PROCESS IMPROVEMENT PROJECT

MBC 638
KELLY HWANG

Account Cancellation Requests for Customers

Kelly Hwang

Key Dates ---> January to March	Define	Measure	Analyze	Improve	Control
	BEGIN – 1/28/18	1/29/18 – 2/15/18	2/16/18 – 2/25/18	2/26/18 - 3/12/18	3/12/18 - END

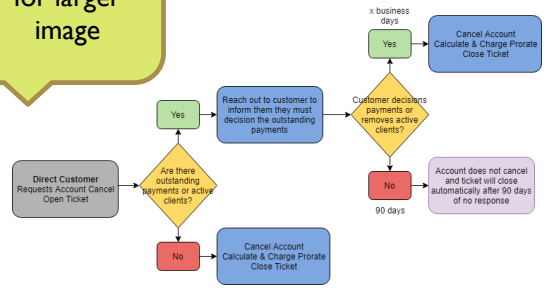
DEFINE

Every customer at X company has one or more accounts. Should the customer want to terminate services, they have to submit a cancellation request. A customer service agent at X company will review the cancellation request, manually review the account, and perform the cancellation once criteria are met.

With an SLA of closing a ticket within 2 business days, at the start the % of tickets within SLA was 61%.

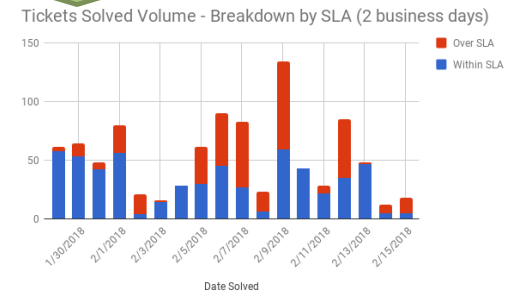
Goal: Increase the percent of time tickets are being closed within 2 business days by 5% or more (Improve Customer Experience).

See Slide 4 for larger image



MEASURE

Total:: 943 Tickets



Although continuous data was encouraged for this project, much of the data gathered for this specific project was discrete due to the nature of cancellation tickets and the platform being used to house the data (Zendesk). However, time/days to resolution can be counted as continuous data.

Y = F(X) where
Y = Time to Resolution
X's = Date Opened, Date Solved, Resolution Type, Delay Reason

$$n = \left(\frac{z^* \hat{\sigma}}{E}\right)^2$$

Ideal Sample Size: 670
Further reduce margin of error, collect more samples if exists

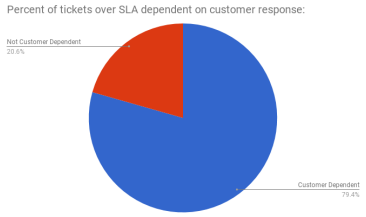
ANALYZE

SQL Before:

D	1
U	943
D*U	943
A	364
A/DU	0.3860021209
DPO*1,000,000	386,002.12
SQL	**1.8**

Score for manually gathered data

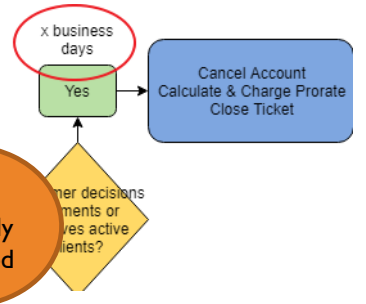
P observed	0.93
P chance	0.2530992
Kappa Score	**0.91**



It is an easy win to focus process improvement efforts on customer dependent delays. The pie chart shows the breakdown of percentage of tickets over SLA because of customer dependent actions (BLUE).

IMPROVE

Revising Process Map…



SQL After:

D	1
U	721
D*U	721
A	223
A/DU	0.3092926491
DPO*1,000,000	309,292.65
SQL	**2**

Customer decision wait time is an uncontrollable factor that can be reduced by introducing small changes:

- Amend the process to cancel and/or void certain types of outstanding payments on behalf of the customer. (Not all types of payments can be addressed but this will reduce at least 25% of customer needed actions).
- Create new macro responses that will report which payments were cancelled within the account cancellation confirmation.

CONTROL

Were the goals of this project met? [Increase the percent of time tickets are being closed within 2 business days by 5% or more.]

Continue with improved process!

	% Within SLA
Ticket Total Before	61.40%
Ticket Total After	69.07%

YES

DEFINE - OVERVIEW

- Every customer at X company has one or more accounts. Should the customer want to terminate services, they have to submit a cancellation request. A customer service agent at X company will review the cancellation request, manually review the account, and perform the cancellation once criteria are met.

- Customer service spends on average 5 minutes per cancellation request. Daily volume for cancellations is about 50 tickets (250 minutes) per day. If the average customer service agent is paid $19/hour, and we are using the estimation of 23 works days per month, the current cost per year to process these requests is $21,850 annually. The time spent per year is 1,150 hours.

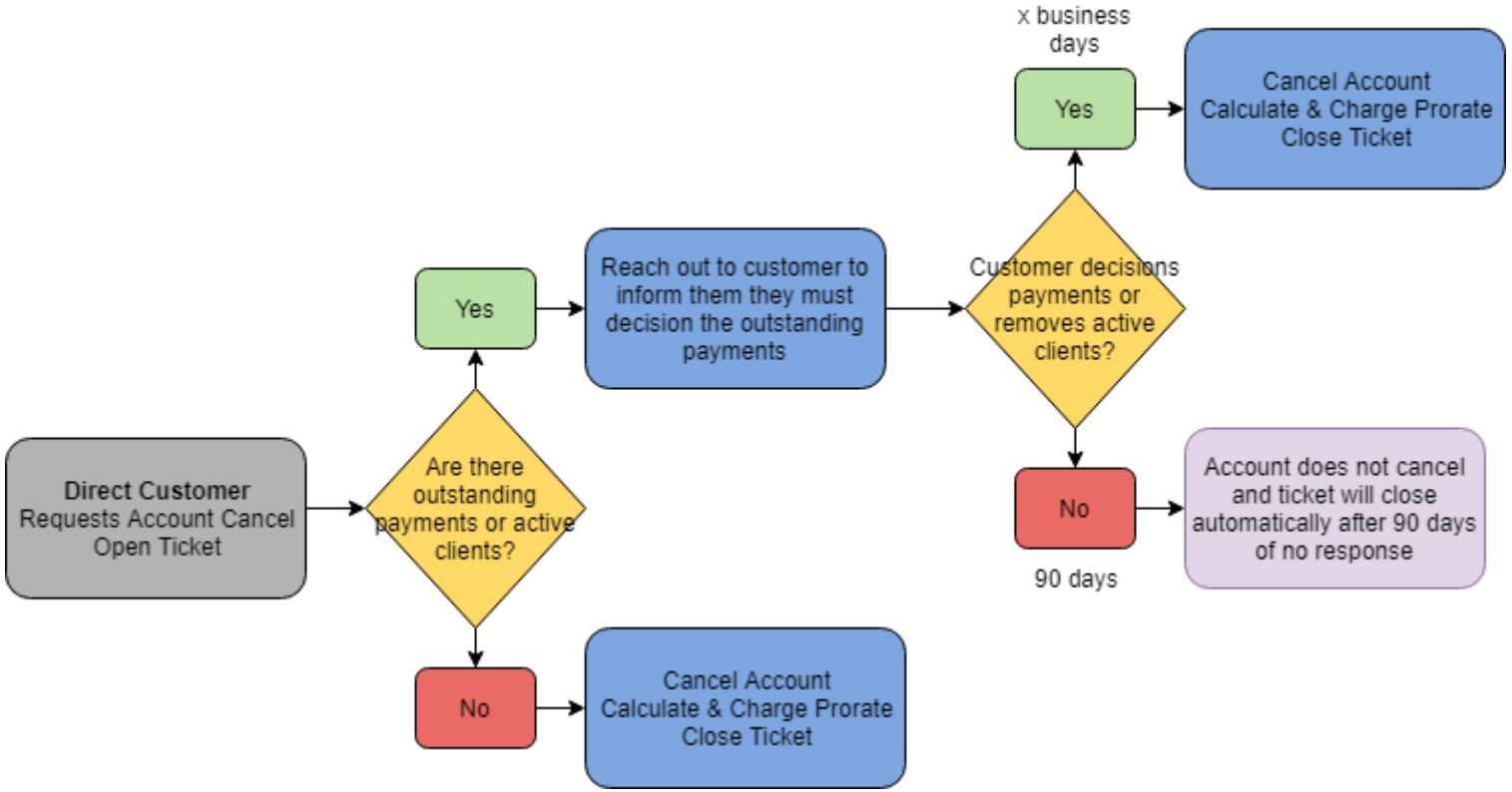
- Defined Standard Operation Procedure mandates a service level agreement of response time within 1 business day of the day of request. The SLA was being met 95% of the time (based on the data gathered during the Measure stage). Ideally an account cancellation request will be completely resolved within 2 business days if there are no exceptions, though this is not an official SLA metric. We will use 2 business days as our SLA for this improvement project.

- The goals are to either:
  - Reduce the time spent on cancel tickets by at least 10% or 115 hours ($2,185 in savings).
    OR
  - Increase the percent of time tickets are being closed within 2 business days by 5% or more (Improve Customer Experience).

Storyboard will present the goal with the most positive findings.

DEFINE – PROCESS MAP

The original project definition worksheet showed a high level overview of the cancellation process for different types of bank partners. I have decided to focus solely on one type of bank partner (Direct) moving forward, mainly because the other bank partners have rigid procedures in place externally and are controlled by said banks, which will make it difficult to alter any of the processes. Direct type accounts are all internal procedures, therefore process changes are easier to implement. Direct type accounts are also the majority of the accounts with cancellation requests.



MEASURE – OPERATIONAL DEFINITIONS

- **Time to Resolution:**
  Calculated by the difference between Date Opened and Date Solved (Counting Weekdays only, no weekends)
  Example: Date Opened Friday 3/16, Date Solved Monday 3/19, will result in Time to Resolution of 1 (day)

- **Date Opened:**
  Date that the cancellation request was submitted by the customer

- **Date Solved:**
  Date that the cancellation request was resolved and closed (final date of correspondence)

- **Resolution Type:**
  - Immediate – Agent was able to cancel the account within SLA and no additional communication was necessary with the customer
  - Action Requested – Communication(s) needed with the customer in order to complete cancellation request

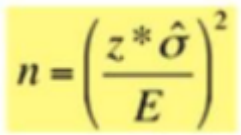
- **Delay Reason:** Reason for delay of ticket if it was not closed within SLA or if an action was requested
  - Uncleared Payments – A pending or uncleared payment kept the ticket from being solved within 2 business days.
  - Active Clients – A parent account trying to cancel with child accounts cannot cancel until the child accounts are first removed from the parent account. This kept the ticket from being solved within 2 business days.
  - Resolved by SOP – The account was actually cancelled within 2 business days, however further questions or concerns from the customer kept this ticket open for longer than 2 business days.
  - Agent Delay – The ticket was not resolved within 2 business days because the agent did not engage with the ticket until after the 2 business day period mark, missing SLA.

Other Definitions:

- **Ticket** – A ticket is opened when a customer requests for their account to be cancelled. 1 account cancellation request = 1 ticket.

MEASURE/ANALYZE - OVERVIEW

- If I accept a margin of error of 0.2 business days (to resolution) with a 95% confidence interval, my calculated sample size should be at least 670 tickets.
  Calculation: (1.96 * 2.64 / 0.2)^ 2 = 669.33 (round up to 670 tickets).



To minimize margin of error even further, more samples were taken than the minimum of 670.

Measured cancellation ticket activity over the course of 1/29/18 – 2/15/18.
Sample Size: 943 Tickets

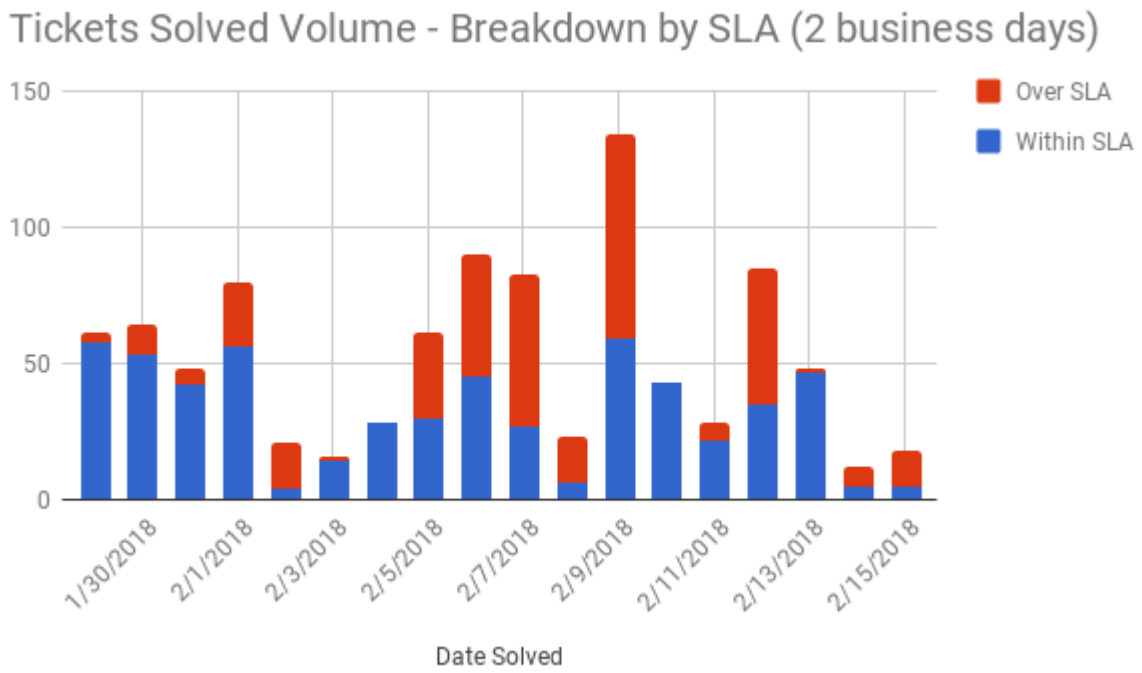
- SQL Score: 1.8
- Kappa Score: 0.91
- Although continuous data was encouraged for this project, much of the data gathered for this specific project was discrete due to the nature of cancellation tickets and the platform being used to house the data (Zendesk). However, time/days to resolution can be counted as continuous data.
- Y = F(X) where
  Y = Time to Resolution
  X's = Date Opened, Date Solved, Resolution Type, Delay Reason

MEASURE – DATA MEASUREMENT PLAN

Data was collected using my company's CRM platform (Zendesk) where each cancellation ticket is stored. The data collected can be viewed in the next slide (defining operational definitions). The data was collected with a combination of methods: building custom reports using Zendesk's metric building tool as well as manually collecting data that Zendesk did not capture (such as Delay Reason).

Metric / Performance Measure	Data Souce and Location	How will the Data be Collected	Who will Collect the Data	When will the Data be Collected	Target Sample Size
Date Opened	Zendesk Ticket	Auto Record	System	1/29 – 2/15	
Data Solved	Zendesk Ticket	Auto Record	System	1/29 – 2/15	670+
Time to Resolution	Zendesk Ticket	Calculated: Date Opened – Date Solved	Kelly	1/29 – 2/15	
Resolution Type	Zendesk Ticket	Manual	Kelly	1/29 – 2/15	
Delay Reason	Zendesk Ticket	Manual	Kelly	1/29 – 2/15	

MEASURE/ANALYZE – VOLUME & STATISTICS



Statistic	Business Days to Resolution
Mean	2.532343584
Standard Error	0.085992488
Median	2
Mode	1
Standard Deviation	2.640683563
Sample Variance	6.973209682
Range	25
Minimum	0
Maximum	25

Statistics	Daily Volume
Mean	53
Standard Error	8
Median	48
Mode	61
Standard Deviation	33
Sample Variance	1084
Kurtosis	1
Skewness	1
Range	122
Minimum	12
Maximum	134

ANALYZE – SQL & KAPPA

SQL Definitions:

Defect Opportunity – Any ticket that is not solved within 2 business days of the ticket's open date
Calculation:

D	1	Defect opportunity per unit
U	943	Units total
D*U	943	Total possible defects
A	364	Total actual defects
A/DU	0.3860021209	DPO
DPO*1,000,000	386,002.12	DPMO
SQL	**1.8**	Yield 61.80%

Kappa Definitions:
Because I manually rated a ticket's reason for delay if it was not resolved within 2 business days, I used the Kappa score to confirm whether my method for capturing data was good for reproducibility.

Since this data was tagged manually, I used a sample test of 44 line items.
Calculation: K = (P observed - P chance) / (1 - P chance)

Totals			44
Uncleared Payments	11	11	
Active Clients	10	9	
Resolved by SOP	11	9	
Agent Delay	12	15	
Total Agreed			41
Percents			
Uncleared Payments	0.25	0.25	
Active Clients	0.23	0.20	
Resolved by SOP	0.25	0.20	
Agent Delay	0.27	0.34	
Percent Agreed			0.93

P observed	0.93
P chance	0.2530992
Kappa Score	**0.91**

= Almost perfect agreement

ANALYZE – CHI SQUARE

Test if there is a relationship between large volume of tickets and agent caused delay (not customer dependent).
High volume defined as greater than the mean (>53 tickets).

Ho: Volume and Agent Delay are independent (no relationship)

Ha: Volume and Agent Delay are not independent (there is a relationship)

Observed	Agent Delayed	Not Agent Delayed
High Volume	30	239
Low Volume	13	50
Grand Total	**43**	**289**

Expected	Agent Delayed	Not Agent Delayed
High Volume	34.84036	234.1596
Low Volume	8.159639	54.84036
Grand Total	43	289

Alpha: 0.05

ChiSqValue: 0.043623115

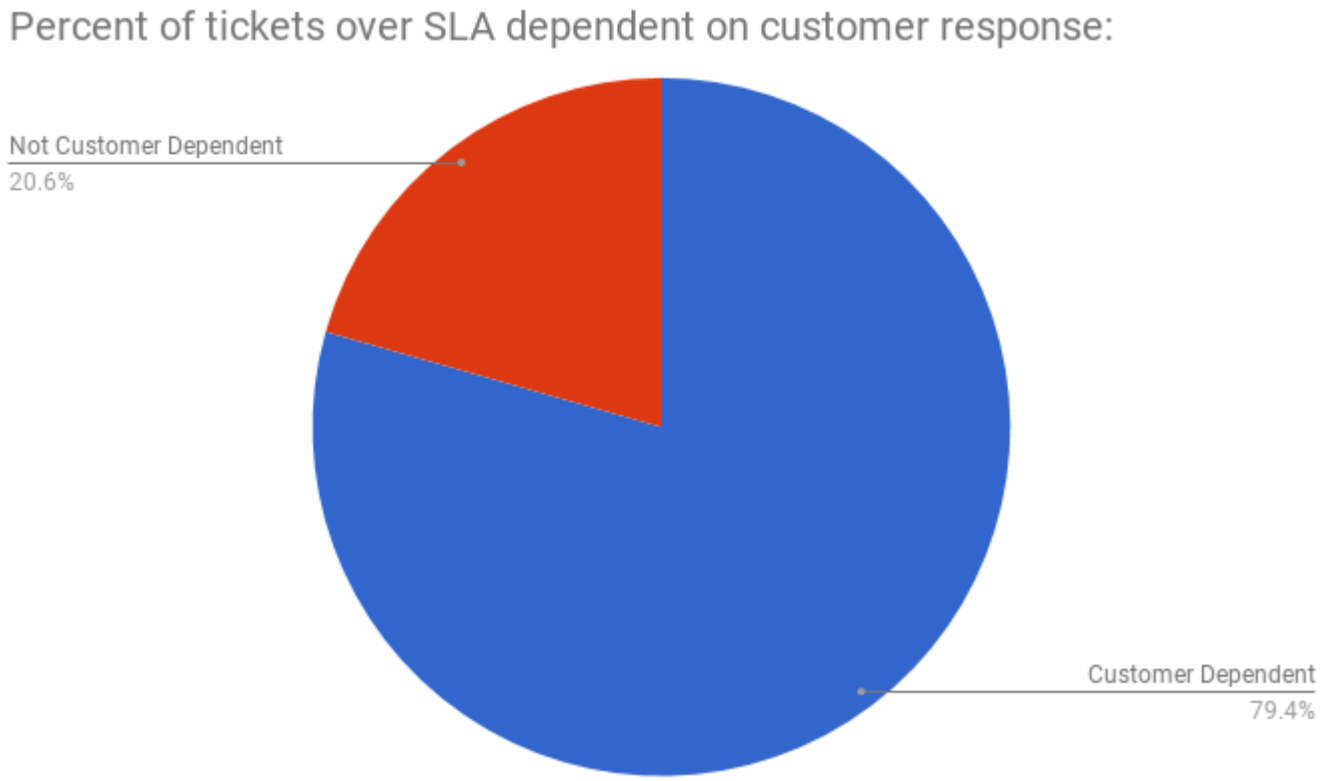
0.04 < alpha, REJECT NULL, not independent (there is a relationship)

An agent causing ticket delay is may be dependent on ticket volume.

ANALYZE – CONTINUED

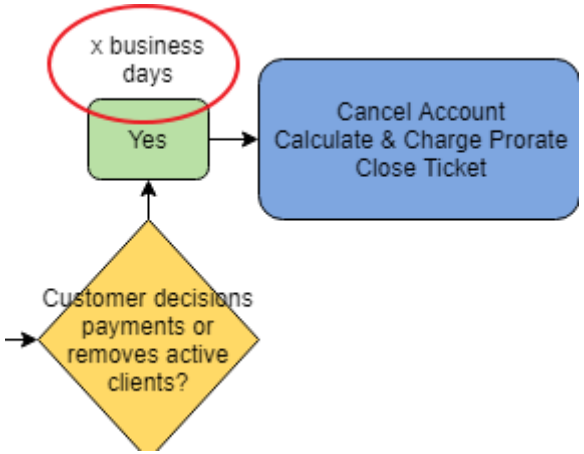
Though there is a relationship between agent performance and ticket volume, it may be close to impossible to control the volume of requests coming in from customers.

It may be an easier win to focus process improvement efforts on customer dependent delays. The chart to the right shows the breakdown of percentage of tickets over SLA because of customer dependent actions.



IMPROVE - SOLUTION

Revisiting the process map…



The best opportunity for improvement is to reduce the unknown factor of customer response time as much as possible.

Barriers to improving customer reponse time:

- Cannot affect tickets that cannot be completed due to still having active clients.

Solution:

Improve process by eliminating customer need to respond to outstanding payments in order to cancel their account by implementing the following changes:

- Amend the process to cancel and/or void certain types of outstanding payments on behalf of the customer. (Not all types of payments can be addressed but this will reduce at least 25% of customer needed actions).
- Create new macro responses that will report which payments were cancelled within the account cancellation confirmation.

IMPROVE/CONTROL – NEW SQL

Old SQL:

D	1	Defect opportunity per unit
U	943	Units total
D*U	943	Total possible defects
A	364	Total actual defects
A/DU	0.3860021209	DPO
DPO*1,000,000	386,002.12	DPMO
SQL	**1.8**	Yield 61.80%

New SQL (2 weeks of data):

D	1	Defect opportunity per unit
U	721	Units total
D*U	721	Total possible defects
A	223	Total actual defects
A/DU	0.3092926491	DPO
DPO*1,000,000	309,292.65	DPMO
SQL	**2**	Yield 69.20%

CONTROL / CONCLUSION

- Were the goals of this study met?
  - Reduce the time spent on cancel tickets by at least 10% or 115 hours: **NO**
    Findings: time spent on each ticket cannot be reduced and volume for tickets cannot be reduced. Root cause of tickets over SLA are mostly customer dependent.
  - Increase the percent of time tickets are being closed within 2 business days by 5% or more: **YES**
    Findings:

	Within SLA	Over SLA	Total	% Within SLA
Ticket Total Before	579	364	943	61.40%
Ticket Total After	498	223	721	69.07%

  - Tools Used: 1) Process Map, 2) Data Measurement Plan, 3) Process Sigma Calculations, 4) Chi-Square Test, 5) Measures of Center & Variability
  - Continue to use new process