Final Project Report – LSSGB

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I. INTRODUCTION

First Wealth Bank should outsource its customer interactive services operations to Customer Calling Services (CCS) about 5 years ago. First Wealth Bank declared the least volume of 300,000 calls per year with the rate of $4.50 USD. Over the last two years, the service performance of CCS has deteriorated to such an extent that First Wealth Bank is considering withdrawing the contract. CCS has been collecting the data on the duration the representatives were available to answer the calls and the hold time. The data for the last few months is shown in Table 1. The performance measures that were of interest to First Wealth Bank were:

- Provide first call resolution to at least 75% of calls.
- Resolve minimum 90% of inquiries within 5 days.

Furthermore, First Wealth Bank was monitoring the data on number of people who were unable to get answers from CCS.The Quality Assurance business conducts routine examinations of recorded conversations between the callers and representatives. A rating based on the scale of 1-5 is assigned to the calls based on friendliness, accuracy, and suitable advice given to the callers. The table below shows the description of ratings As been observed that the quality check results of the two QA. Therefore data for 20 voice recordings were collected to verify the repeatability and reproducibility of QA projects. Table 2 shows the results of their assessments for each voice recording.

Table 1 The description of rating

Rating	Definition
1.	Perfect response
2.	Good response
3.	Average response
4.	Bad response
5.	Very bad response

A couple of other problems with CCS are their inability to hold on to the qualified workforce and the time it takes to hire experienced individuals. CCS decides to hire an expert on Six Sigma methodology to help them improve the call centre operations and to improve the production to a level that is acceptable to the client. CCS also wants to ensure that the Average Handle Time (AHT) is maintained during the course of this project. CCS has 6-8 months to turn around the performance of the company or potentially lose contract.

1. What is six Sigma?

Lean Six Sigma is a business improvement procedure that means to expand investor esteem by improving quality, speed, consumer loyalty and expenses. It accomplishes these by consolidating appliances and standards from both Lean and Six Sigma. Lean and Six Sigma have pursued freeways since the 1980s when the terms were first strenuously coded and characterized: Lean began in Japan (inside the Toyota Generation System), and Six Sigma started a presence in the US (inside the Motorola Research Focus).

2. Lean is a procedure improvement approach used to convey items and benefits better, faster and at a lower cost. Womack and Jones (1996) characterized it as "an approaching to indicate the esteem, line up esteem making activities in the best succession, lead those exercises without interference at whatever point somebody demands them, and perform them frequently more successfully. To put it clearly, lean believing is lean since it gives an approach to perform increasingly more with less. Furthermore, less human exertion, less human hardware, less time, and less space while coming consistently nearer to giving clients precisely what they need."

3. Six Sigma is an information-driven process improvement procedure used to perform steady and unsurprising procedure returns, decreasing method variety, what's more, abandons: Seen 1999 characterized it as "a business procedure that seeks to recognize and dispose of reasons for mistakes or deformities or disappointments in business forms by concentrating on yields that are basic to clients".

4. While Lean is about Speed and Efficiency, Six Sigma is about Precision and Precision:

Lean guarantees assets are crumbling away at the correct exercises while Six Sigma guarantees things are done well the first run through. Lean Six Sigma appropriates instruments from both tool

slots, so as to defeat the two conceptions, increasing speed while additionally expanding precision. Advantages of Lean Six Sigma in the modern world (both assembling and administration) include Guaranteeing administrations/items fit in with what the client needs (Voice of the Customer).

- Evacuating non-esteem including exercises (squander).
- Diminishing the occurrence of deficient items/exchanges.
- Shortening process duration.
- Conveying the right item/benefit at the opportune time in the ideal place. Albeit used to a great degree efficiently in modelling over the most recent couple decades, the use of Lean Six Sigma in the administration section has been less end favoured and tried, in the middle of fears that the systems in administration ventures don't loan themselves to the absolute utilization of the arrangement of calculable apparatuses compared with Six Sigma. There are three principal reasons why agencies need to apply Lean Six Sigma:
- Management method can remain economical and along these lines expensive, i.e. inclined to blunder and along these lines indicating diminished consumer loyalty.
- Many administration forms are mind boggling and have excessively "work-in-advance" which prompts
- expanded holding up time a non-esteem included expense.
- The Pareto System applies to reasonable procedures 0.80 of the postponement is generated by 0.20 of the activities. In this manner improving the speed of that basic 0.20 will prompt a reduction of 0.80 in process duration.

The application of Lean Six Sigma in Call Centres has been considerably more questionable over the most current couple of years, with a few authorities visualizing a set of opportunities, yet with others seeking the achievability of its application to such a situation.

5. Why Apply Lean Six Sigma in a Call Centre?

Call Centers are an overall wonder. Nations, for example, the Netherlands, Ireland, UK, Philippines, South Africa and India all have abundant Call Centre businesses. In the US there are larger than 55,000 Call Centers utilizing roughly 2.9 million specialists. In the UK the share utilizes more than 595,000 operators in 6324 Call Centers. The couple noteworthy sorts of Call Centers are outbound focuses and inbound focuses. The most widely recognized are inbound Call Centre tasks. For some, clients, Call Centers are the main purpose of contact with an association and their encounters can assume a noteworthy job in their choice to remain or leave that association.

Nearly everybody in their day by day life has had the experience of reaching one of those Centers for an assortment of reasons. In the UK alone, in excess of 10 million clients use phone managing an account. Outbound focuses are used more in regions, for example, promoting, deals and credit accumulation. In those cases, it's the Call Centre administrator that reaches the client/client. In spite of the fact that there are a few contrasts among outbound and inbound call focuses, they each have comparative potential advantages and challenges for the practice of Lean Six Sigma.

5.1 Benefits

A portion of the advantages that Lean Six Sigma can convey in a Call Centre is given underneath:

5.1.1 Streamlining the activities of the Call Centre - Lean system helps in taking out waste and other non-esteem included exercises from the procedures;

5.1.2 Diminishing the number of lost calls- Six Sigma's main driver examination and speculation testing systems can help with deciding how much time to spend on an alternate sort of calls in this manner giving a manual for the administrators.

5.1.3 Better use of assets (both human asset and innovation), prompting a decrease in the expenses of running the Call Centres.

5.1.4 Revealing the 'shrouded industrial facility'- building up the underlying drivers of why clients bring, in any case, can help in uncovering inconveniences further up in the process stream in this way giving advantages that go more remote than the Call Centre itself and enhancing client administration and support.

5.1.5 Lessening representatives' turnover- Call Centers are normally described by high worker turnover, because of the very distressing workplace (Mintel, 2009). An increasingly streamlined task would help with diminishing administrators' pressure, especially in an inbound Call Centre.

6. Challenges

Distinct difficulties to use Lean Six Sigma in a call centre conditions are provided below:

- The constant pace of the activity (usually 24/7) makes it more difficult for key factors of a team to find the opportunity to get connected in projects and Lean Six Sigma practice;
- The success of a relevant Measurement System Analysis (MSA) is given complex from the natural. subjectivity and representation of some call types thus disappointing reproducibility tests among different Call Centre executives;
- Huge employee turnover, that commonly characterizes Call Centres, execute it more complex for a Lean Six Sigma plans ‘to stick’ in the organization.
- Generally speaking, the open doors far exceed the difficulties. Call Centres these days are something beyond activities: they are the first, and now and again just, the purpose of contact an organization may have with its clients. Their productive and viable going through auspicious goals of clients' questions can go far in setting up the organization's image what's the more, picture.

II. LEAN SIX SIGMA PROJECTS IN CALL CENTERS

Undertaking determination is a basic part of progress: not all tasks might be the appropriate possibility for the utilization of Lean Six Sigma, and this should be remembered while evaluating the activity of a Call Centre. Additionally, extraordinary apparatuses and procedures might be progressively reasonable for an explicit undertaking, contingent upon the nature and normal for the procedure it is attempting to address. Activities that better loan themselves to Lean Six Sigma share, bury alive, the following attributes: The focal point of the undertaking is on a procedure that is either not in factual control or outside client particulars. As of now referenced in the presentation, Six Sigma procedures centre around decreasing the variety in a procedure, making them the perfect apparatuses for handling an unfit yet stable process, while the Lean devices centre more around the end of waste and would be the principal port of call for streamlining a temperamental procedure.

Needs ought to be given to insecure procedures, utilizing Lean devices to wipe out the squanders and improve the procedure: when it has settled, further developed measurable instruments, from the Six Sigma toolkit, can be utilized to decrease variety and make the procedure able. The root reasons for this has not been recognized yet: it is essential to begin chip away at the task with an unmistakable perspective and with no partiality. Information and hard certainties should manage the undertaking along its way; Quantitative measurements of the procedure are accessible: absence of measures and neglecting to understand a finished Measurement System Analysis (MSA) (Wheeler and Lyday, 1990) can genuinely risk any enhancement exertion The procedure's proprietor is strong and willing to give information and assets: this is basic for the on-going achievement of the venture, and the procedure proprietor job is talked about in detail in the Control Phase segment.

1. Define Phase

A cross-useful undertaking group was made, driven by a Black Belt, with the goal of utilizing the DMAIC (Define, Measure, Analyze, Improve, and Control) Six Sigma achievement system so as to expand the primary call goals proportion. The group perused down the undertaking, distinguishing which explicit territories of the Call Centre and administrations they would concentrate on; an abnormal state process guide or SIPOC (Suppliers, Inputs, Process, Outputs, Customers) (Pyzdek, 2003) was made, trailed by a progressively itemized process outline. In this paper, we have actual data for calculation and resolving the problem which goes on the bank call centre.

2. Process Capability Indices

Process enhancement end eavours, the procedure capacity record or process capacity proportion is a factual proportion of process ability: the capacity of a procedure to deliver yield inside particular limits. The idea of process ability just holds importance for

Table 2 Historical baseline data

HISTORICAL BASELINE DATA (Table 1)							
Month	Number of Reps	Number of Calls	AHT	First Calls Resolution	5 Day Resolution	FCR %	5DR %
Jan-14	20	22,858	4.17	16,458	15,822	72.0%	69.2%
Feb-14	20	28,963	3.40	22,910	22,092	79.1%	76.3%
Mar-14	20	23,070	4.91	15,826	16,697	68.6%	72.4%
Apr-14	19	29,933	2.46	26,375	21,454	88.1%	71.7%
May-14	19	26,633	4.49	15,554	19,663	58.4%	73.8%
Jun-14	19	27,638	3.97	21,266	20,788	76.9%	75.2%
Jul-14	19	24,553	2.93	23,167	20,136	94.4%	82.0%
Aug-14	20	29,897	3.27	19,913	22,544	66.6%	75.4%
Sep-14	20	23,418	4.05	16,346	18,788	69.8%	80.2%
Oct-14	21	22,901	3.89	18,756	14,910	81.9%	65.1%
Nov-14	20	22,250	5.59	15,308	15,301	68.8%	68.8%
Dec-14	20	27,482	4.02	16,324	22,585	59.4%	82.2%
Jan-15	20	24,599	4.67	20,366	17,138	82.8%	69.7%
Feb-15	20	26,413	3.14	25,281	15,187	95.7%	57.5%
Mar-15	19	24,840	4.87	16,221	17,691	65.3%	71.2%
Apr-15	19	27,011	3.43	17,368	17,708	64.3%	65.6%
May-15	18	21,166	4.85	17,400	14,749	82.2%	69.7%
Jun-15	18	28,871	3.62	26,417	21,618	91.5%	74.9%
Jul-15	17	24,515	4.19	21,003	19,949	85.7%	81.4%
Aug-15	19	21,244	3.73	14,573	14,191	68.6%	66.8%
Sep-15	20	29,950	4.02	23,766	22,833	79.4%	76.2%
Oct-15	20	21,387	6.08	14,950	14,990	69.9%	70.1%
Nov-15	20	23,906	3.57	18,848	19,047	78.8%	79.7%
Dec-15	20	27,199	4.03	24,115	24,258	88.7%	89.2%

Procedures that are in a condition of measurable control. Process ability files measure how much "normal variety" a procedure encounters in respect to its particular breaking points and enables diverse procedures to be contrasted with deference with how well an association controls them. Using the data given in Table 2, determine the process capability indices for performance metric. Provide the appropriate interpretation for the process capability indices drawn, based on the available data.

- 'First Call Resolution'. The specification limits for the FCR are; LSL=75% and USL=100%.
- '5 Day Resolution'. The specification limits for the 5DR are; LSL=90% and USL=100%.

Table 3 Day resolution data

5 Day Resolution	FCR %	5DR %
15,822	72.00%	69.20%
22,092	79.10%	76.30%
16,697	68.60%	72.40%
21,454	88.10%	71.70%
19,663	58.40%	73.80%
20,788	76.90%	75.20%
20,136	94.40%	82.00%
22,544	66.60%	75.40%
18,788	69.80%	80.20%
14,910	81.90%	65.10%
15,301	68.80%	68.80%
22,585	59.40%	82.20%
17,138	82.80%	69.70%
15,187	95.70%	57.50%
17,691	65.30%	71.20%
17,708	64.30%	65.60%
14,749	82.20%	69.70%
21,618	91.50%	74.90%
19,949	85.70%	81.40%
14,191	68.60%	66.80%
22,833	79.40%	76.20%
14,990	69.90%	70.10%

19,047	78.80%	79.70%
24,258	88.70%	89.20%

Table 4 Interpretation table

Description	Values	Notes	Interpretation
USL	1.00000		1. Since the Cp value here is 3.8 which is less than 1 means the process id not capable. 2. Cpk value is 0.047 is less than 1 which indicates the instability in the process and it is not capable 3. The given specification range is 0.75 - 1.0 and the process mean for the same is 0.76536 as long as the process mean is not Centre of the process tolerance range the Cpk Value will always be less than Cp Value 4. No Centring happens when the process fail to understand the customer expectation clearly or the process id complete as soon as the output reaches a Specific Limit
LSL	0.75000		
STDEV	0.10808		
MEAN	0.76536		
Cp	0.38551	(USL-LSL)(6*STDEV)	
Cpu	0.72365	(USL-MEAN)(3*STDEV)	
CpI	0.04737	(MEAN-LSL)(3*STDEV)	
CpK	0.04737	Minimum of Cpu & Cpl is CPK	

III. Measurement system analysis

A trial and statistical approach for determining how complete the variety inside the judgment method adds to in common process vacillation. There are five parameters to examine in an MSA: predisposition, linearity, dependability, repeatability and reproducibility. As indicated by AIAG (2002), a general principle guideline for estimation framework adequacy is:

- Under 10 percent mistake is acceptable.
- >10 percent to 30 percent mistake recommends that the framework is satisfactory relying upon the significance of use, cost of estimation gadget, cost of fix, and different variables.
- More than 30 percent blunder is viewed as unsatisfactory, and you ought to enhance the estimation framework. AIAG additionally expresses that the quantity of unmistakable classes the estimation frameworks partitions a procedure into ought to be more prominent than or equivalent to 5.

Not with standing percent mistake and the quantity of particular classifications, you ought to likewise survey graphical investigations after some time to settle on the worthiness of an estimation framework**.**

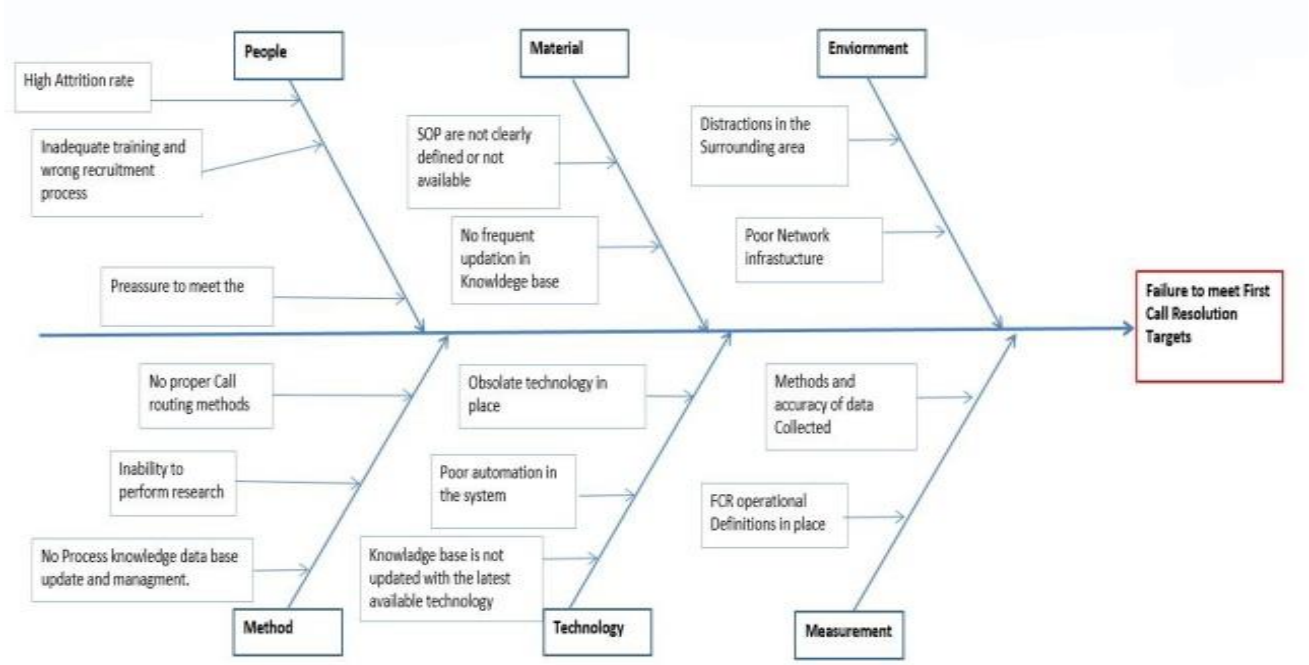
In the second table, we are going to find which is the best method would be best to use form measurement system analysis (MSA) to verify the repeatability and reproducibility of quality assurance (QA). And we are Determine the potential causes why CCS fails to meet First Call Resolution targets consistently.

Table 4 voice sample data

Table 2					
Voice Sample	Master Appraiser	John Trial 1	John Trial 2	Miranda Trial 1	Miranda Trial 2
1	3	3	2	3	3
2	2	2	2	2	2
3	2	2	2	2	2
4	4	4	3	4	4
5	2	1	1	1	1
6	5	5	4	5	5
7	4	4	4	5	4
8	3	3	2	3	3
9	3	3	3	3	3
10	4	4	5	4	4
11	2	2	1	2	2
12	3	3	3	3	3
13	5	5	4	5	5
14	2	2	2	2	2
15	2	2	2	2	2
16	2	2	2	2	2
17	2	2	2	2	2
18	4	4	3	4	3
19	3	3	3	3	3
20	2	2	2	2	2

Table5 voice sample data

Master Appraiser	John Trial 1	John Trial 2	Miranda Trial 1	Miranda Trial 2	With In John	John With Standard	With In Miranda	Miranda with Standard	Between OPS	All OP S Vs Standard
3	3	2	3	3	0	0	1	1	0	0
2	2	2	2	2	1	1	1	1	1	1
2	2	2	2	2	1	1	1	1	1	1
4	4	3	4	4	0	0	1	1	0	0
2	1	1	1	1	1	0	1	0	1	0
5	5	4	5	5	0	0	1	1	0	0
4	4	4	5	4	1	1	0	0	0	0
3	3	2	3	3	0	0	1	1	0	0
3	3	3	3	3	1	1	1	1	1	1
4	4	5	4	4	0	0	1	1	0	0
2	2	1	2	2	0	0	1	1	0	0
3	3	3	3	3	1	1	1	1	1	1
5	5	4	5	5	0	0	1	1	0	0
2	2	2	2	2	1	1	1	1	1	1
2	2	2	2	2	1	1	1	1	1	1
2	2	2	2	2	1	1	1	1	1	1
4	4	3	4	3	0	0	1	1	1	0
3	3	3	3	3	1	1	1	1	1	1
2	2	2	3	2	1	1	1	1	1	1
				12		11		18	17	12 10
				20		20		20	20	20 20
				60%		55%		90%	85%	60% 50%



Use Brainstorming technique for creative thinking and come up with improvement solutions that can be proposed for improvement in FCR Solutions for bringing improvement in FCR performance

Solutions for bringing improvement in FCR performance

1. Improve the recruitment process through identifying the right skill, competency needs and mapping with the roles and responsibilities and ensure that right candidates are recruited for the post.
2. Create standard operating procedures and knowledge base based on the standard queries received from the customers. Maintaining the Knowledge base and up to dated SOP will help the representatives to provide the First call resolution and thereby achieve the set performance level.
3. Having a SOP will help new and existing representatives to FCR without doing further Research and forwarding the calls to supervisors.
4. Budgeting for functional and soft skill training will give them motivation to achieve further in the career growth with the company and thereby curb the high attrition rate.
5. Implement automation and latest technologies available will help effective call handling and thereby achieving high customer satisfaction
6. Gather Voice of customer on FCR performance and re-establish operational definition on FCR and how it is computed, the team should be educated on operational definition and data collection of FCR.

IV. FMEA

Abbreviation for Failure Modes and Effects Analysis. FMEA is a hazard appraisal device, which assesses the seriousness, event and identification of dangers to organize which ones are the direst. **The two most mainstream sorts of FMEAs are Process (PFMEA) and Design (DFMEA).**

1. Every classification has a scoring network with a 1-10 scale.
2. Severity of 1 means okay to the end client, and a score of 10 signifies high hazard to the client.
3. Occurrence of 1 indicates low likelihood of the hazard occurring, and a 10 means a high likelihood of the hazard occurring.
4. Detection of 1 indicates a procedure that WILL probably get a disappointment, and a 10 implies the procedure will probably NOT get a disappointment.

Subsequent to scoring of every classification is finished for each hazard, the three scores are increased together (**Severity x Occurrence x Detection**) to decide the Risk Priority Number (RPN). The RPNs are arranged from biggest to littlest, and moves are made on the best dangers so as to lessen the general hazard.

Ordinarily, the seriousness can't be decreased, so the group ought to assess approaches to diminish event or increment location. After activities are finished, the RPNs are recalculated and new dangers are resolved.

1. Severity - The severity of the impact of the failure situation. It is a rate on a scale of 1 to 10. A great score is allowed to high-impact results while a low score is allowed to low-score results.

2. Occurrence - The frequency of appearance of the failure result. It is measured on a scale of 1 to 10. A high score is assigned to frequently occurring results while results with low occurrence are indicated a low score.

3. Detection - The ability to process investigations to identify the appearance of failure results. It is scored on a scale of 1 to 10. A failure result that can be simply identified by the process control is allowed a low score while a high score is allowed to inconspicuous results.

4. Risk Priority Number - The overall opportunity score of a result. It is measured by multiplying the scores for severity, occurrence and apprehension. A result with a high RPN demands important consideration while the results with low RPN are less risky.

Table Action FMEA

Process Step	Potential Failure Mode	Potential Failure Effect	Severity	Occurrence	Detection	RPN	Action Recommended
What is the step?	In what ways the step can go wrong?	What is the impact on the customer if the failure mode is not prevented or corrected?	How severe is the effect on the customer?	How frequently is the cause likely to occur?	How probable is the detection of the failure mode or its cause?	Risk Priority Number computed as Sev*Occ*Det	What are the actions for reducing the occurrence of the cause or for improving its detection?
Receive calls	Representative not available	Annoyed Customer	9	5	7	315	Take nessary Measure to control attritoin, give training, Motivate to grow the career path.
		Dissastisfied Customer		6	4	216	Make Provision for back up represntative.
	Representative not able to receive the call	Dissastisfied Customer	8	2	2	32	Check the Network systems are working properly and impliment early detection of system malfunction
Answer calls	Incorrect Resouliton Given	Dissastisfied Customer	9	4	2	72	Frequent updation of knowledge base and SOP to enable the representative answer the call more accurate to resolve the issue.
	Call transferred to Wrong Representative	Annoyed Customer	7	2	5	70	Train the represnetative to understand the customer requirement so they can be transferred to the correct person.
	Customer Kept the call on hold	Annoyed Customer	7	3	6	126	Customer feed back need to be collected to undestand how to serve them more satisfying way
Refer Knowledge base for answering the call	Knowledge base is not available	Failur to Meet the FCR Target	9	2	2	36	Frequent updation is needed, assign appropriate managers to update the same in frequent intrevels.
	Knowledge base is not updated	Incorrect Resolution Given	8	6	5	240	Schedule the frequency to update the Database and follow up with the same.

V. CONCLUSION

Call Centres are progressively significant for unusual organizations and are absolutely battling with the measurement of bearing better administration at a lower cost. This paper aimed to speak the issue of whether Lean Six Sigma can be effective in a Bank Call Centre condition: by methods for a Study, it was concluded that Lean Six Sigma can improve the task of a Call Centre, through an advancement in First-Call goals (that reduces abortion made by neglecting to answer the inquiry in any case), a reduction in Call Centre superintendents' turn over investigation): notwithstanding, negligent of this, it concluded out how to improve the First-Call goals, and consequently the client advantage levels, of its task.

Given any substantial size of various Call Centre activities, even a usually little improvement in the sigma estimation of the procedure can drastically diminish the imperfection valuation, increment consumer loyalty and convey money related advantages to the primary concern. By focusing on wiping out waste, identifying the actual esteem including exercises and utilizing the DMAIC apparatuses for critical thinking, it is conceivable to accomplish essentially enhancements in expenses and the dimensions of client benefit gave (utilizing on preparing and encounter) and streamlining the hidden schemes by taking out superfluous activities. This paper has used a specific number of tools accessible in the Lean Six Sigma toolkit while precluding some other analytical apparatuses.