CSAT Project

Phase A-

A huge client of Silverline Services, Mr. Shawn who works for Citizens Bank, complained that the service of Silverline Services is not meeting customer satisfaction level as mentioned in the SLA agreement to the relationship manager and process owner of Silverline Services, Mr. Vinod Patil. This means that the customer satisfaction level of customers of Silverline Services is not as par as sanctioned in the agreement. It is affecting Mr.Shawn's customer retention and he is losing a lot of his customers because of improper customer care service. He says that they will discontinue this contract if immediate action is not taken. Mr. Shawn is a very reliable client for Mr. Patil and he can't afford to lose him. Due to this fact, a precise Lean Six Sigma project was necessary to be conducted.

Phase B-

1. We understood the business case
2. We identified the external and internal customers from the business case. Critical to Quality factor was identified from the Voice of Customer.
3. We collected the Define phase data and analyzed it.
4. We performed a 1-Proportion Test over the data.
5. From the analysis, we prepared a project charter.
6. Using the tool SIPOC we constructed a snapshot of the process.
7. A high level process map was created.
8. We prepared a RACI matrix.
9. We set the Performance Standards.
10. We listed the potential causes for the problem.
11. We prepared a Ishikawa diagram using the list of potential causes
12. We prepared a CI matrix and sorted the potential causes into specific categories.
13. We prepared a data collection plan using the suitable sampling plan.
14. We collected and analysed the Measure data.
15. We prepared a Capability Analysis Chart.
16. We performed Pareto Tests for all the listed potential causes, saved their graphs and analyzed them.

17. We performed Chi-Square Tests for the listed potential causes which had multiple X's and multiple levels. Then we analyzed them.
18. We performed Goodness of Fit Test for the significant causes and analyzed their graphical outputs.
19. We performed 2-Proportion Tests for the listed potential causes which had one X and exactly two levels. Then we analyzed them.
20. We prepared a summary table of the 2-Proportion Tests Results.
21. We prepared a Solution Brainstorming Table.
22. Using the brainstormed potential solutions, we prioritized them in the Solution Refining Table.
23. We did Pilot Phase Planning.
24. We collected Improve phase data.
25. We performed a Validation Test using the 2 Proportion Test and 1 Proportion Test on the collected data.
26. We prepared a Capability Test Table.
27. We compared the Phase-Wise sigma value of Measure Phase and Improve Phase.
28. We performed various Validation Tests for X's Improvement.
29. We summarized all the Validation Tests for Improvement.
30. We updated the Process Map.
31. We prepared a FMEA Chart.
32. We collected Control phase data.
33. We prepared a Control Chart on the data, suitable to the nature of the data.
34. We performed a Validation Test using the 2 Proportion Test and 1 Proportion Test on the collected data.
35. We prepared a Capability Analysis Table.
36. We compared the Phase-Wise sigma value of Measure Phase, Improve Phase and Control Phase.
37. We prepared a Combined Individual Chart for Performance of Y.
38. We prepared a Monitoring Plan accordingly to the results.
39. We prepared a Response Plan accordingly to the results.
40. We received Project Sign Off approval from Process Owner, MBB and Finance Manager for project completion.
41. We ended the project.

Phase C-

1. We understand the business scenario to get the context of the background of the agreement between the company and the client. From this, we can understand the main problem more precisely and can conduct the project with much ease. We understand the need for the conduction of the Lean Six Sigma project.
2. This step is necessary to identify the Internal customer, External customer and the Critical to Quality factor. In this case, Mr. Shawn and his Customers are the External customers and they are complaining that the customer satisfaction level of customers of Silverline Services is not as par

as per the SLA agreement(CSAT≥3) to the Internal Customer Mr. Vinod Patil. The CSAT Score is below 3.

3. We collected the Define data and found out how many readings are satisfying the agreed CSAT score.
4. We performed a 1-Proportion Test over the data to check whether the defined goal which is obtained from the baseline data is same as that of the goal of population. As the P-value is greater than 0.05, we can conclude that the defined goal obtained from the baseline data is the same as that of the goal of population.
5. We prepared a Project Charter to summarize the business case briefly. We made a Problem Statement in which we understand that out of 4550 readings, the CSAT Score of 2658 readings is lower than the agreed CSAT. We made a Goal Statement in which we declared the target CSAT and the time it will be achieved. We made a Project Scope in which we understand the In-Scope(Fields to be worked on) and Out-Scope (Fields to be ignored). We clarified the members and their roles and prepared a Project Timeline.
6. SIPOC (Suppliers Inputs Process Outputs Customers). SIPOC is a scoping tool that views the process as a system of process steps, inputs and outputs. SIPOC allows the team to clearly define the process boundaries, link the stakeholders to process, and begin laying out the 'map' of the process itself, at a very high level.
7. A Process Map is a tool for graphically describing a process and used to identify project focus areas.
   A high level process mapping provides shared understanding between the team, a visual layout of the entire process for better communication, illustration of interrelationships of process to get an idea of the data versus the emotions of the customers and identification of bottlenecks and wastes to focus more on the project.
8. RACI matrix is a responsibility assignment chart that maps out every task, milestone or key decision involved in completing a project and assigns which roles are Responsible for each action, which personnel are Accountable and where appropriately, who needs to be consulted or informed. We identify the roles of every member in this project and hold them responsible for the task they are assigned. We make clear when the review meetings will be held.
9. The goal of a performance standard is to translate the customer needs into a measurable characteristic. It specifies the customer wants and a good process to give them what they want. The Defective here is any query with CSAT Score<3
10. We brainstormed the potential causes for low CSAT Score and listed them.
11. We sort the list of potential causes into various groups and categories. This is called the Ishikawa diagram.
    The main categories are as follows:
    - Man/Personal related causes
    - Machine related causes
    - Method or policy related causes
    - Material related, measurement related causes
    - Environment related or external factors
12. The CI matrix gives us an idea of if the potential causes we listed are Controllable or Uncontrollable, High or Low Impactable and Measurable or Immeasurable. This gives us an idea of what causes we really need to focus on.

13. Data Collection Plan is a tool to collect data of causes. It describes exact steps as well as the sequence that needs to be followed. In gathering the data for the given Six Sigma project. Sampling method is decided according to the nature of the data.
14. We collected Measure phase data and listed the various X's and if they meet the agreed CSAT Score or not.
15. We prepared a Capability Analysis Chart where we stated that the Defective Definition is a query which has CSAT Score<3. We found out that out of the 1500 units, 740 are defective and the long term sigma value is 0.0167.
16. As both the X's and Y's of data are discrete, we perform Pareto Tests over the data. It helps a team to focus on those causes that will have the greatest impact if solved. It displays the relative importance of problems in a simple, quickly interpreted, visual format. From the analysis of Pareto Charts, we can observe that Shifts, Team Leads, Query Holding Time (in hrs), Unscheduled Meeting on given day, have almost the same incidences over all their respective cases of not meeting target CSAT score. All the other potential causes had at least one of their respective cases which has more incidences of not meeting target CSAT score.
17. We performed Chi-Square Tests for the listed potential causes which had multiple X's and multiple levels.
    The Chi-Square Test answers the question: It is observed in graphical analysis that proportions of 'Y' across sub-categories of 'X' are not the same:
    - Is the above result statistically significant enough i.e. applicable to the whole population ? or,
    - Has the above result occurred by just random chance i.e. applicable only to the current sample of 'Y'?
      From all the Chi-Square Tests, the P-value for Task Complexity, Experience, Query Holding Time(in sec), Query Holding Time(in hrs) is less than 0.05. This means that the impact of above mentioned X's on CSAT Score is statistically significant.
18. Goodness of Fit Test is a graphical representation of the observed value and expected value of Y's to their X's.
    We found out that the Observed value>Expected Value for Task Complexity, Experience, Query Holding Time(in sec), Query Holding Time(in hrs). Hence, we can conclude that some of their respective cases have a significant impact on CSAT score.
19. We performed 2-Proportion Tests for the listed potential causes which had one X and exactly two levels.
    The 2-Proportion Test answers the question: It is observed in graphical analysis that proportions of 'Y' across sub-categories of 'X' are not the same:
    - Is the above result statistically significant enough i.e. applicable to the whole population ? or,
    - Has the above result occurred by just random chance i.e. applicable only to the current sample of 'Y'?

    From all the 2-Proportion Tests, the P-value for Handling multiple tasks, Unplanned Leaves on a given day is less than 0.05. This means that the impact of above mentioned X's on CSAT Score is statistically significant.
20. We prepared a Summary Table for the results of all the tests so we can see the results in a glimpse.

21. In Solution Brainstorming, we discuss the various possible solutions for the significant causes we have found out. In this step, all the team members sit down and discuss many possible solutions to each of the significant causes.
22. In solution refining, we check for possible cost of implementation, impact of solution, feasibility of solutions, client/senior management's consent for the solutions we have discussed and listed out in the solution brainstorming session. We calculate the Solution Priority Index to short list the more effective and feasible solutions.
23. Piloting is preparation for the 'unintended consequences' of implementing change. It is a test of a potential solution on a smaller scale, in order to better understand the effects of X's solutions , and to learn how to make the implementation more effective.Data is collected to ensure Y's performance is under specification limit every day. To track the challenges in deployment and fix them. Cause log and Solution log are maintained simultaneously for fixing challenges. Weekly meetings with operations/production leaders are conducted for the smooth deployment.
24. We collected Improve phase data and listed the significant causes and their CSAT.
25. Validation tests are performed to ensure that target is achieved and applicable to the total population in improve phase. In the 2-Proportion Test, the P-value is less than 0.05 and therefore, improvement in CSAT Score is sustained. In the 1-Proportion Test, the P-value is more than 0.05 and therefore, improvement goal is accomplished in improve phase.
26. In the Capability Test Table, we defined Defective as CSAT Score<3 and found out that 453 out of 1500 units are defective. Hence, Long-term sigma value is 0.518.
27. We compared the Measure and Improve phase sigma value in a graphical manner and plotted their average.
28. We did a Validation Test for X's Improvement for Types of Task Complexity, Experience, Query Holding Time(in sec) and Query Holding Time(in hrs) in a given day by Chi-Square Test and got P-value less than 0.05 for Types of Task Complexity and P-value more than 0.05 for the rest. Hence, we can conclude that there is an impact of Types of Task Complexity on CSAT score and no impact of the rest.
29. We summarized all the significant causes, their P-values and interpretation in a table so that we can see all the useful data in a glimpse.
30. After implementing the solutions, we updated the process map as per our new requirements.
31. The first thing we do in the Control phase is prepare a FMEA chart. FMEA (Failure Mode and Effect Analysis) is a tool to identify potential X's by considering and quantifying the risks of failure. We calculate the RPN (Risk Priority Number). We rate the severity of the cause of failure and the frequency of occurrence. On the basis of the RPN, the resources are focused on the causes with highest RPN i.e. causes having highest severity.
32. We collected Control phase data
33. Statistical Process Control commonly referred to as SPC are the charts used to prevent overreaction to normal process variation. Control charts are made to test the consistency and the stability of the process. SPC graphically illustrates the difference between special cause and common cause variation. Provides quick detection of unintended process changes as we can see the data point lie outside of the control limit. Control charts are an effective medium to detect any changes in the unintended x's as it works for both discrete and continuous type of data.
    As the Sample Characteristics are Variable Lot Size and Data plotted is % Defectives, we use P Chart .

34. We perform a Validation Test- 2 Proportion Test to check whether the improvement is sustained in the Control phase. As the P-value is less than 0.05, we can conclude that improvement in CSAT Score is accomplished for the total population.
    We perform a Validation Test- 1 Proportion Test to check whether the defined goal is met, sustained and whether the result is applicable for the total population in the Control phase. As the P-value is greater than 0.05, we can conclude that we have sustained with the target of 60% in the control phase.
35. We prepared a Capability Analysis Chart where we stated that the Defective Definition is a unit where CSAT Score<3. We found out that out of the 2250 units, 769 are defective and the long term sigma value is 0.41.
36. We compared the Measure, Improve and Control phase sigma value in a graphical manner and plotted their average.
37. Combined individual control chart is made to compare the improvement in various phases i.e. the sole purpose of the combined chart is to track the improvement performance over time for Y over the various phases we have been through.
38. Monitoring plan helps to ensure that solutions that we have found are properly implemented.
39. Response plan is made to provide a response plan for each monitored Y i.e. % Quality score and X the causes.
40. We received Project Sign Off approval from Process Owner, MBB and Finance Manager for project completion.
41. We investigated the project again and checked if no mistakes are made. Then we ended the project and submitted it to the management.