Culminating Projects in Mechanical and
Manufacturing Engineering

Department of Mechanical and Manufacturing
Engineering

8-2016

Applying Lean Six Sigma Concepts to Improve Fee Billing Processes

Elily G. Daffa
St. Cloud State University

Applying Lean Six Sigma Concepts

to Improve Fee Billing Processes

by

Elily G. Daffa

A Starred Paper

Submitted to the Graduate Faculty of

St. Cloud State University

in Partial Fulfillment of the Requirements

for the Degree of

Master of Science

in Engineering Management

July, 2016

Thesis Committee:
Dr. Ben Baliga, Chairperson
Dr. Hiral Shah
Dr. Balasubramanian Kasi

ABSTRACT

The purpose of this project was to analyze the impact of applying Six Sigma concepts to solve redundancy issues in corporate trust operations. It is an assessment that was performed in the key operational fee processing unit in the Corporate Trust Services (CTS) department in a fortune 500 company. The project focused on the daily administration of fees including: set up, invoicing, collections, supporting comments for fee adjustments, waivers, accurate termination of account fees in key systems of record and business procedures relating to the collection of these fees. The assessment included all Corporate Trust Service business lines and products and the time period in scope was March 1st, 2016 through June 15th, 2016. In this project the DMAIC methodology was used to reduce the number of invoice adjustments and Six Sigma techniques were used to analyze and improve their issues at hand. The results of the project indicate that Six Sigma can positively impact organizational performance by reducing or eliminating redundancies and increasing efficiency. Through the deployment of a poka-yoke system key changes were able to be recommended to facilitate the changes needed.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I: INTRODUCTION

Introduction

Corporate trust services are business activities that some large financial institutions, such as U.S. Bank, The Bank of New York Mellon and Wells Fargo, engage in where they act as a fiduciary for investors in particular securities such as stocks or bonds. A corporation with little or no financial expertise may seek the services of a financial institution through the creation of a corporate trust, in which they are entrusting the finances of their corporation to that particular financial institution. For example, instead of borrowing funds from a bank, a company might borrow funds from the general public in the form of a bond and use a corporate trustee to manage it for them. When a company acquires a loan from a bank, the bank often inspects the company's financial statements to ensure that the company adheres to the bank's rules and loan agreements.

On the other hand, in a public bond issuance there isn't any specific person who monitors the loans and the investors would find it difficult to communicate with the company. Therefore, they both agree as a condition of their bond to appoint a financial institution, known as a corporate trustee, to be the responsible party. The corporate trustee is accountable for monitoring compliance with the loan terms, in other words it is acting in interest of the general public who purchased the bond. Another aspect of this service is acting as a paying agent who is responsible for the distribution of the repayment from the company to the bondholders. Financial institutions receive fees for their services and they usually have a fee processing department that handles the billing of clients. This project was undertaken in a fee processing department and focused on how to improve fee billing using Six Sigma concepts within a corporate trust division in a fortune 500 company.

Problem Statement

The fee billing department in the Corporate Trust Operations (CTO) division had been experiencing a large number of requests from account administrators from Corporate Trust Services (CTS) to adjust invoices that have already been billed and this had caused a large amount of rework that could have been avoided. There were various reasons for these requests such as the wrong volumes being entered by either the administrator of the account or a CTO staff member or the description on the invoices being wrong and CTO opted to find the root causes to these issues and reduce or eliminate them in order to improve ongoing processes of billing customers.

Nature and Significance of the Problem

The problem identified was the increase in the number of invoices that are either adjusted or reversed completely in order to bill a whole new invoice. Invoice adjustments cause a lot of rework for the fee processing department in CTO because they have to reenter the correct information into their system that they use to track billing. CTO staff members have to adjust the invoice to represent what is expected in revenue and clear the remaining balance or reverse the invoice and start from scratch. This was a waste of resources such as time, labor and money. Therefore, it was imperative to reduce or eliminate the wastage and the main issue was in identifying the causes.

Objective of the Project

The purpose of this project was to assess the effectiveness of operational controls related to the administration of fees which includes initial, ongoing, change management, and final administration of fees. This included a review of fee set up and daily administration of fees, fee

adjustments or waivers, termination of fees within systems of record and delinquent fee accounts. The main objective of this project was to improve the fee billing process by reducing the amount of rework caused by invoice adjustments using lean techniques. The project was undertaken in in order to correct the ongoing errors and to create a sustainable process for future endeavors.

Project Questions

This Project addressed the following questions and the results will be presented in this format:

1. What is the root cause of the large amounts of rework in CTO?

The answer to this question will be addressed throughout the entire project as this is the most important question.

2. How can it be improved?

Through the use of a poka-yoke system an improvement can be made to any system and this project will design a mistake proofing system to help decrease the number of invoices being adjusted.

3. How can it be sustained in the future?

Sustainability is the most important part of any fix and this project will recommend how the new system can be maintained.

Limitations of the Project

The project did not have limitations and there were no major compliance requirements associated with this process. There were also no access issues to gather the data required which was an advantage.

Definition of Terms

DMAIC. (Define, Measure, Analyze, Improve, and Control) A methodology used in Six Sigma that is an effective problem solving technique to improve a product or process. Most companies use the DMAIC methodology when they first implement Six Sigma, and later add the DMADV (Define, Measure, Analyze, Design, and Verify) methodology when the organizational culture and experience level increases.

Fiduciary. A person or corporation who holds a legal or ethical relationship of trust with one or more people. A fiduciary must pragmatically take care of the other party's money or other assets.

LOB. Line of Business or division

Lean Techniques/Methods. An overall methodology that seeks to minimize the resources required for efficiency by eliminating waste, or non-value adding activities that inflate costs or lead times.

Poka-yoke. A Japanese term to define any mechanism in a lean process that helps an operator avoid (yokeru) mistakes (poka). Its purpose is to eliminate product defects by preventing, correcting, or drawing attention to human errors as they occur.

Six Sigma. A set of techniques and tools for process improvement that was developed by Motorola in 1986. In order to achieve Six Sigma, a process must not produce more than 3.4 defects per million opportunities. As stated in the Journal of Operations Management, Six sigma seeks to improve the quality of output or the process by identifying and removing the causes of defects and minimizing variability in manufacturing and business processes (Shafer and Moeller, 2012).

Summary

In this chapter the problems and challenges were explored and some of the reasons for the issues were identified as well as the background of the problem. In the next chapter, the literature that was used to tackle the project will be reviewed and the research that was gathered prior to starting the project will be revealed.

CHAPTER II: BACKGROUND AND REVIEW OF LITERATURE

Introduction

In this project, Six Sigma concepts were used to analyze and identify the root causes and poka-yoke is used to recommend fixes to these problems. As reported in the Journal of Accountancy, Six Sigma is a very efficient technique that focuses on quality and can improve both short term and long term operations (Hostetler, 2010). The Pareto Chart will be used to further understand which root cause has the largest effect. Due to the limited samples that were collected, total population sampling was used for the data collection in the DMAIC process.

Background Related to the Problem

Vilfredo Pareto was an Italian engineer and economist who introduced the Pareto chart and the concept of Pareto efficiency. The Pareto efficiency was the study of income distribution that observed that 80% of the land in Italy was owned by 20% of the population. This 80/20 rule solidifies the principle of the vital few and trivial many among defects; 80% of defects in a process seem to be accounted for by 20% of the causes.

Literature Related to the Problem

According to the American Statistician, the Pareto chart is a bar chart with frequencies, sorted by the highest on the left and a line above showing the cumulative frequencies (Wilkinson, 2006). The chart is widely used in quality control to identify critical factors leading to failure or defects in any process. The chart will be used as a statistical tool to portray which issue or factor has the highest effect on the overall outcome. The main focus of the project and the most efforts will then be transferred to fixing the main issues because they will most likely reduce or eliminate the number of invoice adjustments.

Total population sampling is a technique that involves examining the entire population for a study. The population may be limited because the set may have specific characteristics that are otherwise uncommon. In total population sampling, researchers choose to study the entire population because the size of the population that has the particular set of characteristics that are needed is typically very small. Therefore, if the researcher fails to include a small number of issues, the study may be biased.

As reported by Laerd Dissertation, total population sampling is a type of non-probability sampling; therefore, it is not possible to make statistical generalizations about the sample being studied. However, the use of total population sampling does make it possible to make analytical generalizations about the population being studied (Laerd Dissertation, 2012). The population in this project will consist of all the invoices adjusted in a certain period of time.

Literature Related to the Methodology

DMAIC methodology was used in this project and is defined as follows in each stage. The DMAIC (Define, Measure, Analyze, Improve and Control) method refers to an improvement cycle that is data-driven and seeks to optimize and stabilize business processes. Each phase has specific requirements and all the phases are important.

Define Phase:

The define phase is the first phase of the Lean Six Sigma process. This is a critical phase of Six Sigma in which the teams define the outline of their efforts.

The objective of the define phase is to:

- Identify and validate the business improvement opportunities

- The requirements are gathered

- Problem statements and goals are developed

- Resources are defined

- The process is documented

- Key organizational support is identified.

Measure Phase:

The measure phase involves the numerical study of the previously defined problem. Measurement is a critical stage of any project because the data collected will be used throughout the life of the project. In this phase raw data is collected and the system is observed to get a clear picture of the process.

Analyze Phase:

The purpose of this step is to identify, validate and select root causes for elimination. A large number of potential sources of the project problem are identified via root cause analysis. The top 3-4 potential causes are selected using a consensus tool for further validation.

Improve Phase:

The purpose for this phase is to distinguish, test and actualize solutions for the problem to some extent in the following order:

- Identify potential solutions

- Select solutions to implement

- Improvements are implemented

- Improvements are evaluated

Control Phase:

During the control phase, the improved process or product performance is tested to ensure the targets were met. Once the solution had resolved the problem, the improvements are then standardized and sustained over time. The most important thing in this phase is to devote the same high level of energy and commitment throughout this phase as in the beginning of the project.

Summary

In this chapter the literature and background on this research topic was explored. In the following chapter the methodology that was used for this project will be described in detail.

CHAPTER III: METHODOLOGY

Introduction

This project utilizes two different tools to analyze and further illustrate data collection and results in the different phases of the DMAIC methodology. The define phase was used to gather requirements and the measure phase was used to collect data. For the analyze phase a root cause analysis tool called a fish bone diagram was used. In the Improvement phase the use of a poka-yoke system will be suggested, which will also be useful in sustaining the outcome of this project in the control phase.

In the define phase in the DMAIC process the project goals were identified and internal deliverables were validated. The key controls assessed within this report are business policies and procedures. Clearly documented and communicated rules and guidelines exist that govern team member and management actions and internal business policies and standards are adhered to throughout the business process.

In the measure phase, a data collection plan was created and data was collected and summarized. In the analyze phase, the summarized data was studied to establish the relative contribution of each root cause to the project. In the improve phase, based on the identified root causes in the prior phase, team members brainstormed potential solutions, prioritized them based on requirements, made a selection, and tested to see if the solution may resolve the problem.

This phase also focused on fully understanding the top causes identified in the analyze phase, with the intent of either controlling or eliminating those sources to achieve better performance. In the final phase, control, the standard-operating-procedures that required revisions were corrected, and a control plan was put in place to monitor ongoing performance.

Timeline

The estimated time for this project was 12 weeks; however it took a little longer than that,

it took 14 weeks instead. The table below shows the actual timeline.

Table 1: Actual Time Taken

Activity	Timeline 2016
Define Phase • Preparing project and gathering requirements	1 week March 9th – 16th
Measure Phase • Data collection	4 weeks March 17th – April 13th
Analyze Phase • Root cause analysis	3 weeks April 14th – May 4th
Improve Phase • Implementing new design	3 weeks May 5th – May 25th
Control Phase • Follow up and ensure continuity	3 weeks May 26th – June 15th
Final Defense	July 2016

Budget

The project did not incur any external costs and the internal costs were covered by a

company as this project was highly beneficial to them.

Design of the Study

In this project a qualitative approach will be used because the data that was gathered is more descriptive than numerical. The frequency of certain fee adjustments and the causes will be analyzed; therefore, a qualitative analysis will be more appropriate.

Business Activities that were reviewed during this assessment were as follows:

- Fee setup on new deals as well as new fees on existing deals

  o Fee schedules are obtained and initial setup in Admin system is completed by CTS lines of business (LOB)

  o System is utilized as the system of record for fees with setup and maintenance completed by Corporate Trust Operations (CTO)

- Calculation of fees as prescribed by the governing documents and provided to CTO by the Lines of Business

- Translation of approved drafts into invoices and creation of general ledger subsidiary transactions

- Invoicing of fees in system per fee schedules and business line requirements

- Collection of fees via Automated SEI Debit, Customer Initiated, DDA, Web SEI Debit

- Adjustments of fees as a result of errors

- Fee waivers of aged, delinquent, and charge off fee reporting, escalation and review

- Final collection and termination of fees within system
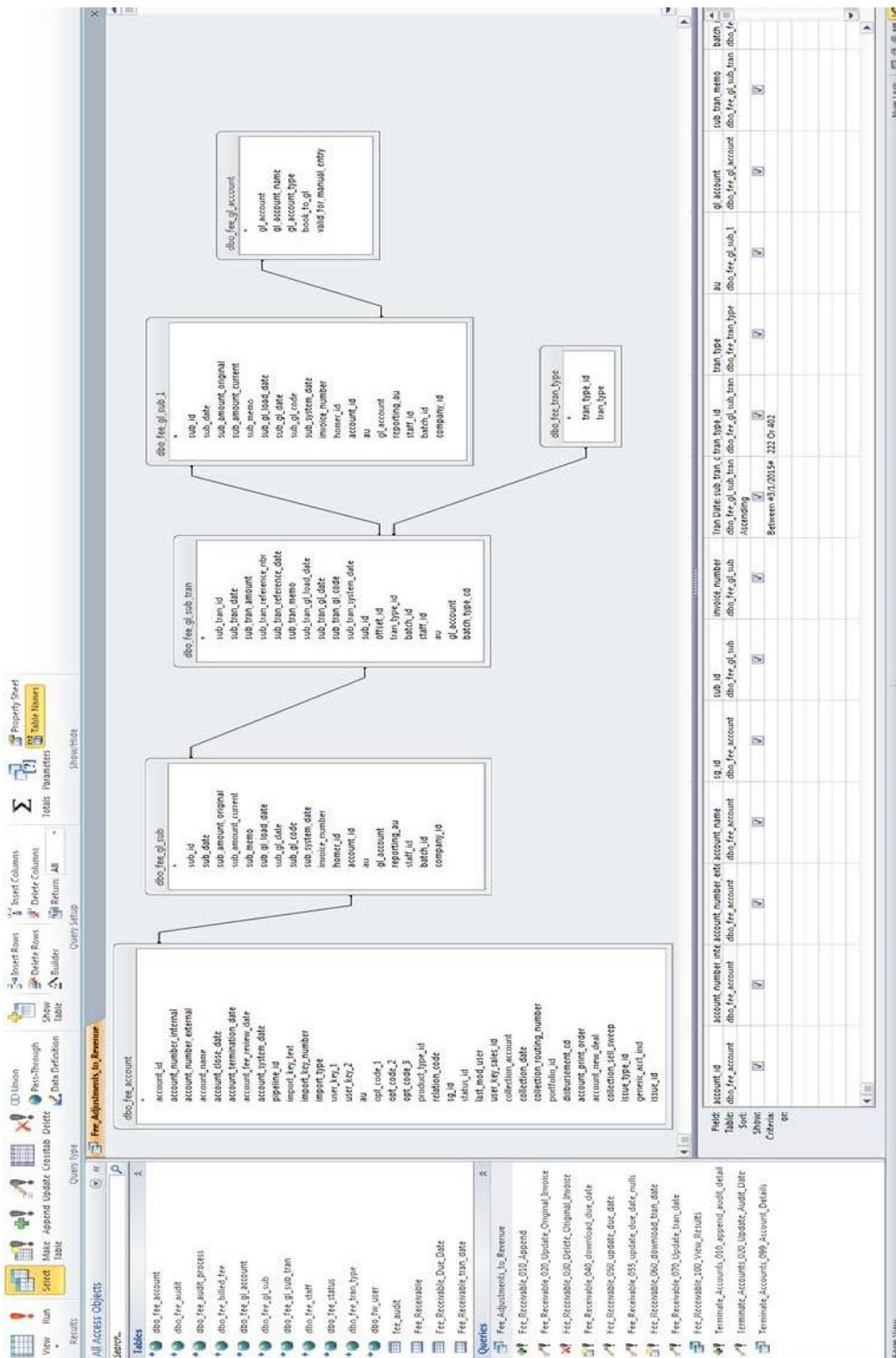
Figure 1: Design view of query used to collect data

Data Collection

The data was collected on a daily basis using a query that pulls information from a live database for 4 weeks from March 17th until April 13th. The design view (Figure 1) shows the fields that were the main focus on the project, such as the account number and the memo that was input to see the reason given for the adjustment.

After the information was collected and compiled it was sent out to each group that was affected by the fee adjustments and had them add necessary comments. The evaluators were asked to enter a summary of the defect, while being clear and concise with what failed. They were asked to do this in order determine what the root cause of the defect is.

The account managers and the administrators were also asked to add their thoughts and replies to what the evaluators had commented as shown in the appendix. It was their responsibility to ensure final comments summarize the defect clearly and to identify the causes.

All the data that was needed was collected and is shown in Table 1 and the detailed brainstorming data is shown in the appendix. There were a few adjustments made due to billing error and set up errors, but the majority of the errors were due to admin miscalculation.

There were limited comments in the system when it came to fee waivers; however, most of them were confirmed as correct by the account managers in their respective line of business. The group procedures for adjustments do not require comments for a reason for the adjustment, but they do require there to be secondary approval for waiving a late fee and this needs to be noted in the system and there were a few accounts where this was not done.

Another recurring problem was that some comments were very limited regarding fee adjustments and there are no standard operating procedures surrounding this issue which is clearly an opportunity for improvement and must be implemented to reduce rework.

Admins were also entering incorrect bonds outstanding in to the fee system which affects all of the fees because they are all associated. In addition, there many keying errors on both sides but especially admins had calculation errors because of this. The table below shows all the results.

Table 2: Transaction Data Collected

Test Sample	Revenue Amount	Transaction Date	Transaction Memo	Comments	SET UP	Billing	Waived
1	-249.14	3/18/2016	Per comment on the Web SEI - Items to clear email. The comment states: Correct amount should have been 3737.12	Adjustment made due to for billing error		Y	
2	-1757.23	3/18/2016	Clear out remaining balance	Issue: Limited comments in System for fee waiver - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.			Y
3	-525	3/19/2016	Cancel the $525 balance on invoice 1095089	Issue: Limited comments in System for fee waiver - however confirmed with LOB. The group procedures for adjustments don't require a comment for a reason for the adjustment - just for secondary approvals to be noted within system			Y
4	-1000	3/19/2016	Reverse out $1000 and generate separate new invoice	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		
5	-2500	3/19/2016	reverse	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
6	-7520	3/19/2016	Invoice has been refunded per approval, closing the invoice due to payment being refunded	Adjustment made due to for billing error		Y	
7	-9000	3/19/2016	Cancelled, approved, overcharged customer	Adjustment made due to for billing error		Y	
8	-11000	3/21/2016	Cancel invoice and reissue the fees. We did not add the fed ex charges onto the invoice.	Adjustment made due to for billing error		Y	
9	-2500	3/21/2016	Incorrect amount billed. Reverse and reissue.	Set up error.	Y		
10	-2000	3/21/2016	Billed in error	Set up error.	Y		
11	-308.5	3/22/2016	adjust	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		

Table 2 (continued)

#	Amount	Date	Action	Note				
12	-53.46	3/24/2016	Waive late fee per rm	Fee waived by account associate. Guidelines require at least the relationship manager approval. LOB Response: Regarding the fee waiver – you are correct as she is not an RM. I don't believe the System can discern an RM from an AA so allowed the waiver. Unless there was some other documentation from an RM that allowed it. A late fee was waived. Companies typically will pay everything except the late fee. Since the late fee is small it is a business decision whether to pursue $50.				Y
13	-5000	3/24/2016	Adjustment	Set up error.	Y			
14	-12000	3/24/2016	Reverse and return to SEI	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y			
15	-149.97	3/24/2016	Duplicate - Fee was paid under inv. # 1063444	Adjustment made due to for billing error		Y		
16	-2480	3/25/2016	Reverse invoice	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. WFSS has specific procedures surrounding fee waivers, but not fee adjustments - therefore no procedures that require comments in System for adjustments	Y			
17	-5562.5	3/25/2016	Reverse portion of the invoice out (consolidated invoice - does not want to reverse the complete invoice out)	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y		
18	-1000	3/26/2016	Return funds back to client	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y			
19	-1000	3/26/2016	reverse and return to SEI	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y		
20	-1614	3/26/2016	reverse and rebill	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y		
21	4621.37	3/26/2016	reverse and return to SEI	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y		
22	-1116	3/28/2016	reverse and send to SEI account	Observation: Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y			
23	-2500	3/28/2016	Reverse - Fee shouldn't have been entered in Fusion	Adjustment made due to for billing error		Y		

Table 2 (continued)

#	Amount	Date	Description	Comment			
24	-2645.23	3/30/2016	The trustee fee was set up incorrectly. Wrong AU. Making adjustment to fix this situation.	Set up error.			Y
25	-225	3/30/2016	adjust	Adjustment made due to for billing error		Y	
26	-4551.8	4/2/2016	Per comment on SEI Script - clear balance - the correct amount should be $2500.00.	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
27	-1305.27	4/2/2016	reverse and return to SEI	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
28	-2222.65	4/2/2016	reverse and return to SEI	Adjustment made for billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
29	-647.2	4/2/2016	Reverse and return to SEI	Adjustment made for billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
30	-1580.78	4/3/2016	Incorrect amount billed - it was not supposed to be set up as minimum fee	Set up error.			Y
31	-2229.67	4/3/2016	RVRS AND RETURN TO SEI	Observation: Adjustment made for billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
32	-125	4/5/2016	reverse inv	Adjustment made due to for billing error		Y	
33	-10444.74	4/6/2016	reverse	Adjustment made due to for billing error		Y	
34	-211.52	4/6/2016	clear remaining balance	Issue: Limited comments in System for fee waiver - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		
35	-1000	4/6/2016	Fee was waived	Issue: Limited comments in System for fee waiver - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		
36	-239.16	4/6/2016	reverse fee	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
37	-2345.26	4/6/2016	reverse and return to SEI	Adjustment made due to for billing error		Y	
38	-28919.6	4/6/2016	Incorrect amount billed. Reverse.	Adjustment made due to for billing error		Y	

Table 2 (continued)

#	Amount	Date	Action	Description			
39	-1287.5	4/7/2016	reverse and return to SEI	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
40	-500	4/9/2016	Reverse an error (invoice was reversed by mistake).	Observation: To correct an invoice reversed in error	Y		
41	-875.01	4/9/2016	reverse and return to SEI	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		
42	-1000	4/9/2016	Credit from UIC	Adjustment made due to for billing error		Y	
43	-1900	4/9/2016	Clear and re-bill	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		
44	-2822.88	4/9/2016	reverse	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
45	-50	4/10/2016	Waive late fee	Waiver approved by AA not RM per SOP.			Y
46	-7500	4/11/2016	Billed to wrong AU	Adjustment made due to for billing error		Y	
47	-1041.67	4/11/2016	reverse and return to SEI	Adjustment made due to billing error Issue: Limited comments in System regarding fee adjustment, however LOB confirmed. No LOB procedures available regarding adjustments and documenting.		Y	
48	-916.5	4/12/2016	reverse interfiling loans fee	Adjustment made due to for billing error		Y	
49	-1440.05	4/12/2016	reverse and return to SEI	Adjustment made due to for billing error		Y	
50	-600	4/13/2016	reverse and rebill on another inv #	Adjustment made due to for billing error		Y	
51	-2600	4/13/2016	Fee was reduced to $3,250. Reverse and reissue	Set up error. Issue: Limited comments in System regarding fee adjustment - however confirmed with LOB. No LOB procedures available regarding adjustments and documenting.	Y		
52	-2000	4/13/2016	Set up incorrectly	Adjustment made due to for billing error		Y	

After the information above was collected and compiled it was sent to each group and they each added the necessary comments as shown in the appendix. Most of the fees that were waived were late fees and they were waived by account admins. Guidelines require at least the account manager has to approve such waivers and these were not documented in the system.

The admins reasoning for some of the waivers was that companies typically pay everything on the invoice except the late fee and since the late fee is usually small it is a business decision to waive the fee. The customer relationship is worth more than the late fee.

Some of the reasons for fee adjustments were regarding accounts that had terminated earlier than expected and therefore their fees had to be adjusted accordingly. When an account no longer has any active parties, it is determined to allow the account to terminate after the final fee is received. There were plenty of fees that were reversed completely and did not have enough information to verify why they had been cancelled.

This was mainly due to the fact that there are no guidelines preventing this from happening. There is a need for standard operating procedures that require approval from managers. Most of the invoices were approved in error and had to be reversed.

Along with the information above, the following details were also collected prior to the project start date to get a better understanding of the general process. Using a sample size calculator (Table 2) it was determined that the sample size used would have a 95% confidence level and 5% margin of error. Once the sample size was picked Microsoft Excel was used to generate random numbers to test.

Table 3: Sample Size Calculator

Source: By the Numbers: A Sample Size Table. *Quirks Marketing Research Media.*Web. 25

   March 2016.

Required Sample Size								
	Confidence = 95%				**Confidence = 99%**			
Population Size	Margin of error				Margin of Error			
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.5%	1.0%
10	10	10	10	10	10	10	10	10
20	19	20	20	20	19	20	20	20
30	28	29	29	30	29	29	30	30
50	44	47	48	50	47	48	49	50
75	63	69	72	74	67	71	73	75
100	80	89	94	99	87	93	96	99
150	108	126	137	148	122	135	142	149
200	132	160	177	196	154	174	186	198
250	152	190	215	244	182	211	229	246
300	169	217	251	291	207	246	270	295
400	146	265	318	384	250	309	348	391
500	217	306	377	475	285	365	421	485
600	234	340	432	565	315	416	490	579
700	248	370	481	653	341	462	554	672
800	260	396	526	739	363	503	615	763
1,000	278	440	606	906	399	575	727	943
1,200	291	474	674	1,067	427	636	827	1,119
1,500	306	515	759	1,297	460	712	959	1,376
2,000	322	563	869	1,655	498	808	1,141	1,785
2,500	333	597	952	1,984	524	879	1,288	2,173
3,500	346	641	1,068	2,565	558	977	1,510	2,890
5,000	357	678	1,176	3,288	586	1,066	1,734	3,842
7,500	365	710	1,275	4,211	610	1,147	1,960	5,165
10,000	370	727	1,332	4,899	622	1,193	2,098	6,239
25,000	378	760	1,448	6,939	646	1,285	2,399	9,972
50,000	381	772	1,491	8,056	655	1,318	2,520	12,455
75,000	382	776	1,506	8,514	658	1,330	2,563	13,583
100,000	383	778	1,513	8,762	659	1,336	2,585	14,227
250,000	384	782	1,527	9,248	662	1,347	2,626	15,555
500,000	384	783	1,532	9,423	663	1,350	2,640	16,055
1,000,000	384	783	1,534	9,512	663	1,352	2,647	16,317
2,500,000	384	783	1,536	9,567	663	1,353	2,651	16,478
10,000,000	384	784	1,536	9,594	663	1,354	2,653	16,560
100,000,000	384	784	1,537	9,603	663	1,354	2,654	16,584
300,000,000	384	784	1,537	9,603	663	1,354	2,654	16,586

The account IDs of all the accounts were listed in chronological order. Account IDs indirectly reflect the date in which the account was created, the smaller the number the older the account. The account IDs were then assigned a number starting from 1 and Excel's random number generator was used to obtain a sample to test. For example, for the first population size of 8,182, 365 random numbers between 1 and 8,182 were generated to test. After these numbers were generated they were sorted from smallest to largest, using conditional formatting the duplicates were eliminated and another random number was created.

Each account that was chosen was audited and any adjustments were noted and the accuracy of the account was tested. The four main areas of concern were the daily administration of accounts with fees, fee adjustments, terminated fees and delinquent fees. This study was done prior to this project and the results further determine the root cause of the large amounts of rework. The results of each test are shown below.

1) Review the daily administration of accounts with fees including fee setup, volume imports, invoicing, and collection to ensure accuracy of administration and secondary review.

- Population: 8,182 active accounts with collection activity in the last year

- Sample: 365

No major issues discovered during testing. Four defects were discovered, but they were within the exception threshold. The defects reflected immaterial fee amount errors to be billed. They were corrected during the normal course of business. Overall control effectiveness of secondary review surrounding fee set up and ongoing fee administration is adequate. Test results demonstrate CTS is effective at setting up, invoicing and collecting fees. The defects identified within testing revealed that some element of setup was inaccurate within 4 of 365 samples tested.

Even though opportunity for improvement is identified within the setup process around document support, setup errors do not typically amount to financial or reputational concerns. Often these errors are detected and corrected during the normal course of administration.

2) Review fee adjustments that take place before and after collection to ensure that the adjustment and reason for adjustment are adequate and authorized.

- Population: 1,183 active accounts with adjustments made to fees within the last year

- Sample: 291

One Issue found during testing. Overall control effectiveness of secondary review surrounding fee adjustments is adequate and effective. When testing the fee adjustments samples for adjustments, it was obvious that there was an opportunity for improvement in oversight and documentation of those reasons. Even though lines of businesses were efficient at providing adequate reasons for fee adjustments when asked, the overall documentation of those reasons were limited within systems of record, therefore prompting us to reach out to the line of business for confirmation. It should be noted that documented reasons and secondary review of actual fee waivers was satisfactory; however adjustments to invoices due to mistakes in billing or set up require more documentation needs. In summary opportunity to strengthen general oversight of adjustments with a focus on monitoring adjustment reasons will assist in improving control effectiveness.

3a) Review terminated fees in Admin system to ensure final fees are collected and account has been properly closed out of system.

- Population: 6,805 deals terminated in Admin system within the last year

- Sample: 365

One Issue cited above during testing. Overall control effectiveness of secondary review surrounding fee terminations in Admin system is adequate and effective. Test results show that while there were minimal defects within the 365 samples, there was a noticeable observation identified on deals terminated in admin system, but not terminated in CTO's system. Overall risk of accounts remaining active in system while terminated in Admin system is minimal because in all cases it appears that there is no evidence that the company knowingly invoiced customers on terminated accounts. If an invoice was generated for a terminated deal, the error is typically captured and appropriate adjustments are made. Even though some areas of opportunity for improvement were identified within the termination process, specifically within oversight and follow up of terminating accounts once final fees are collected, overall terminations of fees appears to be adequately controlled.

3b) Review terminated fees in system to ensure accounts are terminated in both Admin system and CTO system.

- Population: 7,410 accounts terminated in CTO system within the last year
- Sample: 365

No issues discovered during testing. No defects detected. CTS have a compensating control monitoring accounts on terminated accounts. Accounts do not remain open unless a specific need exists. Overall control effectiveness of secondary review surrounding fee terminations in system is strong and effective. Test results show no defects within the 365 samples, and overall business is effective at terminating accounts within system and other systems of record. One noticeable area of opportunity within this assessment activity would be the improvement of electronic document retention. In several cases the fee schedule was not

readily available for review. However, the overall process of terminating fee accounts within the system appears to be effectively controlled.

4) Review delinquent fees and charge offs to ensure delinquent accounts are being escalated and handled appropriately.

- Population: 9,861 active accounts in system that went delinquent within the sample period

- Sample: 370

One Issue cited above during testing. Overall control effectiveness of management and reporting of delinquent fees is adequate and effective. CTS Governance published a CTS wide procedure for fee receivables, monitoring, and processing that gives direction for lines of businesses to enter comments into system every 30 days in order to document collection efforts. More time would be needed to implement the procedure and educate the large population of team members involved with fees on the new procedure. Therefore, further testing is recommended to ensure that all lines of businesses are following the new CTS procedure. Even though some areas of opportunity for improvement were identified, specifically within the documentation of collection attempts, overall management of delinquent fees appears to be adequately controlled.

The results shown above demonstrate that Corporate Trust Operations are effective at setting up accounts, creating fees, invoicing and collecting fees. The test results show a very limited amount of mistakes made while setting up accounts, which shows the overall efficiency and precision of CTO.

The samples for fee adjustments, however, show plenty of space for improvement. When testing the fees for adjustments there was an opportunity in improving documentation in the form of standard operating procedures and more manager oversight over the process to increase accountability.

Terminated accounts showed minimal defects because there was a lag in the information being transferred from the admins systems into CTOs system This resulted in some accounts that had already been terminated on the admin side to still be active in CTO's system, which had caused a few to bill in error.

There were also a few delinquent accounts that were causing errors due to lack of documentation. Even though some areas of opportunity for improvement were identified, overall management of delinquent fees appears to be adequately controlled.

Other than fee adjustments the categories that were tested showed minimal defects. Fee adjustments, on the other hand, require more management oversight and the need for standard operating procedures is obvious.

Data Analysis

In the analyze phase of the DMAIC methodology a root cause analysis was implemented which is a very useful tool in identifying issues. A fishbone diagram, also called a cause and effect diagram, is a visual control tool for categorizing the potential causes of a problem in order to identify its root causes. The value of the fishbone diagram is to assist teams in categorizing the many potential problems or issues in an orderly way and identifying the root causes. It graphically illustrates the relationship between a given outcome and all the factors that influence the outcome.

This type of diagram is sometimes called an "Ishikawa diagram" because it was invented by Kaoru Ishikawa. Although there are some disadvantages in Fishbone Diagram due to the simplicity, it can be an easy way to convey the root cause. In this project, the fishbone diagram will be used to analyze the effects for the increase in adjustments to invoices in the fee processing department. After the causes are traced out, the impact of the causes will be analyzed. This will ensure that the unwanted or less impact causes are cut out.

Summary

In this chapter the methodology that was used was summarized and the time it took for each phase was outlined. In addition, the result of a study that was done prior to the project start date was included.

CHAPTER IV: DATA PRESENTATION AND ANALYSIS

Introduction

After the comments were collected for each fee adjustment, a brainstorming session took place in which the data was grouped into different categories to make it easier to sort and analyze.

Data Presentation

The data was categorized into 9 different groups after a brainstorming session and the percentage of each was calculated as shown in Table 3. Administrative calculation error took up almost one third of the causes and this could be due to human error. On boarding errors are made by a different team who creates accounts as soon as a deal is made and send the information over to CTO in order for the fee billing department to set up the account correctly and bill as needed.

After grouping each of the issues, the cumulative frequency was calculated in order to create a Pareto chart (Figure 2). It is evident that two out of nine of the categories are causing more than half of the issues. This was a good way of portraying what factors to focus most on while trying to find a solution. One third of the problems can be solved by eliminating or reducing the chance of administrative calculation errors.

Table 4: Identified Issues

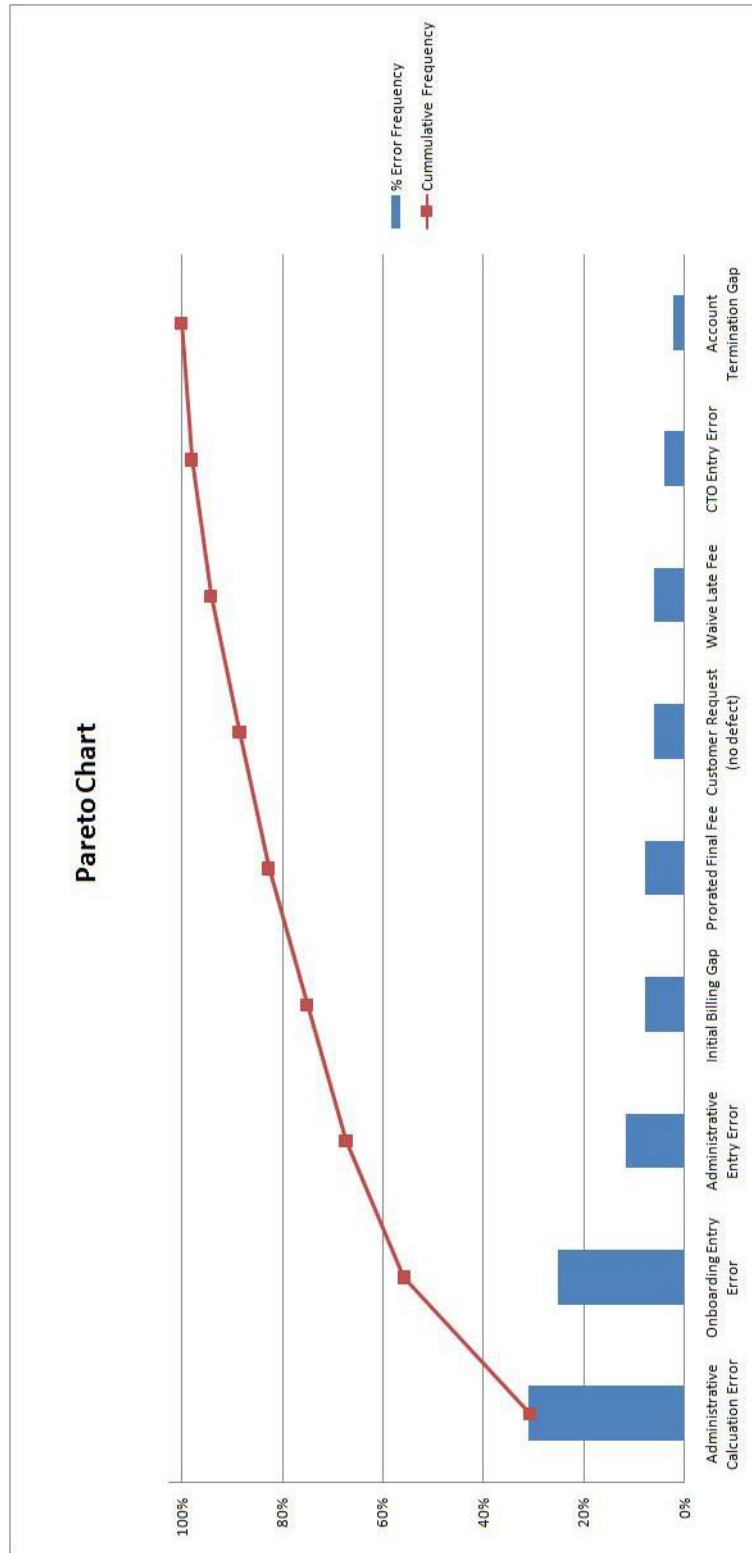| Issue	% Error Frequency	Cumulative Frequency
Administrative Calculation Error	31%	31%
On boarding Entry Error	25%	56%
Administrative Entry Error	12%	67%
Initial Billing Gap	8%	75%
Prorated Final Fee	8%	83%
Customer Request (no defect)	6%	88%
Waive Late Fee	6%	94%
CTO Entry Error	4%	98%
Account Termination Gap	2%	100%
TOTAL	100%	

Figure 2: Pareto Chart

Data Analysis

After categorizing each issue, another brainstorming session took place to group each issue to see who was at fault in each instance. The results are shown in Table 4. The administrative error was the highest and it proved that account managers and administrators made the most errors and were the cause of most of the fee adjustments.

Table 5: Frequency of Root Causes

Issue	% Frequency
Administrative Error	48%
CTO Error	29%
Customer Request (no defect)	13%
System Error	10%
TOTAL	100%

As planned, the data was further analyzed to find the root causes through a fishbone diagram (Figure 3) in the analyze phase of or DMAIC methodology.
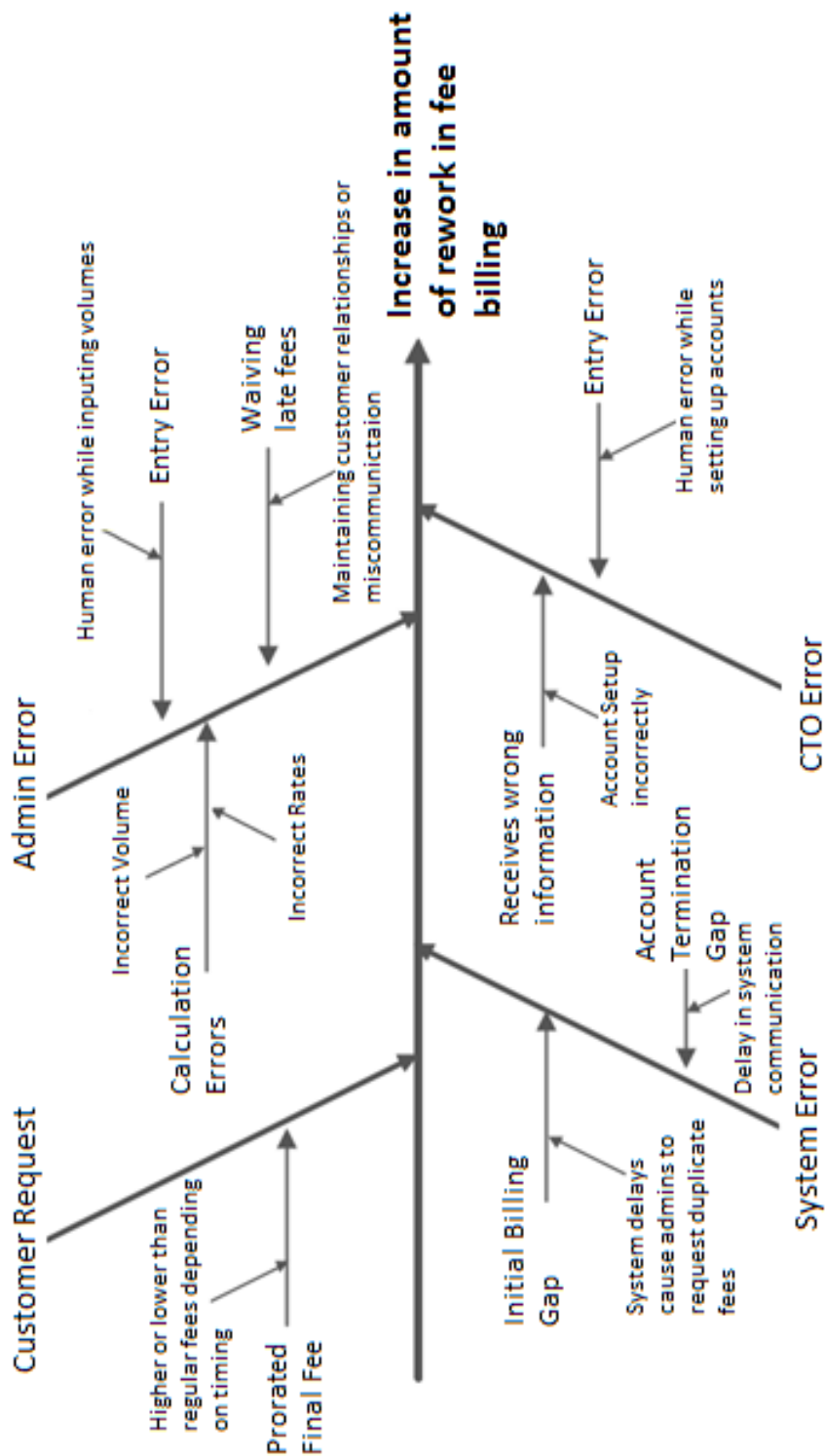
Figure 3: Fish Bone Diagram

Fishbone Diagram:

1. Customer Request

    - Prorated final fee: these fees may be higher or lower than regular fees depending on timing. For example if the account terminates before the cycle is done the final fee may be less. However, the fee should have been caught on the invoice review by Admin

    - Prorated fees are due to deals terminating early and some remaining fee balances are waived. Therefore, the invoices usually should have partial fees on them.

2. Administration Error

    - Calculation errors: Account managers or administrators may input the wrong volume or rate for a fee and that causes the fee to be incorrect. This is typically an error in their calculation spreadsheet

    - There are limited comments in system regarding fee adjustments, however LOB confirmed it was due to an error in amount billed.

    - Entry error: human error while keying in volumes. Account admins should be more cognizant and double check their work.

3. Waiving late fees: maintaining customer relationships requires being lenient in some situations. There is also a chance that there was miscommunication on the timing of when the bill was due.

4. System Error

- Initial billing gap: system delays cause administrators or account managers to request duplicate fees because they may need to close on a deal that same day and pay off the acceptance fees.

- Account termination gap: delay in system communications between admin system and CTO system causes CTO to bill a fee on an account that has already been terminated.

4. CTO Error

- Receives wrong information: account setup incorrectly due to wrong information being received by CTO.

- Entry error: human error while setting accounts up or creating fees. CTO representatives should be careful and precise when setting up accounts.

- Most fees were set up in accordance to the information provided; however, the information was sometimes ambiguous.

Summary

In this chapter the data that was collected was summarized and analyzed. In the final chapter, the results and recommendation will be presented.

CHAPTER V: RESULTS, CONCLUSION, AND RECOMMENDATIONS

Introduction

This project shows that there is a control deficiency in the process. There is a lack of

sufficient oversight of the fee activities performed by team members and without sufficient

attention these fees end up being adjusted. Management is unable to identify inconsistencies in

fee related activities and detect errors being made because of a lack of good procedures for team

members to follow.

Results

The results of this project have answered the project questions posed in the beginning and

are listed below.

1. What is the root cause of large amounts of rework in CTO?

Testing revealed that oversight of the fee administration process should be strengthened

in order to reduce the adjustments. Inadequate reporting and analysis of adjustments inhibits

management's ability to understand the underlying reasons for adjustments and determine

whether they are valid. Testing revealed that 15 invoices (29%) had adjustments due to set up

errors and 25 invoices (48%) had adjustments due to admin errors. Examples of these mistakes

include duplicate fees being billed and input errors of figures used when determining

rate/volumes.

The CTO system also reflected a few accounts as still active while they had already been

terminated in the administrators system. This shows a delay in the communication of the two

systems. While accounts typically stay active in the system after termination for a period of time

in order to collect any remaining fees, team members were unaware these accounts should have

been closed as the remaining fees had been resolved. Managers do not appear to be following up on terminated accounts to ensure the final closure is complete.

Although fee set up, invoicing and charge off practices were observed to be effective, procedures do not adequately address LOB requirements for supporting documentation. Procedures and documentation fail to articulate reasons for adjustments within system. Testing revealed that 15out of 52 (29%) accounts reviewed had an insufficient description of fee adjustments or fee waivers documented within the system. It is noted that while most team members were able to provide reasons for fee adjustments when requested, supporting documentation was not readily available.

2. How can it be improved?

Two areas of opportunity were identified throughout testing that will further improve the administration of fees and control effectiveness.

1. Inadequacies related to supporting documentation were noted throughout the assessment activities.

   a) Documenting reasons for adjustments

   b) Documenting collection attempts according to standard operating procedures

   c) Defining fees appropriately on fee schedules or providing appropriate documentation for charging fees not listed on the fee schedules

   d) Improve electronic retention of fee schedules and fee documentation

2. Oversight of the fee administration process should be strengthened.

   a) Management oversight on fee adjustments is recommended, specifically reasons for adjustments and approval of waivers/adjustments

b) Increase management oversight on terminated deals in Admin system to ensure that system fee accounts are also terminated

3. How can it be sustained for the future?

In the improve and control phase of the DMAIC methodology the use of a poka-yoke system was recommended. The purpose of this system is to eliminate product defects by preventing, correcting, or drawing attention to human errors as they occur. This is basically the equivalent of mistake proofing a system through the use of any automatic device or method that can either make it impossible for an error to occur or alerts you immediately after the mistake has happened. In this project a dummy system was created to test out a few improvements.

A form was created (Figure 4) in Microsoft Access to see if it was feasible to integrate this into the existing system. The form was made to be filled out by administrators to request fee adjustments because they caused the highest amounts or errors. Once they submit this form, their supervisors or account managers can review it and either approve or reject the adjustment before it filters through to CTO to fix. After this system was recommended, developers created a test page (Figure 5) mirroring the form that was created. It is currently in the testing stages and is expected to be released in a few months. The testing thus far has proved to be very effective and has the potential to reduce one third of the mistakes made.
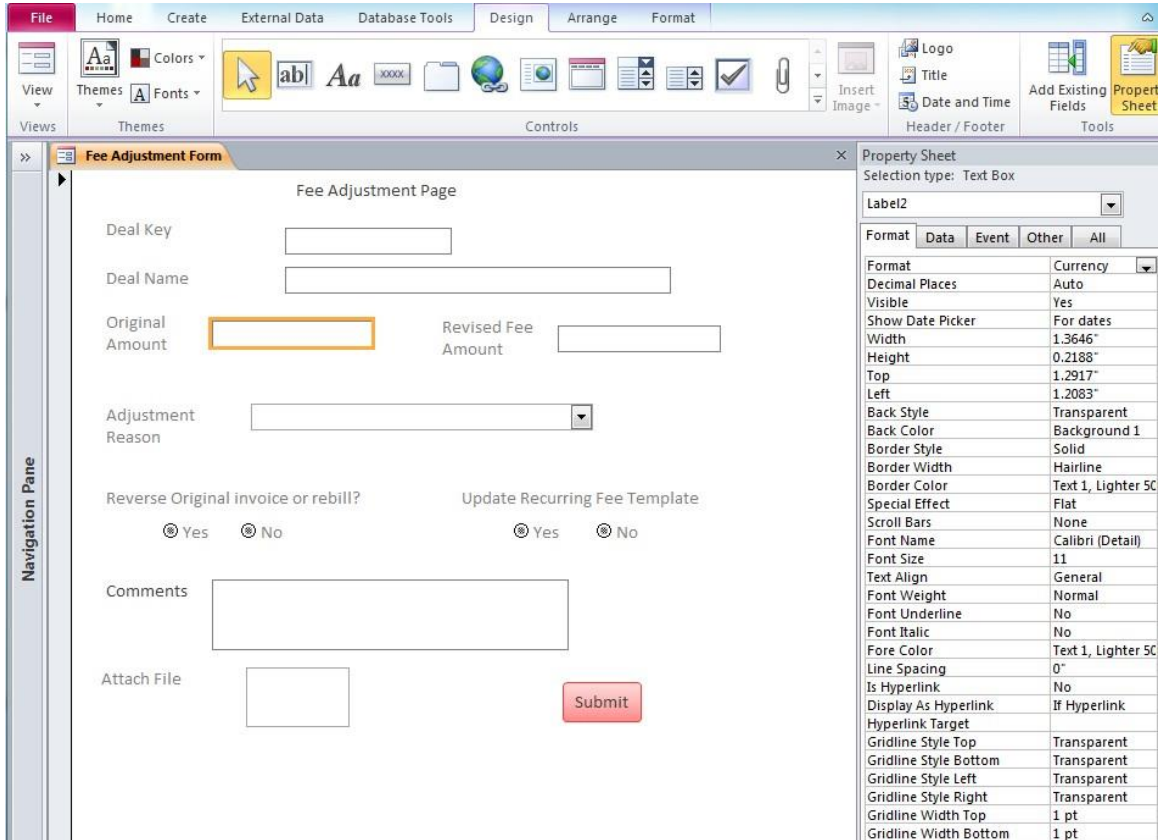
Figure 4: Suggested Fee Adjustment Page

Figure 5: Developed Product

Conclusion

Corporate Trust Operations (CTO) is a sub division of Corporate Trust Services (CTS) and it plays a vital role in ensuring that the fees for all accounts are invoiced and paid. The fee processing department within CTO, specifically, ensures that invoices are created correctly and sent out in a timely manner; therefore, it is important to keep the errors to a minimum.

The project results indicate that the key controls related to the fee administration process needs improvement. The concerns noted above are opportunities to improve oversight and supporting documentation of fee related activities to reduce potential for losses and complaints.

The errors that were detected during testing related to the set-up and billing process could have been avoided with additional oversight. This indicates that managers are not aware or understand the impact of the errors. Fees are being adjusted or waived each month, but comments are often missing or insufficient to describe the reasons for this activity.

The design and performance of business policies and procedures was rated as inadequate. There was also a weakness in procedures related to supporting documentation. This inadequacy was noted throughout the project and the greatest concentration should be on fee adjustments made by admins on a daily basis.

A few groups have procedures calling for adjustment and collection comments, but comments are not always provided. As the fee process is largely common for CTS groups in the use of the system, opportunity exists to standardize expectations.

This project identified the major cause of the fee adjustments to be admin errors and this would be a good opportunity to strengthen oversight and documentation of these adjustments.

Even though admins were efficient at providing adequate reasons for fee adjustments when asked, the overall documentation of those reasons were limited within systems of record.

The administrative errors, including calculation and entry errors, were the highest and it proved that account managers and administrators made mistakes more often than other team members and were the cause of most of the fee adjustments. Account managers or administrators need to be more meticulous when entering volumes or rates for a fee.

Entry errors are typical due to human error while keying in volumes but a secondary level of approval will minimize this defect. In addition, account admins should and will be more cognizant and double check their work if there was an approval system in place.

Recommendations

Introducing a poke-yoke system in which admins will be less likely to make a mistake will be beneficial to the fee billing process. It is recommended that CTO utilizes the page that developers created in order for account managers to monitor missing documentation, reasons for fee adjustments, collection attempts, and set-up errors.

Additionally, it is recommended that CTS establish thresholds to identify high risk concerns and protocols for escalation. Both CTO and account administrators and managers will be more cognizant of their errors if they know that their work is being monitored more often.

Adjustments should include requirements to document reasons for the adjustments within system and obtain secondary approval when adjustments or waivers exceed determined amount. It is also important to have a consistent standard of operation for the whole of CTS. The creation or enhancement of CTS-wide procedures will raise the expectation level for all CTS team members.

REFERENCES

By the Numbers: A Sample Size Table. *Quirks Marketing Research Media.* Web. 25 Mar.

2016.

Hostetler, D. Get Results: Improve Your Accounting Firm Processes Using Lean Six Sigma.

Journal of Accountancy 209.1 (2010): 38-42. EBSCO Mega FILE. Web. 4 Mar. 2016.

Shafer, S. M. & Moeller, S. B. The Effects of Six Sigma on Corporate Performance: An

Empirical Investigation. *Journal of Operations Management.* 30.7-8 (2012): 521-32.

Nov. 2012. Web. 16 Feb. 2016.

Total Population Sampling. *Laerd Dissertation*. Web. 10 Mar. 2016.

Wilkinson, L. (2006) Revising the Pareto Chart. *The American Statistician*. 60:4, 332-334, DOI:

10.1198/000313006X152243

APPENDIX

Notes from Working Session

Test Sample	Risk Observations/Comments and LOB responses	Root Cause Identified - CTO	Additional Comment for Root Cause	Verify Root Cause Category
1	**Observation:** Adjustment made due to account being billed incorrectly - servicer report with correct fees/rates saved in FileNet to confirm error.	Incorrect Bonds Outstanding entered on fee by Admin	Admin Error; spreadsheet calculation error; keying error	Administrative Calculation Error
2	Limited comments provided regarding adjustment/waiver - however through research able to conclude it was due to deal terminating early and remaining fee balance waived. However the difference of 242.77 was not waived, what is this fee for? Last person who approved waiver is an account associate. LOB Response: The account no longer had any active parties. It was determined in 2013 to allow the account to terminate when we took our final fee from the balance. The remaining amount in the account was $242.77 which was only a partial amount of our fee so the invoice was adjusted to take the remaining balance and terminate. It was not the preferred method to handle the account and termination but there are no parties active and we have the right to take our fee from the balance.	This was the final invoice. The final fee was prorated and should have been caught on the invoice review by Admin	prorated calculation based on comments; not enough information in the comments; not necessarily an error, but needed to reach out to admin for further clarification	Prorated Final Fee
3	Limited comments provided for fee adjustment. Account terminated 5/28/15. There is an email in FileNet with the only reasoning for cancelling $525 balance as "We were aware they weren't going to pay some tax processing fees when they sent their payment". Also, both the person who made the request for cancellation and the person who was stated to approve the request no longer work at company - so cannot determine if the appropriate level of management approved. LOB Response: The Business Line Manager and Account Management Manager of Fees at the time had approved not paying the tax processing fee.	This was the final invoice. The final fee was prorated and should have been caught on the invoice review by Admin	tax processing fee that was waived; not necessarily an error, but needed more information in the comments	Prorated Final Fee
4	Limited to no comments provided regarding fee adjustment; however appears to be a set up error. LOB Response: Fees were set up in accordance to the information provided, however, the information was somewhat ambiguous which is the reason for the adjustment afterwards.	CTO Billed as requested in special instructions box in original system. Invoice included Refunding escrow fee for two periods instead of one, so $1000 was reversed	ambiguous instructions provided for fee instructions; LOB did not provide clear instruction; set-up error, should have followed fee schedule	Onboarding Entry Error

#	Observation	Detail	Category
5	Comments only state that invoice amount was reversed. This occurred right before charge off. No other explanations were provided. Direction was given by the account manager, since no guidelines provided regarding approval capabilities, unsure if ok for account manager to give this approval without management review. The LOB Response: Invoices approved in error and had to be reversed. The invoice was reversed since the balance in the account was released on 12-24-14. There was $289.45 of residual interest in the account which we needed to get a direction letter for to release and released those funds on 8-13-15.	This was the final invoice. The final fee was prorated and should have been caught on the invoice review by Admin -	procedure in place for LOB to approve, but LOB approved the incorrect invoice; human error, but procedures were followed	Prorated Final Fee
6	Observation: Error in billing - The opinions referenced on invoice 981451 are duplicates of the opinions on the initial invoice 872196 for this account	CTO Billed as requested on Original system. Duplicate fees were generated and invoice was reversed	duplicate billing error; included in initial and billed out separately right after; should have been set-up as a 1-time fee, but was not set-up error?; legal fee schedule possibility, possibly duplicate client direction	Onboarding Entry Error
7	Observation: Error in billing - This invoice is a duplicate bill sent. The initial invoice already contained the legal fees, annual security trustee fee for that period and the fed ex charges that are on this invoice.	Client had paid for security trustee fee for that period and every period after that in a lump sum on previous invoice. Should not have been charged.	FedEx fee from different system; needs more research as to why there was a billing error; set-up error by fee processing group in CTO; original set-up by LOB	Administrative Entry Error
8	Observation: Error in billing - invoice forgot to include the FedEx charges, so updated invoice was sent	Invoice shouldn't have been rejected, another invoice should have been generated for the small FedEx charge instead; however CTO billed as requested.	timing and volume issue	Onboarding Entry Error
9	Observation: Set up error. LOB Response: The billing is a result of the setup, so the issue is due to a setup issue. Two parties were set up to be billed initially. One was set up for $1250 and the other was for $2500 in error.	Account set up with one fee billing party instead of two, which caused the invoice to be double the amount.	set-up error	Onboarding Entry Error
10	Observation: Account set up in error. Invoice was for a $2,000 acceptance fee, whereas the fee schedule has the acceptance fee waived. Comments in System state the wrong amount was debited from the wrong account in error, so fee reversed - comments made by a CTO admin, do not see any management or LOB approval. D/S appears to be accurate, so possible set up error with CTO? LOB Response: This is a set-up error.	Account set up with one fee billing party instead of two	set-up error	Onboarding Entry Error

#	Description	Finding	Cause	Category
11	Limited comments in System regarding fee adjustment; LOB confirmed set up error. The System fees/invoices were set up incorrectly. Custodian Fee was listed as $750 and the MAS Fixed Fee listed as $5,100 for a total of $5,850. The fees should have been reflected as $950 and $4,483 respectively for a total of $5,433.00 per month. There was a credit adjustment to the SEI account on 7/28/14 for $8.34 to correct. For more specific info on the Revenue Amount then Finance should be able to provide additional details.	Incorrect volume entered in Phoenix	information in Phoenix system requires additional manual steps; further research needed;	Administrative Calculation Error
12	No fees set up in D/S and cannot find fee schedule, yet multiple fees being charged in System. Fee waived by account associate. Guidelines require at least the relationship manager approval. LOB Response: Regarding the fee waiver by Daisy Kuhn – you are correct as she is not an RM. I don't believe the System can discern an RM from an AA so allowed the wavier. Unless there was some other documentation from an RM that allowed it. A late fee was waived. Companies typically will pay everything except the late fee. Since the late fee is small it is a business decision whether to pursue $50.	RM was not alerted.	no system control to prevent mistake from occurring; defect for appropriate level of authority waiving the fee; simply an understanding of an individual waiving the fee	Waive Late Fee
13	Adjustment comments state that the adjustment was due to an incorrect AU # - set up error	Billed to wrong AU	onboarding set-up error; manual process; incorrect set-up in Original system	Onboarding Entry Error
14	$12,000 adjustment. Cannot find management direction/approval. Direction provided by relationship manager. No explanation provided for adjustment. LOB Response: there were miscalculations on both the client team and the external client's part. There was an amendment to the fee letter that was not fully incorporated into some months later which caused some month's fees to be overcharged and some undercharged. We did a net effect transaction in SEI because the net sum of the adjustments was in the client's favor.	Wrong volume input by admin	administrative set-up error	Administrative Entry Error
15	Observation: Billing Error - Fee adjustment was due to duplicate fee being charged which is evidenced between fee schedule and the invoices of reference. LOB Response: The original invoice was billed in April 2014 for $6500. The $149 was some sort of duplicate fee that was billed in June 2014. The $149 was reversed from the April invoice. This does not appear to be a set up issue.	CTO billed as requested in Original system	multiple people working the same account	Initial Billing Gap
16	The invoice appears to be reversed and possibly paid in the following month under a new invoice number, but no explanation or comment confirming this. LOB Response: The invoice wasn't setup correctly and reversed per RM. Email provided - set up error	Invoice reversed because the closing date was 11/12/14 and the invoice was billed too early on 11/7	closing date changed; communication between client, RM and fee group; lack of communication	Onboarding Entry Error
17	No explanation for the adjustment - it appears the invoice was billed incorrectly. LOB Response: Newer analyst that inherited the deals with not enough explanation as to how and when to input volumes for fees. Error realized, correct amounts inputted and adjustments made	Wrong volume entered by admin	manual inputs into System; lack of training; lack of clear procedures	Administrative Entry Error

#	Description	Observation	Comment	Category
18	No explanation provided for refunding of fees in 4/2015, but then re-charging them in 5/2015. Possible issue with the way the invoice was written? LOB Response: 9/2/15: Invoice #1180554 in the amount of $2500.00 was billed and sent to the customer in error. Customer remitted payment prior to the error being discovered by WF. When brought to our attention, we returned these funds to the borrower and created a new invoice (#191917) for the correct amount of $2,000.00. Funds had been sent in via wire at the time of closing so we then debited the SEI account to recover these fees. Details related to these invoice adjustments were provided to CTO in an email dated 5/5/15.	CTO billed as requested	lack of comment; lack of procedure; no clear comment; did not know this was billed at time of close; no flag to identify a fee has been processed, would need to go into System to look	Initial Billing Gap
19	No explanation for adjustment provided. LOB Response: This deal had its first payment in January 2015. When updating the fees for Accounting to strip from the account, we erroneously told them $2,531.64. This happened again in February. Both invoice details & amounts. 1/30/15 Invoice 1161064 $2,531.64; 2/24/15 Invoice 1165636 $2,531.64. For the 1/12/15 distribution date, the correct fees should have been reported to Accounting as $4,064.12. As Accounting already stripped invoice 1169762 for the correct February fee of $4,062.21 they adjusted that fee to get the account back in line.	Incorrect volume entered in Phoenix	human calculation error; not clear on how fee should be calculated possibly; no adequate review getting it into System	Administrative Calculation Error
20	No reason provided for adjustment - cannot find employee as active. LOB Response: duplicate fee was charged under the bi-party agreement and was reversed.	Incorrect volume entered for trailing documents fee - Mortgage Document Custody Volume issue.	error on calculation due to ongoing administration of feed determination; inappropriate oversight	Administrative Calculation Error
21	No reason provided for adjustment, no fees set up in D/S - need to obtain fee schedule from LOB - LOB Response: The revenue amount of -$4,621.37 was a return of funds due to the trustee fee being triple billed. This occurred because the trustee fee was entered into Fusion but later adjusted, and that adjustment caused the triple billing. Once the error was realized, a request was made to Finance to return the funds back to the deal.	Incorrect volume entered from Phoenix.	Administrator error / reviewer error; training issue?	Administrative Calculation Error
22	Unclear as to why this was reversed and sent to SEI - need more explanation. LOB Response: Fee schedule in system set up wrong, refunded overcharge.	Incorrect volume entered for trailing documents fee - Mortgage Document Custody Volume issue.	onboarding set-up error; manual process; incorrect set-up in Original system	Onboarding Entry Error
23	Observation: Relationship manager asked for $2500 be adjusted from invoice. Fees are set up in System to pull rate info from Fusion. Fee schedule shows a $1500 monthly fee and a $2500 acceptance fee. The acceptance fee was already collected on a previous bill. The error on the bill was done in Fusion by the LOB. Issue realized 12 days after the funds had been debited from SEI.	Incorrect amount entered into fusion	no flag to identify fee was already collected; not aware fee was collected or confirmed it was collected	Initial Billing Gap
24	Observation: Set up error - adjustment made because AU for Trustee fee set up incorrectly	Set up with wrong AU	onboarding set-up error; manual process; incorrect set-up in Original system	Onboarding Entry Error

#	Description	Issue	Error Detail	Category
25	Adjustment request made by relationship manager. Adjustment appears to be due to billing error. Delay in closing so annual fee was prorated; however it appears to be prorated for wrong amount	Incorrect volume entered for trustee fee - Flat Fee issue	calculation error; used wrong number of months to determine correct figures to calculate with	Onboarding Entry Error
26	The comment states that per the SEI Script comment, the $4551.80 Custodian fee should be removed from invoice, but no reason provided, why and who authorized it. LOB Response: Custody fee of $4,551.80 on invoice #1124455 was based on outstanding balance, which is incorrect, so it was backed out and the correct custody fees for that time period can be seen on invoice #1122819. Copies of both invoices provided	Wrong volume entered by admin	calculation error; not knowing what numbers to use for calculating	Administrative Calculation Error
27	SAS instructed CTO to adjust fee by $1305.27, but no reason provided for why. LOB Response: The analyst that worked on this deal erroneously updating the Accounting spreadsheet with $2,011.54 as the fee strip from the SEI account. The amount that should have been stripped from the account was $706.27. Thus, the reversal was requested and posted.	Incorrect volume entered in Phoenix	calculation error; not knowing what numbers to use for calculating	Administrative Calculation Error
28	Observation: Limited comments in System regarding fee adjustment, however LOB confirmed it was due to an error in amount billed, February financials showed a positive $2,223 adjustment due to the January shortage.	Insufficient funds in SEI account	calculation error; not knowing what numbers to use for calculating	Administrative Calculation Error
29	Observation: Limited comments in System regarding fee adjustment. Confirmed that 2033 was returned to SEI acct. June 19, 2014 was the first month of payment. Fees were accrued at 18 days for the first accrual period, thus our fee was only $3,050. The invoice and strip from the account was $5,083 assuming a full accrual period and thus overstated. The difference was refunded to the account.	Insufficient funds; therefore it was reversed.	calculation error; not knowing what numbers to use for calculating	Administrative Calculation Error
30	Observation: appears to be a setup error	Minimum fee accidently entered	CTO set-up error	CTO Entry Error
31	No documentation to support why reversed. LOB Response: Invoice 1150991 was partially reversed because for the 12/15/14 distribution, being the first distribution date, the accrual period was only 7 days rather than a full month.	Wrong volume input by admin	calculation error; not knowing what numbers to use for calculating	Administrative Calculation Error
32	LOB Response: The JPMCJLCIII fee should not have been billed since the account was terminated.	This was the final invoice. Account was terminated soon after	did not follow-up account termination procedures	Account Termination Gap
33	Need additional information from LOB- cannot determine if reason for adjustment is appropriate. LOB Response: The invoice for Jupiter II was incorrect. The analyst must have input the incorrect amount in our system prompting an invoice being created and fee stripped.	Wrong volume entered in Phoenix.	administrative set-up error	Administrative Entry Error
34	Appears that client wire for MAS Fee was short by $211.52. Appears that remaining fee waived but no indication that this waiver was approved. Is there an established threshold for waivers of this type?	Wrong volume entered in Phoenix.	administrative set-up error	Administrative Calculation Error

#	Description			Category
35	Comment in System says automatic late fee generated. Invoice says fee is for Partial Redemption. **PER LOB: Regarding Merrill below, we did a partial redemption and I charged them a $1,000 fee and they came back and complained because they felt that was captured in their annual $30,000 paying agent fee. We ended up reversing the fee to accommodate the client**	CTO billed as requested and waived the fee per the admin's request	defect due to lack of comments; no clear procedure on who can waive fees	Waive Late Fee
36	Not able to determine the reason for the adjustment. Original fee amount was 306.66 adj is 239.16 **Per LOB: accidently included the document custody invoice with the FileNet fees in fusion so it was stripped incorrectly from SEI. We had to have them reverse the fees so we could make payment on the invoice to document custody.**	Wrong volume entered in Phoenix.	calculation error due to not knowing what to calculate based off	Administrative Calculation Error
37	Observation: Cleanup of invoice- amount adjusted because fee was already collected in different invoice totaling 25K.	Wrong volume input by admin	no flag to identify fee was already collected; not aware fee was collected or confirmed it was collected	Initial Billing Gap
38	Incorrect amount billed- Observation this has been a quarterly fee, how does the incorrect amount get billed.	Wrong volume entered; therefore $23,818.26 was moved to invoice 1182477 and the remaining amount was sent back to client	defect due to lack of comments; no clear procedure on who can waive fees	Prorated Final Fee
39	Not able to determine reason for adjustment. Need to follow up w/LOB - **Per LOB incorrect amount was stripped from deal. Adjustment necessary to fix.**	Wrong volume entered in Phoenix.	administrative set-up error; lack of comments	Administrative Entry Error
40	Observation: Reason for adjustment was to correct an invoice reversed in error	Invoice mistakenly reversed	CTO manual reversal error	CTO Entry Error
41	**PER LOB: Pearl 14-ADV** • Originally this deal was set up incorrectly to strip $4,917 per month which it did for 3 months. • The actual Fee is $4,625. • This over strip of $292*3 months = $875 • In September we corrected by reducing our monthly fee $4625 by the $875 reversal.	Wrong volume entered in Phoenix.	onboarding set-up error; manual process; incorrect set-up in Original system	Onboarding Entry Error
42	Incorrect amount billed. System shows acceptance fee to be 2,150. A revised invoice was created.	Client sent a check and had leftover money so they credited this invoice	no defect, client sent extra money	Customer Request (no defect)
43	Trustee Fee is $2500/yr. $600 received, cannot determine why remaining due was cleared. Do not see rebilling in System. **Per LOB- amounts incorrectly - in error created fee for a different account. Currently in process of correcting error.**	CTO billed as requested, client paid a portion so the remaining balance was cleared and rebilled on a different invoice	defect due to lack of comments; administration brought fees into current cycle	Customer Request (no defect)

#	Description			
44	**Per LOB Response: For the November invoice, we held back from paying the paying agent fees reported because we caught a calculation error that resulted in over payment over prior months. No paying agent fee should be stripped in November.**	Wrong volume input by admin	calculation error from administration	Administrative Calculation Error
45	Waiver approved by AA not RM per SOP. Appears that Late fee was included in initial invoice in error.	RM did approve the waiver, but was not listed in the comments	no system control to prevent mistake from occurring; defect for appropriate level of authority waiving the fee; simply an understanding of an individual waiving the fee	Waive Late Fee
46	Observation: Possible billing error	Incorrectly billed to wrong AU	administrative set-up error	Administrative Entry Error
47	Reason for adjustment- Trustee fee was booked twice in fusion in error. No comments in system	Incorrect amount invoiced	calculation error; potential lack of training, human error, lack of comments	Administrative Calculation Error
48	Adjustment made due to for billing error, possible volume error	Incorrect volume invoiced; therefore the INTERFILING LOANS fee was waived	calculation error based on volume; volume to be used not clear, possibly grabbed wrong volume; human count error; potential; keying error	Administrative Calculation Error
49	**Adjustment made due to for billing error - Adjustments due to admin error**	Admin put in wrong volume	calculation error based on volume; volume to be used not clear, possibly grabbed wrong volume; human count error; potential; keying error	Administrative Calculation Error
50	Adjusted to rebill on a different invoice, possible billing error	Client did not pay full amount, therefore $600 was cleared and rebilled.	not an error, client did not pay	Customer Request (no defect)
51	**Per LOB: the fee was supposed to be $3250. On 9/15/2014, the $4750 was reversed and the correct fee of $3250 was posted on 9/16/2015. The fee of 3250 can be confirmed in original system.**	Securities intermediary fees were reduced from $2,600 to $1,100 after invoice was billed; therefore, reversed and rebilled.	onboarding set-up error; manual process; incorrect set-up in Original system	Onboarding Entry Error
52	Incorrect amount billed. System shows acceptance fee to be 2,150. A revised invoice was created.	Incorrectly invoiced; therefore reversed and rebilled	onboarding set-up error; manual process; incorrect set-up in Original system	Onboarding Entry Error