

White Paper



Six Sigma Approach

Key to enhance productivity and customer delight in a Support Project

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Abstract

Adopting the best practices derived from Six Sigma methodologies has become the key in augmenting the revenue generation cycle of the customer in support projects.

Introduction

In the light of current economic scenario and ever increasing competition, it has become imperative for Information technology (IT) service providers (vendors) to devise innovative processes for reducing operational costs to maintain profit margins while sustaining competition.

Service providers offer a range of services which include: package evaluation, scoping, development, implementation and rollouts, system reengineering and upgrades, customization and integration, maintenance and support etc. Of these, the maintenance and support projects provide an opportunity for generating revenues over a period of time depending on the relationship level with the customer. Hence it becomes important to keep a tab on the operational costs to maximize revenues from a support project. Some of the key challenges faced in achieving this goal can be summarized as below:

- **Fixed price base** – In a fixed price base model, number of resources utilized is inversely proportional to the project profit margins. On one hand, this provides flexibility in deciding the number of resources, whereas on the other, it builds pressure on generating higher profit margins. Thus, there always exists a tradeoff between the two. In order to achieve a perfect balance, use of limited number of resources to maintain higher profit margins becomes a necessity.
- **Service Level Agreement (SLA) adherence** – Missing a SLA leads to penalty and hence loss of revenue for the vendor, making it essential to put a control mechanism in place which keeps a strict vigilance on SLAs.
- **Increased turnaround time (TAT)** – TAT is the time taken from incident creation to its closure. It is directly related to the SLA of an incident. Higher the TAT, higher is the risk of missing the SLA. Thus along with SLA it also becomes necessary to work towards reducing the TAT.

Apart from these, limited knowledge base, skill level of resources, communication gaps and ever increasing volume of incidents could be cited as the other probable challenges during the course of a support engagement.

Six Sigma approach is one of the tried and tested approaches towards combating these challenges. It is a statistical approach for eliminating defects, where a defect is defined as anything outside of customer specifications. It seeks to improve the output quality of a process by identifying and removing the causes of defects (errors) and minimizing variability in business processes. This is accomplished through DMAIC (Define, Measure, Analyze, Improve and Control) for existing processes as in a support project and DMADV (Define, Measure, Analyze, Develop and Verify) for new processes as in a development project. Each Six Sigma project has quantified targets/financial metrics like cost reduction or profit increase or metrics around parameters critical to the customer such as cycle time, safety, delivery, etc.

Leveraging this approach, new and innovative processes can be devised and practiced, ensuing quantitative and qualitative benefits. In this paper, we highlight the phases involved in applying Six Sigma approach for a support project and the resulting monetary savings.

Application of DMAIC (Define, Measure, Analyze, Improve and Control):

Define & Measure Phase – Identify the need and measuring factors

The first phase involves defining the problem and the goal statement, necessitating the team to identify the need to implement six sigma and the major challenges faced.

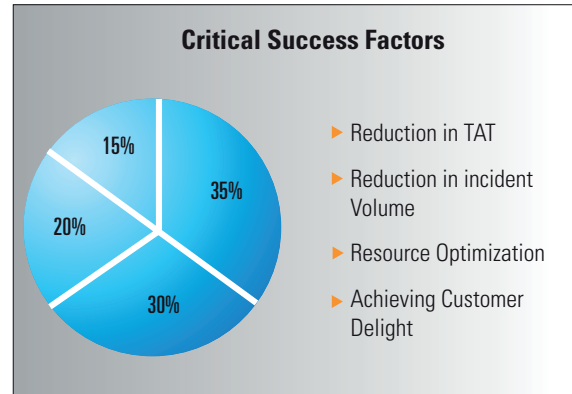
Problem Statement – Steep rise in volume of incidents leading to SLA misses and increased turnaround time. Below is a pictorial representation of the major issues faced:



Goal Statement – SLA adherence and reduction in incident volume.

Critical Success Factors – CSF are the variables which need to be worked upon in order to achieve the goal statement. Enlisted below are the factors:

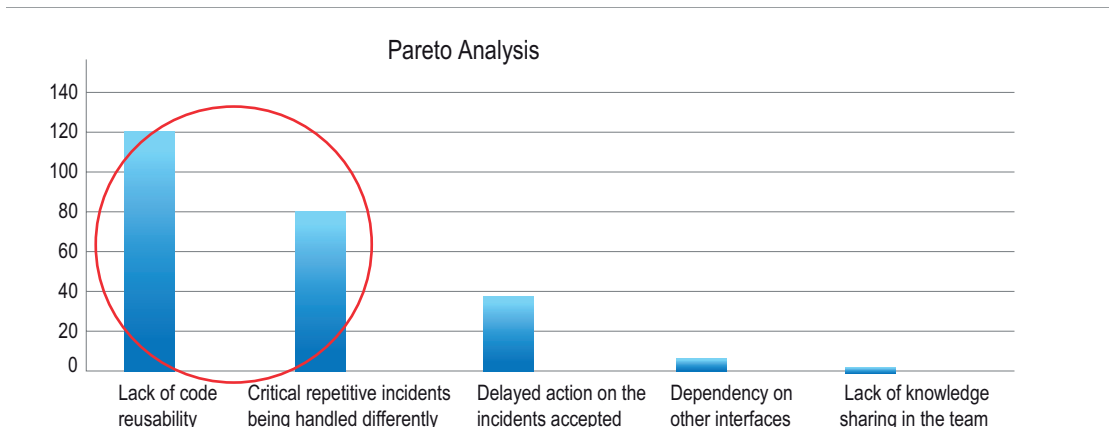
- **Reduction in Turn Around Time (Impacting Revenues)** – Lead-to-Cash (L2C) and Trouble-to-Resolve (T2R) are broad functional areas in which a support project operates. Turnaround time of the incidents is a critical factor influencing both the cycles. In L2C, TAT has a direct impact on revenues whereas customer delight is at stake in case of T2R. Thus, it becomes mandatory for every support project to have a strict vigilance on the turnaround time of the incoming incidents.
- **Reduction in Volume of Incidents** – The evolving technology has widened the scope of the product umbrella of the customers, which in-turn has led to an exponential increase in the volume of incidents, requiring the need to keep a strict tab on the number of incidents to maintain normalcy of operations.
- **Resource Optimization** – With the ever increasing competition among the IT service providers, each customer is adopting multi-vendor theory in order to maintain cost pressure on the service providers. In this cutthroat situation, it becomes essential to work with limited budget constraints which intensify the need for resource optimization.
- **Customer Delight** – Meeting the end goals is not the only objective of any service provider. To achieve the customer's satisfaction you need to walk an extra mile by providing and maintaining the quality of service as well. "Right First Time" is one such initiative, which aims at delivering the right solutions to the end customer in the first go itself; adding on extra pressure on the service provider.



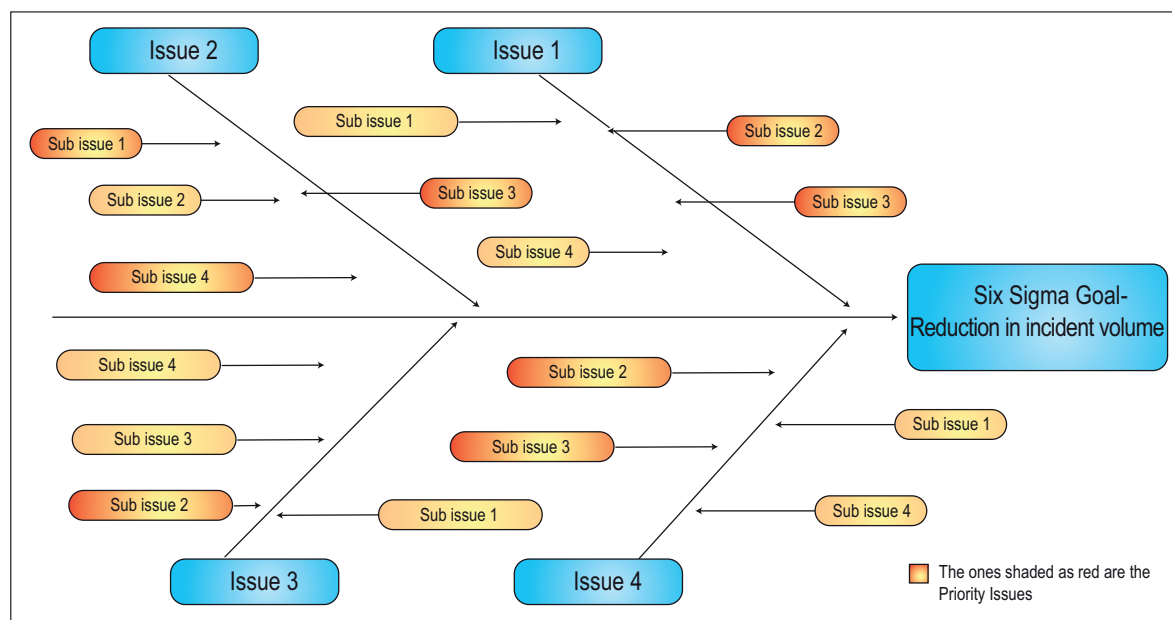
Analysis Phase – Circumscribe the root causes

This phase involves analyzing CSFs determined in measure phase. It also identifies the Before Improvement Values (BIV) for each CSF which will help in evaluation of monetary savings. The CSFs are as follows:

1. **Service Level Agreement (SLA):** In every support project the foremost important objective is to meet the SLAs. In order to achieve this, regular defect prevention activity is conducted. Here, Pareto's theory (80:20) is used to determine the key issues responsible for the SLA misses. These issues can be:
 - a. Lack of code reusability
 - b. Critical repetitive incidents being handled differently
 - c. Delayed action on the incidents accepted
 - d. Dependency on other interfaces
 - e. Lack of knowledge sharing in the team



2. **Turnaround Time (TAT):** Turn Around time is defined in various ways based on project specific scenarios. Here, a sample set of outlying incidents having more than average TAT are analyzed to determine the key cause of increase in incident cycle time. Apart from the above mentioned reasons under SLA, cases not being worked on non-working days, delayed response from users can also impact the increase in TAT.
3. **Volume of Incidents:** To facilitate the reduction in the number of incidents, it is important to categorize the different type of issues under common umbrellas. One such umbrella of categorization can be System, Data and User issue. Further by the use of Fish Bone or/and Pareto Analysis, the root cause for the identified category can be determined.



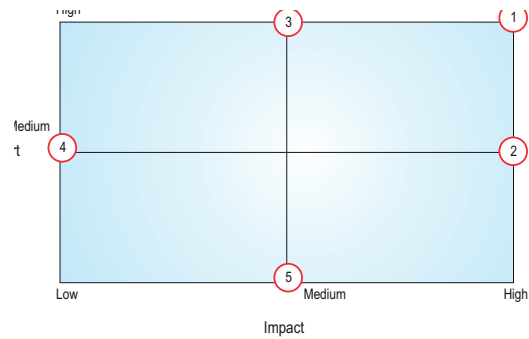
Fish Bone Diagram

Improvement Phase - Strategy Catalogue

This phase entails the formulation of solutions for the issues identified and implementing them in the project. It also identifies the After Improvement Values (AIV) for each CSF which will help in evaluation of monetary savings. The identified key solutions are then enlisted in a tabular form and ranked based on Effort required to implement the process, impact (in terms of outcome after implementation) and priority (based on the number of incidents impacted).

Sl.	Critical Success Factors	Solutions	Effort (H/M/L)	Impact (H/M/L)	Priority (H/M/L)
1.	Resource Optimization / SLA / TAT	Automation Tool *	High	High	High
2.	Reduction in Volume of Incidents	Providing proper RCA to the development team for permanent fixes	Medium	High	High
3.	SLA / TAT/ Resource Optimization	Common knowledge Repository Portal *	High	Medium	Low
4.	Reduction in Volume of Incidents	Highlighting the incidents which can be resolved by users community itself / Preparing a user issue handbook and circulating it among the user community	Medium	Low	Medium
5.	Reduction in Volume of Incidents	Data Cleansing Activities	Low	Medium	Low

- **Automation Tool** – Automation is used to achieve higher profit margins with the constraint of limited budget. In a support project, automation tool can be incorporated by determining the areas or the processes which require lot of manual effort and have scope of automation. Automated tools can be developed for various areas like: project functioning, project control and monitoring. For instance, a tool which can execute commonly used scripts in the background for retrieving, modifying and updating data or for data manipulation.
- **Common Knowledge Repository Portal**- To improve the knowledge base and to decrease the dependency on any individual, it is important to have a common knowledge repository wherein solutions for all kind of issues – new, complex, critical or recurring ones can be submitted by the team members. This ensures better performance as it eliminates the need to re-invent the wheel each time. Below matrix helps in determination of priority in which the solutions need to be implemented:



Control Phase – Best Practices

Objective of this phase is to devise a control mechanism for maintaining a continuous improvement for the above defined solutions. This can be achieved by defining the following “Best Practices”:

1. WSR (Weekly Status Report) - Weekly reports to be generated to check the status of SLAs, TAT, ageing incidents, and any other key highlights from previous week. In a short span of time, it facilitates in encircling outliers, if any, so that an in-time resolution can be provided before the issue turns out to be critical.
2. Analysis of Incidents – Incidents to be analyzed on regular basis so as to uncover any new issues. The same should then be highlighted to the development team for their resolution / workaround. This resolution should be stored at a common knowledge repository for future references.
3. On-Call resolution– To provide on-call resolutions for the incidents wherever possible, so as to ensure reduced turnaround time resulting in a delighted end customer.
4. Process Knowledge – To make sure that the team members have thoroughly understood the clauses mentioned in the MSA (Master Service Agreement) like threshold time limits for incidents, SLAs, penalties against SLA misses and the escalation points of the customer. Apart from the contractual processes, the team needs to follow the other functional norms defined in the project and also focus on improving the same. To ensure this, knowledge sharing sessions and quizzes can be conducted fortnightly/ monthly.

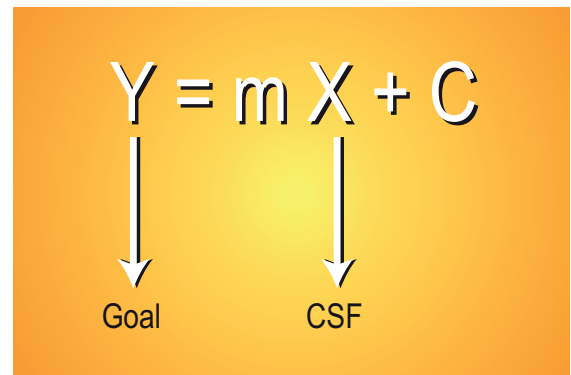
Evaluation of Monetary Savings

Summarized below is the holistic view of six sigma implementation, encapsulated in the form of a mathematical linear equation to calculate the benefits in terms of monetary savings:

Here, Y is the goal statement and X1, X2, X3... are the critical success factors highlighted in the Define and Measure phase of DMAIC, while ‘m’ and ‘c’ are constants in this equation.

Factors derived pre-implementation from Analysis Phase:

- SLA_{BIV1} : Number of incidents that miss SLA
- SLA_{BIV2} : Average time taken by the incidents that miss SLA to get resolved
- $IncidentVolume_{BIV2}$: Average time taken by the incidents to get resolved $IncidentVolume_{BIV1}$ - Number of incidents being solved



Improved factors post implementation:

- SLA_{AIV1} : Number of incidents that are missing SLA
- SLA^{AIV2} : Average time taken by the incidents that are missing SLA to get resolved
- $IncidentVolume_{AIV1}$: Number of incidents being solved
- $IncidentVolume_{AIV2}$: Average time taken by the incidents to get resolved

Using these, let us analyze the calculation for two key goals as follows:

1. Reduction in SLA Misses:

$$Productivity = Work / Effort$$

$$Work = [\Delta \text{ Increase in number of incidents being solved within time} * \text{time saved per incident}]$$

Where,

Δ Increase in number of incidents being solved within

$$\text{time} = SLA_{BFV1} - SLA_{AFV1}$$

$$\text{Time saved per incident} = SLA_{BFV2} - SLA_{AFV2}$$

Effort = (number of resources * effort spent by each resource)

Conversion Rate = [rate of 1 resource * number of days]

$$Savings = Productivity * Conversion Rate$$

2. Reduction in Incident Volume:

$$Productivity = Work / Effort$$

$$Work = [\Delta \text{ Reduction number of incidents} * \text{time saved per incident}]$$

Where, Δ Reduction number of incidents = $IncidentVolume_{BIV1} - IncidentVolume_{AIV1}$

Time saved per incident = $IncidentVolume_{BIV2} - IncidentVolume_{AIV2}$

Effort = (number of resources * effort spent by each resource)

Conversion Rate = [rate of 1 resource * number of days]

$$Savings = Productivity * Conversion Rate$$

Note – In the above scenario, $C = 0$.

Last Words

Best practices derived from Six Sigma approach provides a win win situation for both the –customer as well as the vendor:

Customer

Managed control over turnaround time not only helps foster customer's revenue growth in a short span of time but also helps sustaining the customer's end customer.

Vendor

Strategy catalogue and best practices helps in achieving higher project margins via optimum resource utilization which in turn boosts customer's confidence for future prospects and opportunities.

Glossary

CSF – Critical Success Factors

Fish Bone/ Ishikawa diagram - It is a cause-and-effect diagram that shows the causes of a certain event

Incidents – The problem faced by the end users are reported in a system in the form of an Incident. They can be in form of change requests, service request etc.

L2C – Lead to Cash cycle

MSA – Master Service Agreement

Pareto Analysis - The Pareto rule states that for many events, roughly 80% of the effects come from 20% of the causes.

RCA – Root Cause Analysis

Six Sigma - It is a statistical approach for eliminating defects i.e. measure of how a process performs quantitatively.

SLA – Service Level Agreement

T2R – Trouble to Resolve

TAT – Turnaround Time

References

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http://en.wikipedia.org/wiki/Six_Sigma

http://en.wikipedia.org/wiki/Ishikawa_diagram

http://en.wikipedia.org/wiki/Pareto_principle

About the author

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