UNIVERSAL INSURANCE

LEAN SIX SIGMA BLACK BELT PROJECT

ARPAN DINESH

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EXECUTIVE SUMMARY

Universal Insurance is grappling with a crucial issue in its call-center operations as a result of a surge in phone calls following a successful advertising campaign. This has led to a decline in customer service quality, with representatives lacking the necessary knowledge to effectively address inquiries.

To address this challenge, recommendations include implementing a robust training program to equip representatives with the skills needed to handle customer inquiries. Reviewing employee salaries is essential to attract and retain high-quality representatives. Optimizing the website design, which has a significant impact on revenue, can improve customer experience and reduce phone inquiries. Redesigning the call answering process by involving specialists and streamlining workflows will result in faster response times and better answers, ultimately enhancing customer satisfaction.

Establishing performance monitoring mechanisms will ensure the effectiveness of implemented changes, allowing Universal Insurance to achieve improved business outcomes and maintain a high level of customer service quality.

BUSINESS PROBLEM

Universal Insurance is facing a significant business problem with its call-center operations. After a successful advertising campaign, the company experienced a sales increase of over 15 percent, resulting in a surge of more than 25,000 phone calls per month to their call centers. Unfortunately, this influx of calls has led to a decline in customer service quality, as representatives often lack the necessary knowledge to address customer inquiries effectively. To tackle this issue, the company needs to identify the root cause. Potential factors that could be contributing to the problem include training deficiencies, inadequate hiring standards, insufficient employee salaries, or a website that fails to provide adequate information. Determining the primary issue will allow the company to allocate its resources appropriately for improvement.

DMAIC - 1

- Define: The project focuses on the call answering process, addressing the problem of increasing hold times for customers. Prompt service and quality answers are critical to customer satisfaction. The project boundaries include faster response times and better answers, excluding a review of paperwork processing. Inputs comprise staff training, salaries, website completeness, and process design.

- Measure: Hold times, measured in minutes, serve as a metric for the project. Sampling a set of calls allows a comparison between the existing and expected response times under the new system.

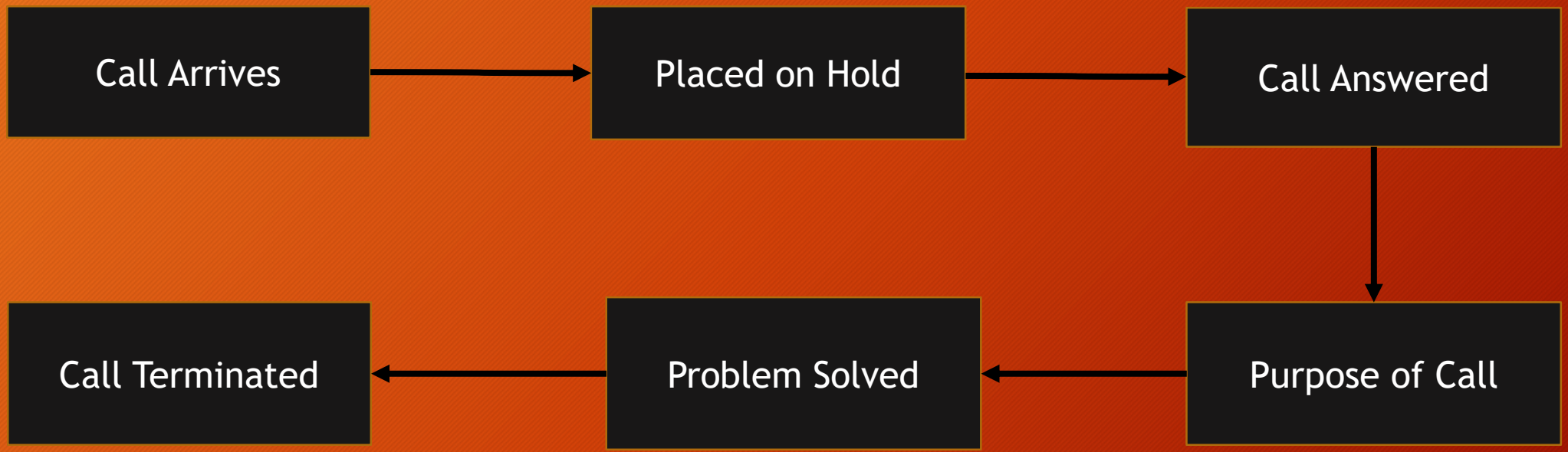
DMAIC - 2

- Analyze: Inadequate knowledge of representatives may contribute to the problem. Redesigning the process and involving specialists can enhance customer satisfaction. Analysis tools include X-Y matrix, Value Stream Maps, Regression, Multi-Vari charts, Hypothesis testing, and Control Charts.

- Improve: Findings from the analysis phase guide the design of a trial system. The system's performance is monitored and tested against the old system to verify its effectiveness. Implementation takes place in both facilities if appropriate.

- Control: To ensure continued performance, control charts for means and variances are designed. These charts focus on hold times, processing times, and customer satisfaction. The system is documented for future reference.

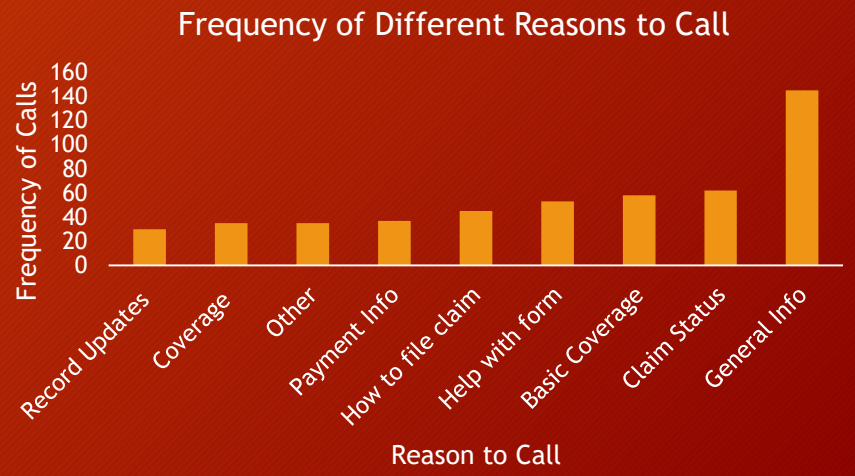
PROCESS FLOW



CALL CATEGORIES

- General Information: 145 instances, 14-minute duration. Consistent duration suggests stable customer needs.
- Help with Form: 53 instances, 12-minute duration. Trend shows shorter interactions, indicating improved familiarity or more efficient support.
- Payment Information: 37 instances, 18-minute duration. Trend indicates increasing complexity, requiring additional time for resolution.
- How to File a Claim: 45 instances, 18-minute duration. Stable duration implies consistent customer understanding of the process, irrespective of external factors.

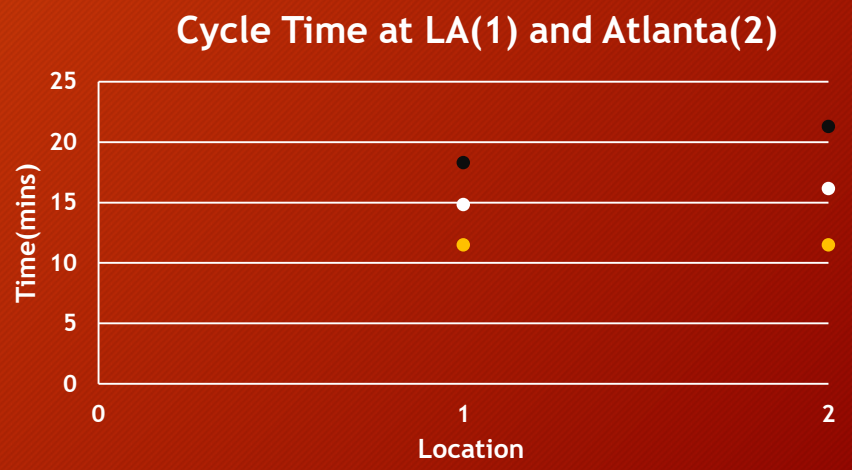
Category	Frequency	Duration
Coverage	35	8
Help with form	53	12
General Info	145	14
Claim Status	62	14
Record Updates	30	14
Other	35	16
How to file claim	45	18
Payment Info	37	18
Basic Coverage	58	24



MULTI-VARI – Cycle Time

- A Multi-Vari Analysis is conducted using 10 samples to determine if the cycle time from receipt of call to termination is the same across two locations: Los Angeles & Atlanta.
- The Multi-Vari Chart shows that the cycle time of call durations stays relatively the same across both locations.
- On Average, calls in Atlanta last longer, and have a larger variation than calls in Los Angeles.
- For purposes of re-designing the system, small differences in call times will be ignored. Having said that, it is strongly recommended that Universal Insurance re-visit these results and analyze why there is a variation.

Los Angeles(1)	Atlanta(2)
15.5	15.4
12.3	11.5
13.7	20.2
15.6	19.7
14.1	14.8
16.5	16.2
18.3	13.7
11.5	21.3
13.2	11.5
17.5	17.1



X-Y MATRIX

- Satisfaction is the most important output, followed by revenue and returning customers.
- Design has the highest impact on the output with the least importance(Returning), but manages to still affect customer satisfaction greatly.
- Website has the highest impact level (9) on the second most important output: Revenue.
- Salary & Training have the highest impact on the most important output, satisfaction.

	LEVEL OF IMPORTANCE		
	9	7	8
	OUTPUTS (Y)		
INPUTS (X)	Satisfaction	Returning	Revenue
Training	8	7	7
Salary	7	5	5
Website	6	8	9
Design	8	9	8

The X-Y matrix analysis highlights the need for Universal to focus on a robust customer service training program and re-visit their pay scale for customer facing employees. Universal should also look at optimizing their website's design as it has a significant impact on all important outputs.

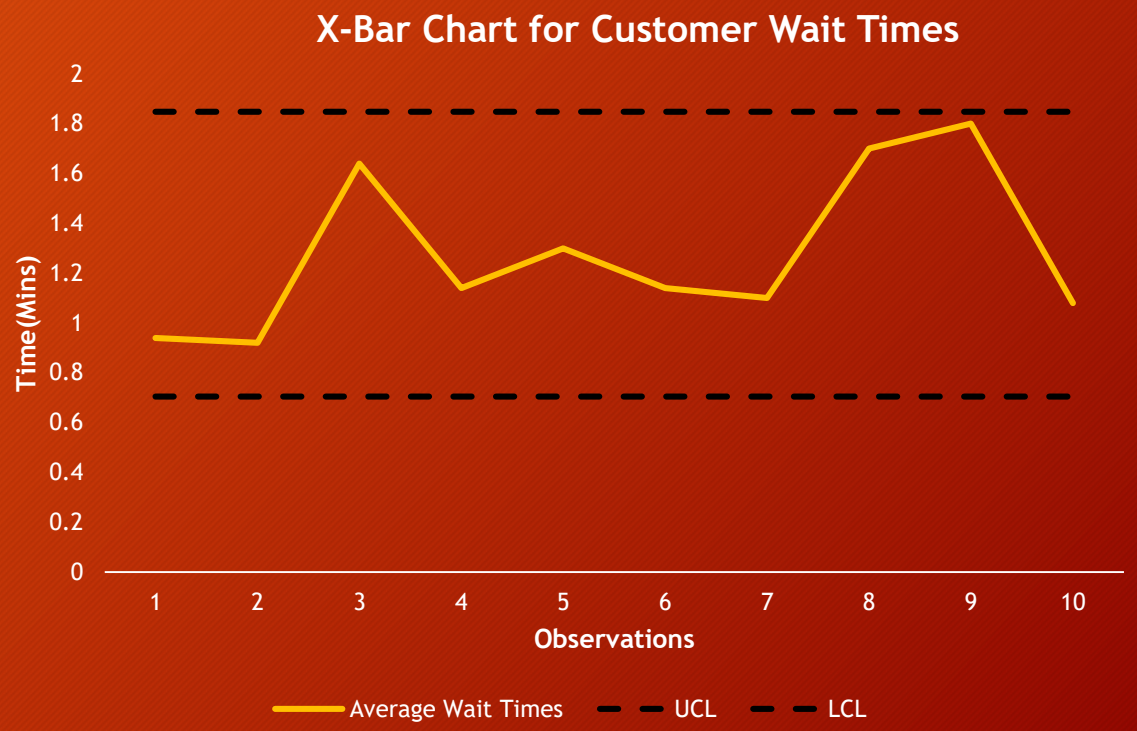
7 WASTES

- Waiting: Waiting before a call is answered is a significant issue, resulting in poor customer satisfaction and lost business. Urgent attention is needed to minimize wait times and improve customer experience.
- Defects: Increasing product line leads to representatives answering questions outside their knowledge base, potentially providing incorrect information. Addressing this issue promptly is crucial to ensure accurate responses and maintain customer trust.

7 Wastes	Explanation	Degree of Urgency
TRANSPORTATION	N/A	N/A
INVENTORY	N/A	N/A
MOTION	N/A	N/A
WAITING	Waiting before a call is answered is clearly the biggest problem. Customers become impatient, some terminate the call after waiting for several minutes. The consequence is poor customer satisfaction and lost business.	HIGH
OVER-PROCESSING	N/A	N/A
OVER-PRODUCTION	N/A	N/A
DEFECTS	Representatives must be capable of answering a wide variety of questions. As the product line of Universal increases, it becomes increasingly likely that representatives are answering questions from a limited knowledge base, and customers may receive incorrect information.	HIGH

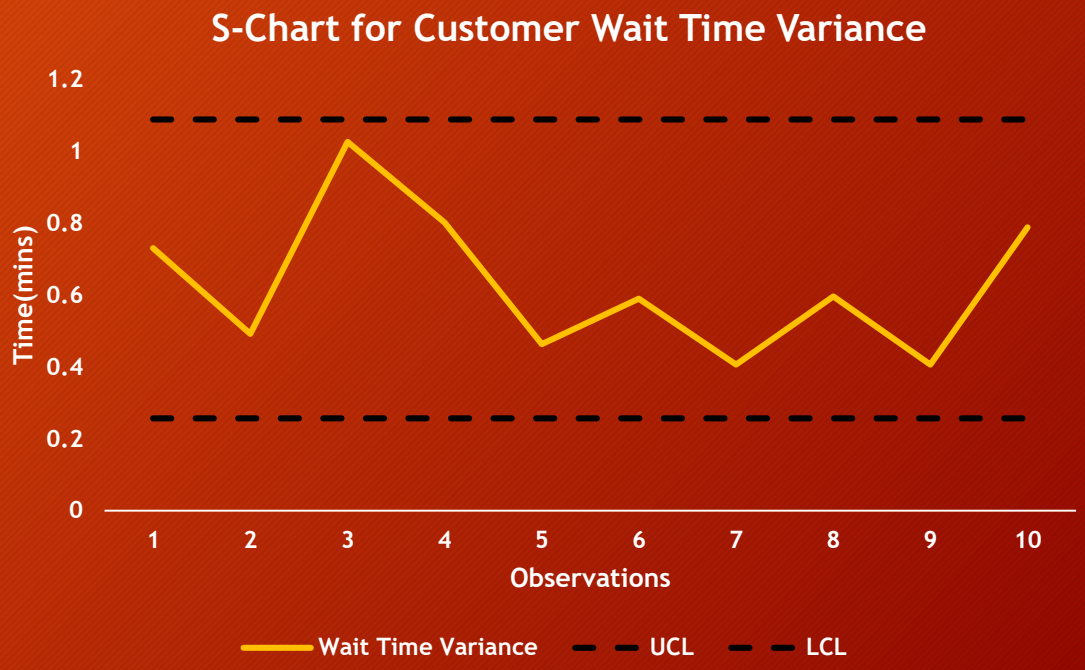
X-CHART

- The X-bar chart displays the average call wait times for each observation, providing insights into the overall process performance.
- The X-bar values range from approximately 0.7 to 1.4, indicating some variability in the average call wait times across the observations.
- No out-of-control signals are observed on the X-bar chart, suggesting that the process average remains within control limits.
- There is no evident trend or pattern in the X-bar values, indicating a stable process with consistent performance over the 10 observations.
- The X-bar chart enables process owners to monitor and maintain the average call wait times within acceptable limits to meet customer expectations.



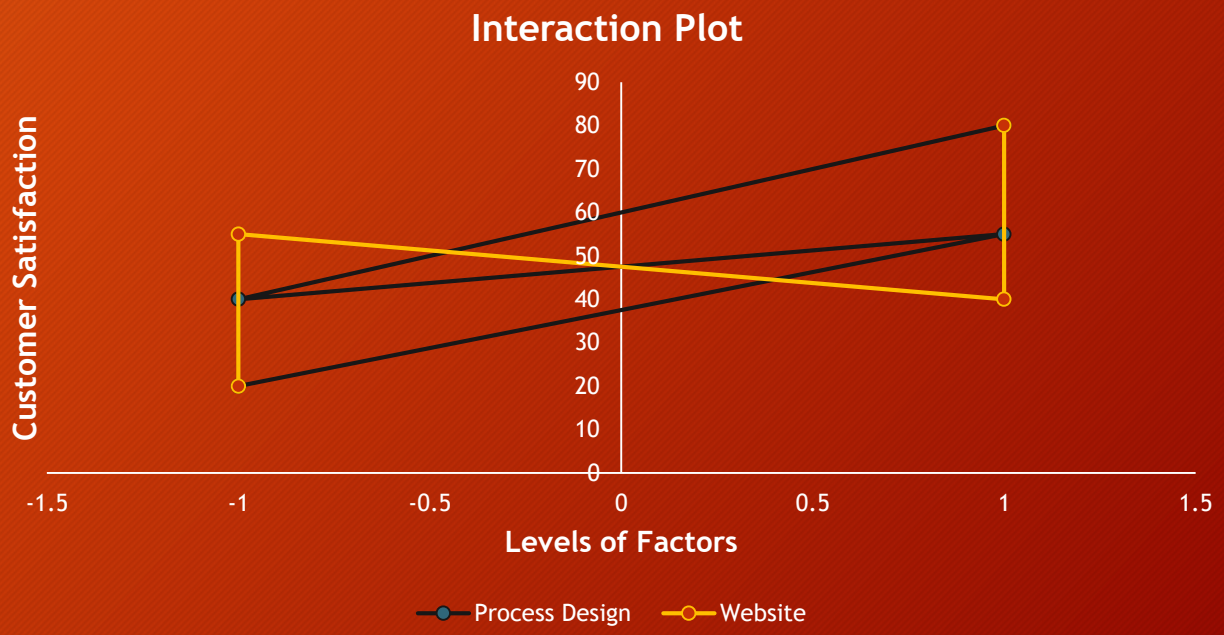
S-CHART

- The S-chart represents the standard deviation of call wait times within each observation, indicating the variability or dispersion in the data.
- The S-chart shows fluctuating standard deviation values ranging from approximately 0.4 to 0.9, suggesting some variability in the call wait time measurements.
- No out-of-control signals are observed on the S-chart, indicating that the process variation remains within control limits.
- There is no clear trend or pattern in the S-chart, indicating that the process variation is consistent and stable across the 10 observations.
- Monitoring the S-chart allows process owners to assess and control the variation in call wait times, ensuring consistent service quality and identifying opportunities for improvement.



DOE

- A Full Factorial Design is conducted to study the effect of two factors(Process Design and Website) on the response variable(Customer Satisfaction).
- The high and low of the two level factors generate a customer satisfaction score(seen on the interaction plot).
- Process Design influences customer satisfaction more than the website does.



Trial#	Process Design	Website	Performance
1	-1	-1	20
2	1	-1	55
3	-1	1	40
4	1	1	80

HYPOTHESIS TESTING – Testing Re-designed system

To ensure the effectiveness of proposed changes, a working prototype of the system was created and tested with a sample of customers. A hypothesis test would determine if the results were positive. The test included 28 calls, with callers being screened and directed to specialists. After the call, customers were asked to rate the system on a scale of 1 to 10, aiming for a target satisfaction score of 7.5. The results of the hypothesis test suggest that there is enough evidence to say that new system is successful in returning a customer satisfaction rating greater than 7.5 on 10.

Hypothesis Test Details:

- 1-tail t-test
- Ho : Customer Satisfaction Score = 7.5
- Ha : Customer Satisfaction Score >= 7.5
- Level of Significance = 0.05
- P-Value = 0.03
- **Result = Reject Ho: Enough evidence to suggest that customer satisfaction has increased.**

LINEAR REGRESSION MODELLING

Q: How is hold time or courtesy of a call affecting customer satisfaction?

A linear regression model is computed using 14 samples, with customer satisfaction as the dependent variable and hold time and courtesy of call as dependent variables. The results are shown in the table below.

- The coefficient for courtesy (-0.244) suggests that an increase in courtesy by one unit leads to a decrease in customer satisfaction by 0.244, although the p-value (0.441) indicates this relationship is not statistically significant.
- The coefficient for hold time (-1.218) suggests that an increase in hold time by one unit results in a decrease in customer satisfaction by 1.218. This relationship is statistically significant, as indicated by the p-value (0.0039).
- Although customer rep courtesy should not be compromised, Universal insurance should emphasize the importance of shorter hold times to it's employees.

	Coefficients	Standard Error	t Stat	P-value	Lower 95%
Intercept	9.019676214	1.306572276	6.903312109	2.58E-05	6.14393002
Courtesy	-0.244084682	0.30568029	-0.798496634	0.441481	-0.9168825
HoldTime	-1.218181818	0.33562312	-3.629612344	0.003959	-1.9568833

BUSINESS RECOMMENDATIONS

- Enhance training program: Address the issue of inadequate knowledge among representatives by implementing a robust customer service training program. This will empower representatives to effectively address customer inquiries and improve customer satisfaction.
- Review employee salaries: Revisit the pay scale for customer-facing employees to ensure they are adequately compensated. This step can help attract and retain high-quality representatives, leading to improved customer service quality.
- Optimize website design: Given the website's significant impact on revenue, focus on enhancing its completeness and user-friendliness. Improve the website's information availability to provide customers with adequate self-service options and reduce the need for phone inquiries.
- Implement process redesign: Redesign the call answering process by involving specialists and streamlining the process flow. This can lead to faster response times and better answers, improving overall customer satisfaction.

THANK YOU

ARPAN DINESH

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