytics Framework for the Future

## **Abstract:**

This project was initiated to develop a Comprehensive Risk Analytics solution through innovation & Data insights. Hence the name, 'CRAFT – Collection Risk Analytics Framework for Tomorrow', for the Accounts Receivables Tower was framed. Technology plays a major role in this project as it is used to address data related challenges, provide detailed analytics and deliver a consistent and a comprehensive Analytics Dashboard.

## **Problem & Scope:**

Out of the \$ 150 Bn revenue for the Corporation, \$ 350 M+ are overdue. As a service provider, Conduent faced the following challenges,

1. Process variations, inconsistency in reporting which varied between 10 to 20% that impacted quality, delivery and errors – Negative impact to Process Sigma which were in the region of 2.5 sigma.
2. Manual reporting consolidation resulted in unnecessary transportation and waiting time in the quality of our deliveries – Process Lean performance.
3. Increasing overdue beyond \$ 350 M

## **Objective/Need/Purpose:**

To address the above problem, CRAFT was developed. It is a comprehensive Risk Analytics Framework through innovation & Data insights. It was designed to deliver consistent quality and reporting accuracy to address the voice of the customer. Also, it was predicted to improve collections and on analysis it was found that the system had improved collections by 20% (\$70 Million)

## **Methodology (in detail):**

1. Usage of ERPs, Legacy data used effectively to build comprehensive and quality data sets.
2. Validate data to remove process variations and eliminate transportation and extra processing on the data compilation.
3. Use an existing or Go to solution to develop an Analytical solution which is acceptable to Customer.

4. The solution to provide Dash boarding, Strong Analytical and Visualization capabilities.
5. Usage of the Tool effectively to reduce the Overdue by \$ 70 M for the Fortune 100 Customer.

## **Data Analysis/Results:**

The system gave 25 plus Analytical reports and 10 Visual dashboards having different risk parameters.

1. Customer level payment performance as Good, Moderate and Poor paying customers
2. Employee level performance analysis, driving their performance and incentives
3. Identification of collection risks from Poor payers or Non payers or delayed payers
4. Comprehensive Billing risks, Bad debts, legal and other Non-collectible risks had been analyzed.

## **Impact/Improvements:**

The improvements recorded were the following:

1. Process sigma improved from 2.5 to 6 in reporting accuracy.
2. Better Customer satisfaction and improved Net promoter score by 2 notches
3. Lean related savings accounted for 8.5 Man-days against crucial reporting period

## **Conclusion:**

1. This project was identified as the model project for the year 2019 by the Fortune 100 Customer
2. We had the special opportunity to present the project to Customer's executive leadership
3. Conduent's internal performance on process variations had improved and the results are consistent
4. Improved collections performance and NPS score improvement was well received by the company.
5. Collection related improvements are \$ 130 Mn

## **Challenges Faced:**

The multiple challenges faced during this project were the following:

1. Multiple ERP and legacy systems – eSAP, SAP legacy versions, Oracle, IBM mainframe and others
2. In view of the different ERPs, there are multiple report formats – Large scale data clean up required
3. Customer posed us the challenge but did not support the solution – Inadequate support
4. Limited or no resources to carry on the project with strict deadlines
5. 70 plus countries, 4 large geographical regions – Added to the process complexities.



## MTS-As A Customer Satisfaction Strategy

### **Abstract:**

Customer Satisfaction is key business metric measured at organization level. A fundamental metric that impacts CSAT greatly is ‘DELIVER RIGHT AT FIRST TIME (DRFT)’. It becomes all the more important for an organization to understand the factors impacting it to stay relevant and competitive

Mahalanobis Taguchi System is a multivariate concept to analyze various patterns leveraging the concepts of Taguchi’s robust engineering techniques.

This is a use case of how MTS can be used to drive organization level DRFT and thereby overall Customer Satisfaction.

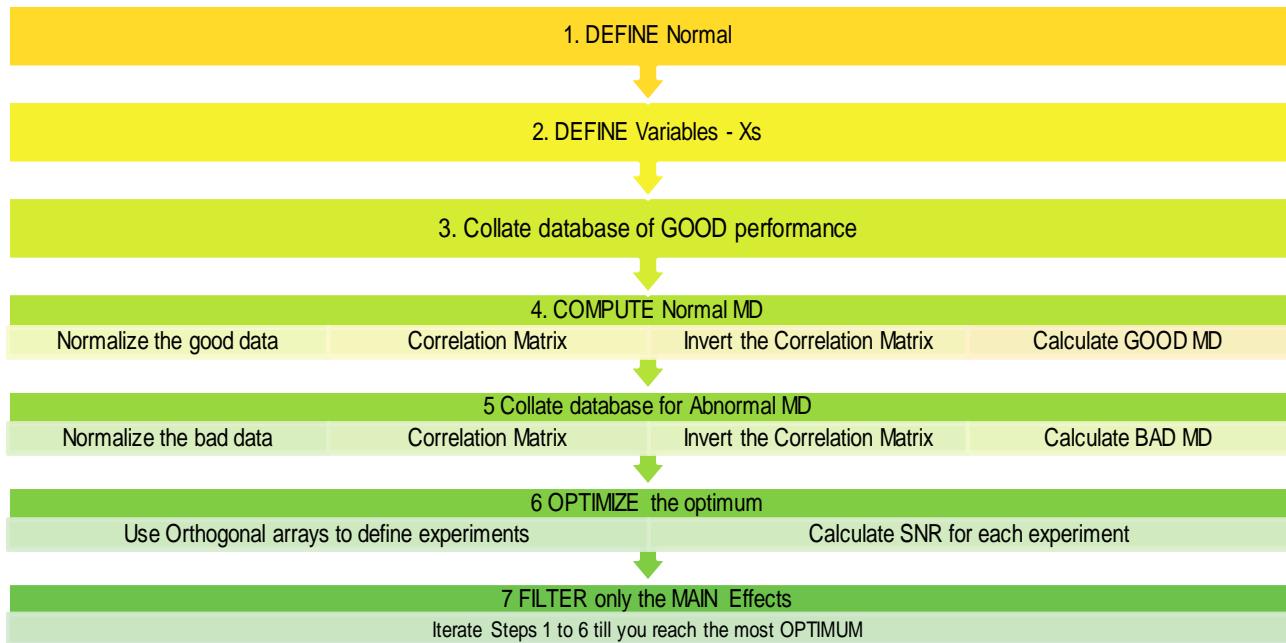
### **Problem & Scope:**

It is mandatory for a company to keep themselves upgraded and paced in the rapidly growing organizations. Wipro continues to demand improvement customer satisfaction to stay relevant and competitive. The need to improve was focused on ‘DELIVER RIGHT AT FIRST TIME’.

### **Objective/Need/Purpose:**

To satisfy the need to improvement, a predictive/diagnostic model on ‘DELIVER RIGHT AT FIRST TIME’- DRFT

## Methodology (in detail):



## Data Analysis/Results:

We used a year long DRFT performance data across the organization.

- We identified 23 variables that can potentially impact DRFT say, skills, experience, project types, team size, project duration, domain etc..
- We formulated a Parameter Diagram explaining the inputs, output, variables (Mahalonobis space) and noise.
- We developed a measurement scale using the good DRFT data, defining base or reference point of the scale. It calculated the Mahalonobis Distance values.
- Validated the scale using known conditions outside the reference group, i.e., using the data of bad performance.
- Optimized the scale using Taguchi's Robust Engineering techniques of Orthogonal arrays and Signal to Noise ratios. We selected only the useful variables.
- Optimized the optimum by iterating the useful variables till you get an adequate differentiating factor expressed in MD.

## Impact/Improvements:

During this project, we identified the top 4 factors that can impact DRFT were identified

- Operating limits identified
- Recommended strategic actions on each factor

## **Conclusion:**

From this project we conclude that this model helps to continuously determine the next set of factors that we need to drive. We also applied this in few other internal critical metrics and it has several use case scenarios in every domain where pattern recognition is needed.

## **Challenges Faced:**

The challenges faced in this project were the following:

- Large volume of data generally requires a lot of computing power
- To comprehend a high number of variables and perform the complex calculations in excel can be a big challenge. We did overcome this with a python code
- Ensuring data accuracy on variables can be challenge considering the volume



## To Reduce Setup Changeover Time on Inner Ring Groove Honing Machine from 300 min to 150 min.

### Abstract:

SKF has major presence in India with its factories and warehouses spread across various locations to serve the customer better. SKF factories are located in Pune, Ahmedabad, Bangalore, Haridwar, Mysore. The current project is representing SKF Pune factory.

#### Pune factory overview



We did a project related to setup change over time reduction on inner ring groove honing machine in DGBB channel 04 with the help of LEAN methodology.

SKF has driven various initiatives to improve the customer satisfaction by solving the various customer concerns (internal and external) by using LEAN methodology. This has prompted to identify the value and non-value-added activities of entire value chain through VSM, after map the DGBB channel 04 VSM we came to know that Inner ring setup change over time is very high, that is the big flow stopper on channel 04 and additional manpower was required which further increases operating cost. Hence the project has been taken by cross functional team to solve the abovementioned concern. This will result in estimated financial saving of INR 24.06 lakhs per annum.

### Problem & Scope:

**Problem:** High setup change over time on channel 04 inner ring groove honing machine that is 300minutes.

**Scoping of the Problem:** From **Fig a**, bar chart concludes that setup change over day efficiency of DGBB channel 04 was less than the target 58.0% from last 6 months, because from setup change over bar chart in **Fig b** we came to know that FGM machine setup change over time is very high. **Fig c** pareto shows that top 4 activities contributes 55% of setup change over time on inner ring groove honing machine.

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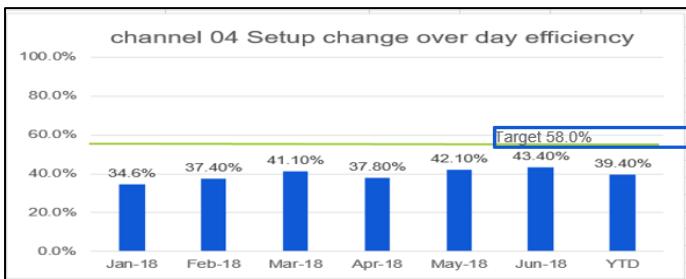


Fig a

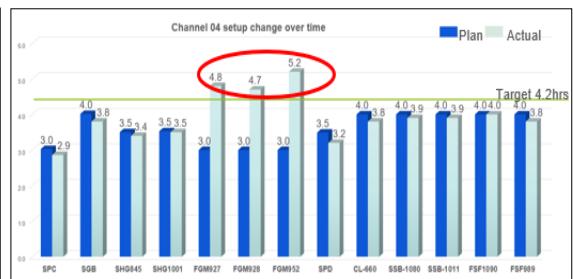


Fig b

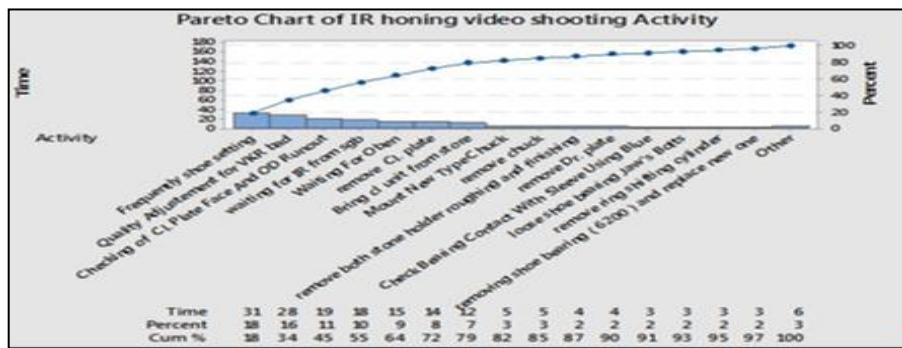
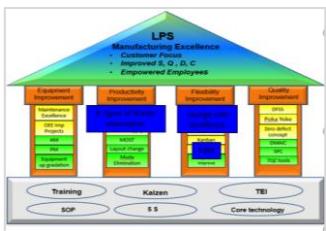


Fig c

## Objective/Need/Purpose:

With respect to 2017 data, we have found that setup change over time on Inner ring groove honing machine was the highest amongst all other machines. Setup change loss was one of the top 3 losses in channel -04 OEE. High setup change loss was also resulting in reduced flexibility. So, our team decided Using Lean Methodology was the only way to reduce the setup change over time. Team used various lean tools to eliminate the wastes available within process.

## Methodology (in detail):



The Fig a is the manufacturing excellence model what we followed, from that under flexibility improvement pillar we used change over excellence and VSM, similarly under productivity improvement we used to elimination of 8 types of wastes

Fig a.

Process followed to implement the SMED (change over excellence):

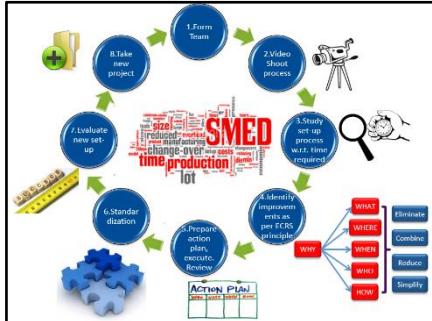


Fig b shows how to implement the SMED in a systematic approach.

Step 1: we formed a cross functional team from production, manufacturing engineering, stores, supply chain, and quality assurance etc.

Step 2: We took video shooting of exiting set up change over activities on inner ring groove honing machine

Step 3: Studied each and every activity actual time w.r.t standard time.

Step 4: Identify improvements as per ECRS principle.

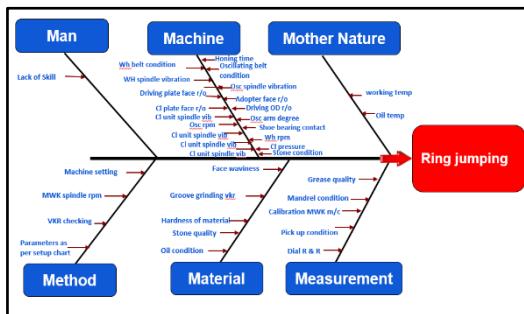
Step 5: Prepare action plan, execute review.

Step 6: Standardization of improvement actions what we did through SOP, setup chart, OPL etc.

Step 7: Evaluate new setup

Step 8: Base on business case take new project.

## Data Analysis/ Results:



Fishbone analysis was applied to identify the problems which are associated with the high setup change over time on inner ring groove honing machine activity.

- Issues while shoe setting
- Frequently ring jumping
- High machine adjustments



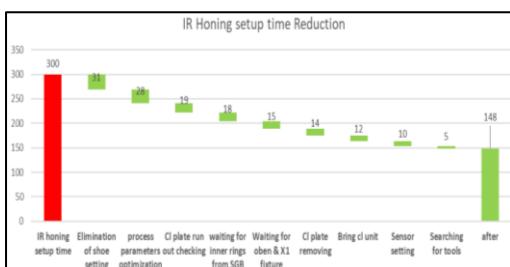
WHY Analysis was applied to identify the root cause of setup change over.

- Issues with oben angle
- issue with process parameters
- High waiting time
- Unavailability of spares

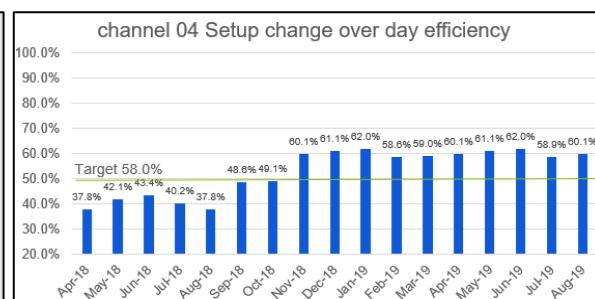
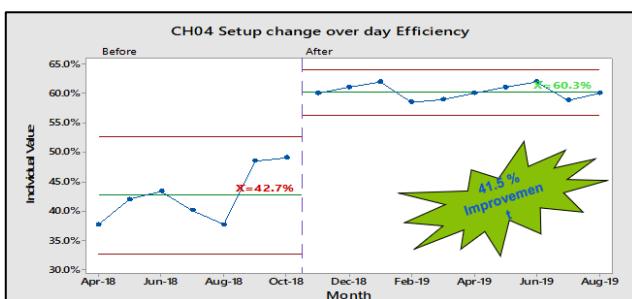


Standardization was applied to streamline the setup change over activity

- Detailed setup change over SOP was made at point of use
- OPL made for awareness and training purpose
- Tooling checklist prepared to confirm availability of all tooling before setup change over



Result: Fig a waterfall diagram shows the inner ring setup change over time reduction from 300 min to 148min according to the ECRS improvements activity wise.



## Setup change over time on inner ring groove honing machine:

Change over time reduced from 300 min to 148 min almost 50.6% reduction

## Key highlights:

- Channel 04 efficiency increased by 41.5%
- Increase in Customer Satisfaction
- Hard savings of 2.26 lakhs
- Shorter lead time
- Less manhours to set the machine
- Greater flexibility

## **Conclusion:**

From this project we conclude that the system sets up a changeover day efficiency target of Ch04 achieved by implementation of Lean tools.

## **Challenges Faced:**

The challenges faced were:

- Design the adaptor angle.
- Changing of ring shifting cylinder from conventional to SMC.
- Mindset of the people



# Contributing to Ease of Doing Business by simplification and reducing Cycle time – DMAIC approach

## **Abstract:**

Infosys helped client to significantly improve the World Bank's EODB (Ease of Doing Business) rankings from 100 to 63 (2019). It has been achieved by Improving the Cycle time and reducing the Application touch points for Company Incorporation (starting a business) along with improving the Usability.

## **Problem & Scope:**

### **Problem:**

- High Incorporation cycle time for Ease of Doing Business.
  - Complex e-filing process for Incorporating a Company (starting a business).
  - Multiple application touch points for end-user.
  - High number of tickets for clarification during the process of company incorporation

**Scope:** Incorporation of Companies - Workflow

### **Objective/Need/Purpose:**

**Program** Objective is to Empower business and Protect Investors. The key focus is on Government process re-engineering (GPR) to improve governance, compliance, enforcement functions and facilitate Ease of Doing Business in India.

**Need:** Optimize the Incorporation Cycle time, cost of application, reduce number of touch point and simplify the processes at par with international references to improve user experience and align to the business objective of Government of India.

**Purpose:** Optimization of Incorporation E2E (End to End) workflow.

## Methodology (in detail):

### DMAIC (Lean Six Sigma) Adopted:

- Baselineing of problem
- Detailed Value stream map and process map to understand the flow of Incorporation of business Process and Ticketing Process
- Brainstorming, Fishbone Diagram and FMEA
- Lean analysis on Support process, Kaizens to identify quick wins.
- Correlation of different X's (Filings, Inflow, Resubmissions) and Y (Cycle Time)
- Solution design (Process Optimizations, Enhancements, Automations and Data analytics – NLP, AI, Making things Visual)
- Results Comparison and Validation.
- Control Plans/Sustenance Checks.

## Data Analysis/Results:

Key Areas identified where Optimization can be done.

- Sequential Multiple process steps for incorporation with complex Forms and repetitive attributes
- Multiple Application touch points.
- Multiple navigations and Manual steps in validation of approval process
- Manual and Non-Uniform Resubmission remarks.
- High inflow of tickets due to ambiguity and delays.
- Variation in individual throughput

## Results:

- Cycle time reduction for Company incorporation by 16 - 1 days (Client Scope) and 30 - 10 days (With external integration)
- Form simplification by **35%**
- Ticket to Filing ratio reduced from **15% to < 6%**
- **33% Effort Savings** Achieved

## Impact/Improvements:

- **Reduction in Incorporation cycle time** - 67% (With external integration) and 94% (Client Scope)
  - Reduction in Name Reservation approval time - Reserve Unique Name for Companies
  - Seamless processing of E-forms and reduced application turnaround - Simplified Proforma for Incorporating Company electronically - eliminated individual discretion and enabled uniformity in application of law thus reducing DIN Allotment, Name Reservation, Company Incorporation and Director's appointment cycle time

- PAN/TAN allotment at the time of incorporation - Extended SPICe form.
- GSTN, EPFO and ESIC registrations - New Agile form to get external integrations.
- Improved efficiency of operations.

## **Conclusion:**

- Complex integration and GPR has simplified the Incorporation process and User experience.
- Significant jump of **37** points (100 to 63) in India's ranking on World Bank's "Ease of Doing Business" index

## **Challenges Faced:**

- High Volume of tickets
- Continuous changes due to dynamic Law requirements.
- Complex interlinked process



# Improvement of Test Case Development Productivity

## **Abstract:**

Improving Test Case Development Productivity using LEAN

## **Problem & Scope:**

Customer needs to optimize release qualification timelines to ensure faster time to market, by augmenting test qualification team from test development team, thus demanding higher test development productivity, to achieve shorter development timelines.

## **Objective/Need/Purpose:**

- Shorter Test Cycle time
- Improve test coverage
- Competency development

## **Methodology (in detail):**

- Root Cause Analysis –5Why Analysis
- Value Stream Mapping
- Takt Time
- Competency Management
- Standardization

## **Data Analysis/Results:**

Objective	Baseline	Actual	Improvement
Test Case Development Cycle Time per test case (person hours)	4.3	2.6	40%
Test Case Development Productivity (per person per hour)	2.09	3.26	56%
Team Competency	106 net score	127 net score	20%
Process Cycle Efficiency%	70%	94%	24%

## **Impact/Improvements:**

### **Tangible Benefits:**

- Cost Savings to Customer by \$22,440/- for customer release plan in 6 months
- Customer Satisfaction: 7/7

### **Intangible Benefits:**

- Team Competency Growth & Motivation
- Process Standardization towards repeatable and predictable outcomes

## **Conclusion:**

<b>Pre Lean</b>	<b>Post Lean</b>
Cost to develop 200 TC in 1 release	\$18920
For 3 releases	\$56760
Cost to develop 200 TC in 1 release	\$11440
For 3 releases	\$34320

<b>Objective</b>	<b>Baseline</b>	<b>Actual</b>	<b>Improvement</b>
Test Case Development Cycle Time per test case (person hours)	4.3	2.6	40%
Test Case Development Productivity (per person per hour)	2.09	3.26	56%
Team Competency	106 net score	127 net score	20%
Process Cycle Efficiency%	70%	94%	24%

## **Challenges Faced:**

- Changing existing processes, habituated to team, towards optimized results
- Meeting product delivery timelines as expected by the customer, with improved results, applying LEAN tenets



# Optimization of Employee off boarding Cycle Time

## **Abstract:**

About the company: Wipro Technologies has adopted Lean framework and techniques over the past decade to ensure cost effective service delivery. Lean has found its applications in all businesses of Wipro including its internal support functions. As a Service Partner, Wipro engages with the Customers in end to end business solutions and managing their various product lines. This paper is a case study of one such projects which successfully met its objective of “Optimization of employee off boarding process” for the internal customers.

Background: The HRSS (HR Shared Services) team is the centralized team which supports the HR team with all the HR activities throughout the ‘hire to retire’ life cycle. This team of 640 members deals with average 2.3 million + transactions annually.

An internal process study has highlighted the need of making the employee off boarding process more efficient and to establish more controls. The ex-employee feedback survey also highlighted that the cycle time of employee off boarding process was high”

Problem statement: The average cycle time for processing final settlement for employees exited from Wipro is 20 days which resulted in process compliance risk and employee dissatisfaction.

Approach taken: Detailed fishbone analysis with the subject matter experts helped in identifying the key causes such as process variation, manual intervention, incorrect data, disparate systems, scalability of systems, multiple process variables etc. Standardization of the process was followed Value Stream mapping exercise which helped in identifying various Non Value Added activities existed. Extensive automation was done to bring together all desperate systems and to eliminate manual intervention in effort intensive jobs. Systemic Visual controls have helped in staying updated with the latest status of the requests.

Benefits: Team was able to reduce the employee off boarding cycle time from 20 days to 3 days. The steps taken have made the process much lesser prone to deviations and human errors.

## **Problem & Scope:**

**Problem:** The average cycle time for processing final settlement for employees exited from Wipro is 20 days which resulted in process compliance risk and employee dissatisfaction.

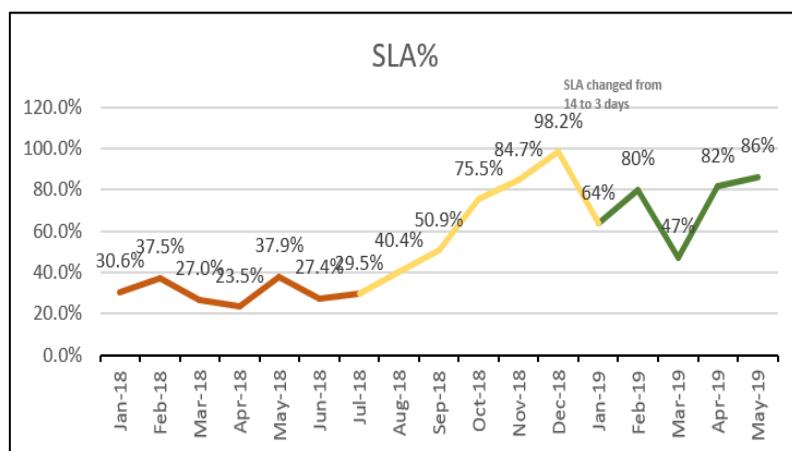
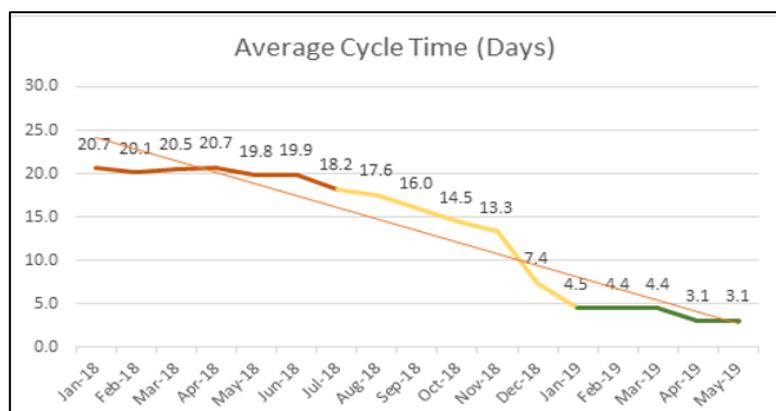
**Scope:** All the employee exited (count is not mentioned due to confidentially reasons)

## **Objective/Need/Purpose:**

To institutionalize audit committee recommendations to remain compliant by law and to reduce settlement timelines.

## **Methodology (in detail):**

Detailed fishbone analysis with the subject matter experts helped in identifying the key causes such as process variation, manual intervention, incorrect data, disparate systems, scalability of systems, multiple process variables etc. Standardization of the process was followed by Value Stream mapping exercise which helped in identifying various Non Value Added activities existed. Extensive automation was done to bring together all disparate systems and to eliminate manual intervention in effort intensive jobs. Systemic Visual controls have helped in staying updated with the latest status of the requests.



## **Data Analysis/ Results:**

### **Impact/Improvements:**

- Reduced cycle time from 20 days to 3.7 days
- Reduced clearing agents/departments from 71 to 10
- Reduced 35 FTE to 10 FTE

- Saved Printing cost of \$ 249,565
- SLA improved to 86% from 30.6%

### **Conclusion:**

- Compliant by law on statutory payment
- On time settlement amount credit
- Real time dashboard available to employee to track status.

### **Challenges faced:**

- Improving the degree of standardization whilst being compliant to various geography bound regulations.
- System level standardization and automation – disparate systems.



## Project Go Green - Reduction of Physical Documents Handling

### **Abstract:**

At RGIC, around 4 Lakh Policies are issued each month. Along with it come a lot of documents, that are eventually sent for archival. Under the Record Management process, all of these documents are checked, indexed, archived and retained for a specific period, as prescribed by the regulator. Where resources are required to handle the documents, it also adds up to the cost. The % of documents handled physically for Record Management Process at Branch / Hub from Jan'18 to Mar'18 is high at 93%. Hence, there was a need to optimize the count of documents being handled physically.

### **Problem & Scope:**

Problem Statement: The % of documents handled physically for Record Management Process at Branch / Hub from Jan'18 to Mar'18 was high at 93%

Scope: All documents archived for Record Management Process at Branch / Hub.

### **Objective/Need/Purpose:**

The goal of the project was to reduce the % of documents handled physically for Record Management Process at Branch / Hub from 93% to 56% by Sep'18

### **Methodology (in detail):**

The baseline data for three months was pulled out to see what do the numbers look like. It was observed that 93% of the documents were being handled physically and getting archived. Hence, to identify the source from which maximum physical documents were getting triggered, an 'As-is' process chart was prepared. Also, a comprehensive list of documents with its regulatory requirement in digital or physical form was also prepared. Analysis was done and pareto chart was prepared to draw out the inference as to what impact product / issuance system / touchpoint / type of business has on the flow of the documents. A Cause& Effect Matrix' was prepared to identify the Final Xs. Potential Solutions were worked-out and priority of implementation was set through EPIC. Each action to be implemented was rigorously tracked through the Implementation Plan. A Control Chart was prepared to ensure sustenance.

## **Data Analysis/ Results:**

Through the analysis it was identified that 77.5% of the policies issued were of Motor Insurance. 68% of the issuance is being done by Retail Agents. 61% policies are issued in Smartzone. Hence, there seemed to be opportunity if the actions were to be focused toward the policies getting issued in Smartzone by Retail Agents.

## **Impact/Improvements:**

Browse & Upload functionality was developed for the agents to upload the documents on Smartzone, so that the physical documents are not required to be sent to the Branch/Hub for Archival. This development became the game changer and brought down the physical document archival % from 93% to 30%. This is a big step towards RGI's focus towards 'Go Green'.

## **Conclusion:**

This project has improved the efficiency of Policy Issuance and Record Management Process drastically, such that at the end of Jul'19, the physical document archival % was only 15% from a baseline of 93%. The process changes made through this project has not only resulted in Partner Satisfaction due to elimination of physical document handling & courting, but also resulted into realized cost saving of INR 0.83 Crs.

## **Challenges faced:**

Mapping the internal requirement of digital archival with the regulatory requirement came up as the initial challenge. Cascading the process changes down to the end resource on the field, soon after the solutions were identified, was a hurricane task as well. Thereafter, providing the digital platform to the retail agents on the policy issuance portal Smartzone was the biggest challenge. The idea of outsourcing the system development would have ended-up as a costly affair. Resources were channelized, and the Browse & Upload development was done in-house, resulting into a clear win.



## Productivity Improvement using DMAIC Methodology

### **Abstract:**

Productivity Improvement using Six Sigma DMAIC Methodology has helped Wipro to improve the productivity of this engagement which has resulted in less disruptions in BI and B2B platform and hence increased customer satisfaction.

### **Problem & Scope:**

Weekly Average productivity in this AMS program was 1.458 tickets/person/day from August 2018 to December 2018 which is less than the Average MS Productivity at Industry level. Low productivity can lead to increased cost of delivery, more transaction failures which will further lead to customer dissatisfaction

- Longitudinal Scope: From the time ticket assigned to Wipro till the closure of ticket in tool
- Lateral Scope: All Towers

### **Objective/Need/Purpose:**

As part of the Managed Service engagement to this client, Wipro's scope is to provide Business Integration (BI) and Business to Business(B2B) application management and support in client's varied landscape.

Objective is to improve productivity of this engagement which will result in less disruptions in BI and B2B platform hence with increase in customer satisfaction.

## **Methodology (in detail):**

### In Define, Measure and Analyze phase following tenets adopted

- SIPOC Flow
- Capability Analysis for baselining Current Sigma level
- Stability Analysis
- Hypothesis Test for Goal Setting
- Fish Bone Technique for RCA
- Control –Impact Matrix for Critical Factor Identification
- Co-relation Study with Scatterplot Analysis
- Regression Analysis for Prioritized factors

### In Improve and Control phase, following tenets adopted

- Optimal level identification with Response Optimizer
- FMEA (Failure Mode Effect Analysis) for improved process.
- Before-After Capability Analysis for determining current Sigma Level
- 2-Sample Hypothesis test for Improvement Validation

Control Chart for continuous monitoring of prioritized factors.

## **Data Analysis/ Results:**

- Brainstorming was done to come up with all the dependent factors, grouped the factors through affinity process, confining to critical factors with control-impact matrix.
- Data was collected for all the critical factors which are identified from control-impact matrix.
- Co-relation analysis was carried out on each of these factors and identified co-related factors
- Derived regression model with most significant and correlated factors in Analysis phase.

## **Impact/Improvements:**

- Derived break through actions for all critical factors in Improvement Phase.
- Implemented the solutions which was leveraging pattern recognition, Automation, Wipro inbuilt BOT's etc.

## **Conclusion:**

### 8612 USD worth CR has been delivered with ZERO headcount

Optimized the end to end ticket management process and improved success rate in BI and B2B message transactions.

Overall Productivity has been increased by 30.3%.

## **Challenges faced:**

As team was completely aligned to ISO 27K and CMMI SVC standards, it was certain that improvement can be achieved only through break through solutions. Identification of robust solution so as to achieve the target improvement was one of the main challenges faced.

Other challenge was to keep the variance in the output very low even in the presence of noise inputs for which robust engineering principles were adapted.



# Distributed Agile & DevOps integrated approach for a Large Transformation Global program

## **Abstract:**

Our Client, Automotive giant & Luxury Car maker from Germany is digitally transforming its business, from vehicle design to core business systems, using the Cloud. In a milestone project, client is replacing its companywide Procurement system—used to manage 400,000 global suppliers—with a software as a service system running in Microsoft Azure and with SAP landscape. Infosys is delivery partner for this large transformation program for Implementation and Support tracks following Agile and DevOps culture

## **Problem & Scope:**

Developed by Client in the early 1990s, the Procurement system used to manage and interact with more than 400,000 suppliers had evolved into a complex and mammoth piece of code that was difficult to refresh. The IT team could only manage to release new features a couple times a year. And the purchasing process still included many manual, paper-based steps that Client wished to digitize.

Infosys is partnering with automotive giant to transform complex legacy purchase system to cost effective, paper less efficient system meeting business critical timelines and greater agility.

## **Objective/Need/Purpose:**

Overall aim is to enhance core business systems to gain scalability, agility, and lower costs and at the same time support the company's faster innovation velocity with early return of investment.

- Faster Time to Market: 20% faster
- Flexibility and speed with Product increments: 5 per month
- Velocity: 10% YoY
- First Time Right in 80% of deliverables
- Hard ware cost reduction by 40%
- Distributed lean teams with Offshore %age: 50%.

## **Methodology (in detail):**

- Infosys team structure mirrors the client team structure for quick communication & better collaboration; Design thinking and refinement teams co-located with client
- Use best of both worlds Scrum as well as Kanban. Continuous improvement as a result of Continuous feedback. High Productivity achieved with Agile Rooms with Visual boards.

- Infosys Dev Ops Platform is implemented to automate the release management and to provide complete tractability into the process.

## **Data Analysis/ Results:**

The new system, which involves the SAP S/4HANA database, SAP Supplier Relationship Management on HANA, and the Icertis Contract Management platform,

- Was operational in just three months, can be updated daily, and costs 50 percent less than the previous system.
- Improved business agility for leveraging SAP Agile and DevOps frameworks
- Got early customer insights through increased sprint velocity
- Achieved up to 70% increase in shippable object deployments per month
- Reduce post-deployment errors to less than 5% through early collaboration with stakeholders.
- Enable nearly 40% absorb of scope creep

## **Impact/Improvements:**

To launch a project of this magnitude previously would have required up to 12 months just to acquire the necessary hardware. With Agile in place, with Microsoft Azure, we had the complete hardware set up in 12 weeks

- Moved from starting off with Minimum Viable Product after first three months to 3-4 Production releases in a month
- 100% First Time Right Achieved in latest Sep 2019 release
- 18% Increase in Sprint Velocity
- 100% Automation in Regression Testing
- 10% Reduction in Retrofit Efforts
- 12% Reduction in Defect Density
- 50% less in IT Support Costs
- **Agile teams** feel satisfied, empowered and trusted, and this often leads to one of the **highest-morale teams** delivering best results.

## **Conclusion:**

The NPS project has been the first application of its scale and complexity for the client, and it has inspired other teams to think about Agile and DevOps for their projects delivery.

By implementing Agile, Lean and Kanban practices we achieved exceptional results in overall project delivery.

- Early ROI with 3-4 Production releases in a month
- Progressive Approach with Self Organized Team
- Turn Around Time (TAT)- Value realized as and when the request was deployed thus helping cycle time reduction
- Requests can be accommodated based upon priority and bandwidth with Flexibility and improved decision making

## AAROHAN 2019

- Daily meetings help in highlighting the bandwidth issues sooner than later for Better Capacity Planning
- Continuous Improvement, Reduced effort in hand-offs, communication and coordination.

### **Challenges faced:**

- Distributed scrum communication practices with Onsite and offshore scrum teams
- Story point estimation with SAP points definitions was a big learning
- Partnership with dedicated SPOCs from Microsoft azure became critical to the success
- Readiness of future stories in backlog ahead of sprint planning for better prioritization



# Transform IT Operations through Lean and Automation for a Leading Healthcare Payor

## Abstract

Infosys was engaged to provide application maintenance and support for 150+ applications, 15+ technical domains, and 20+ services across 24\*7 to a leading healthcare payor in US servicing 4+ million members. We embraced lean principles to reduce our Total Cost of Operations and ensure minimal disruption to business and achieved (a). Project Margin Improvement from -153% to +35%, (b). 40.5% Optimization of Capacity, (c). 53% Elimination of Incidents, (d). 75% improvement in resolution cycle time of Open enrollment inventory./

## Problem & Scope:

- Program started with very low margins compared to the organizational baseline and depleted further due to increased inventory from undocumented activities and incident spike.
- Challenges in meeting the stringent SLAs leading to financial impact.
- 20% Spike in incidents during business-critical events (Open Enrollment) requiring additional attention and bandwidth.

## Objective:

- Improve Project Margins from -153% to +30%
- 35% improvement in resolution cycle time of Open enrollment inventory
- Achieve seasonal spike (Open Enrollment) support with 0% increase in capacity
- Evolve to be a strategic partner to the customer

## Methodology

We started our lean and automation journey with a focused drive to bring in the mindset change and team alignment towards the common goal through an ignition workshop over 5 days. And we progressed with a structured and time bound approach as depicted below:

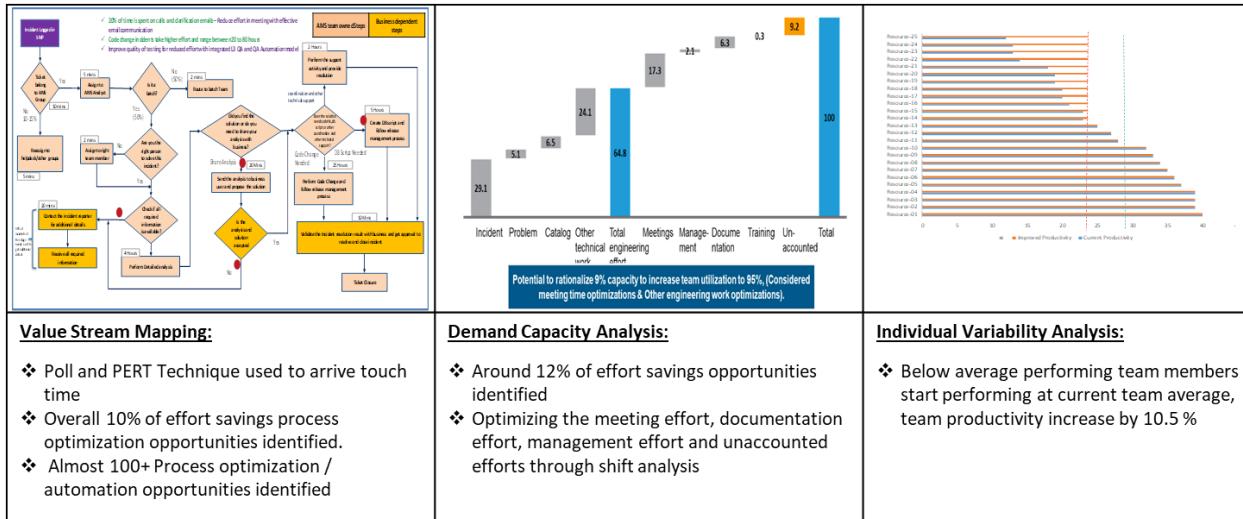
Phase	Diagnostics (3 Weeks)	Design and Implementation- Sprint1 (4 Weeks)	Design and Implementation- Sprint2 (5 Weeks)
Key Activities	Map current state and identify sources of waste	Simple lean levers/Design automation solutions	Complex lean levers/ implement automations
Key Milestones	<ul style="list-style-type: none"> <li>• VSM workshops</li> <li>• Waste Identification</li> <li>• Diagnostic readouts</li> <li>• Weekly reviews</li> </ul>	<ul style="list-style-type: none"> <li>• Measure Improvement</li> <li>• Design readouts (automation)</li> <li>• Weekly reviews</li> </ul>	<ul style="list-style-type: none"> <li>• Implementation and Improvement Update</li> <li>• Weekly reviews</li> </ul>

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During the Diagnostics phase the following lean tools and levers were chosen to identify the opportunities for improvement.

1. Value Stream Mapping ; 2. Day in Life Of(DILO) ; 3. Demand Capacity Analysis ; 4. Meeting Documentation and Management Time Analysis; 5. Span of control analysis and 6. Skill Heat-Map

### **Data Analysis/ Results:**



### **Impact/Improvements:**

## **Improvements:**

- Project Margin Improvement from -153% to +35% over a span of 18 Months
  - 40.5% Optimization of Capacity - Project team Size reduced from 180 to 107 and maintained same during seasonal spikes also.
  - 53% Elimination of Incidents – Monthly Incident Inflow reduced from 2250 to 1050

## **Client Business Impact:**

75% improvement in resolution cycle time of Open enrollment inventory (from 20+ days to 5 days), which has been acknowledged by Client Director and published in their newsletter.

## **Infosys Benefits:**

- Won 3.4 Million USD new engagement for Service Request Development based on these business impact.
  - Renewal of this same contract with higher value almost 12% with additional scope and extended years.
  - Became most trusted and strategic partner to client, where client has referred Infosys to few more customers.

### **Conclusion:**

Internal Recognitions received: Team was recognized with “Gold digger award” at organization level from COO and received multiple internal awards at unit level for the contributors.

Client Feedback: “Wanted to share metrics on some good work the teams have done to improve the stability of our applications. Since the start of 2017, we achieved a 32% reduction in the inflow of incidents.”. - **VP, IT App Dev and Operations to CIO of Client.**

Team continues to focus on ensuring sustenance and continuous improvements by adopting NextGen AMS tools such as Cognitive Automation, Machine Learning Driven Insights and Predictive Analytics.

Team continues to focus on ensuring sustenance and continuous improvements by adopting NextGen AMS tools such as Cognitive Automation, Machine Learning Driven Insights and Predictive Analytics.

### **Challenges faced:**

Team Mindset towards optimization and change implementations; Agreement from Internal and External Stakeholders on the change processes.

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