

Process Errors Determination and Correction for Commercial Loans in the Bank Industry

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Abstract — The purpose of this project was to reduce or eliminate errors on Loan Boarding Packages received in the Loan Boarding Unit in order to increase the boarding volume. During the period of September 2015 through October 2015 the average loan documentation error rate has been 31%. Because of these errors boarding packages are not boarded the same day. For these reason the loan boarding processing lead time has exceeded the same day internal goal by 40% of the time. In order to found what are the variables affecting the loan boarding process we evaluate the type of errors, the loans complexity and the source of the errors.

Key Terms — Boarding Package, Errors, Loan Boarding Unit, Loan Complexity Loan.

INTRODUCTION

Researchers and statistics showed that most services process such as banking, call centers among others have a performance with a defect rate of 23,000ppm or yield 97.7 percent which equal less than 3.5 sigma quality level [1]. This affect drastically the finance and revenues of the services industries. The industries goals are to decrease the costumers' complaints and increase the service quality.

The Loan Operations Loan Boarding Unit receives all new commercial loans, including revolving lines and commercial real estate packages. The loan packages come from various sources or business unit. These business unit are; Branches (New York, New Jersey, South Florida), New York documentation Unit, South Florida Documentation Unit or PAB. The Boarding Unit is responsible to setup new loans, renewals and/or modification and extensions. Including preliminary

documents review, accessing the core system Metavante (FIS) or Personal Computer Financial System (PCFS) for set up, funding the loans and balancing.

The Boarding Unit receive the boarding package from the Loan Documentation Unit, which receive the documents from the Credit Unit and the Credit Unit from the Relation Officer, as Shown in Figure 1. These Business

Unit are responsible of gathering all loan information as credit reports, interest rate, payments and disbursements agreements, settlement, insurance information, appraisals, fees, customer personal and financial information among others.

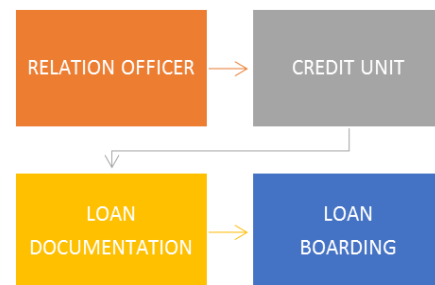


Figure 1
Documentation Process

OBJECTIVES

Juran's establish that six sigma movements gained interest in health care, financial services, legal services among others [2]. Measuring quality in a service based industries is perceived as difficult. As he mentioned in all industries, top-down management's understanding, appreciation and support is mandatory to successfully implement our lean six sigma project.

The goals are to reduce or eliminate errors in the Loan Boarding Packages before receiving it in the Loan Boarding Unit, decrease the time needed

to board each loan in order to completed boarding on FIS for 95% of loans received the same day, lower the allocation of internal cost of origination (FASB Cost) per unit involve in the process.

Beyfrogle states that organizations need to determine how they are going to determine the project and what tools they are going to implement. The procedure they use can affect how projects are selected, executed, and their success or failure [3].

To reach our objectives a DMAIC tools for lean six sigma was applied.

DEFINE PHASE

The process of the unit begins when the loan documentation unit sends the boarding package for boarding and ends when the loan is boarded in FIS (bank core system) and the check list is reviewed to ensure completeness.

The loan boarding package usually comes with errors from different stages of the boarding documentation process.

For the month of September through October the Boarding Unit is presenting an increase in the average loan documentation errors of 31%. In addition, the loan boarding processing lead time has exceeded the same day internal goal by 40%.

The customer, LBU, needs to reduce or eliminate errors on Boarding Packages by 95% in order to increase the boarding volume. To meet this need it is necessary standardize process, have an adequate reconciliation between CLP and loan documents, develop metrics to measure performance and trained Business Unit and Loan Documentation Unit personnel.

The goal is to receive the Boarding Package free of errors in order to completed boarding on FIS for % of loans received on the same day before cut off time 4:00pm. For these purpose we have defined or CTQ scope and defect definition:

- Y1: Decrease % of errors in the Loan Boarding Packages
- Y2: Decrease the time of Boarding per loan

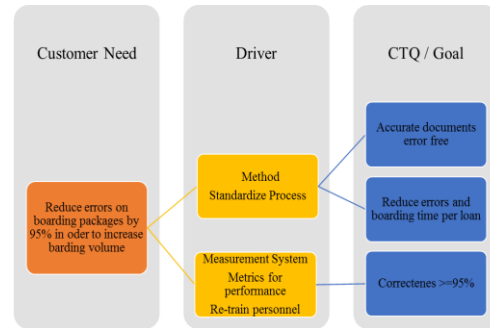


Figure 2
CTQ Tree

The Figure 2.2 shows the CTQ tree develop to establish the critical needs of our customer, Loan Boarding Unit. Our process should deliver accurateness in documentation, less errors per boarding package and correctness o organ Process Unit comes from its suppliers; Business Unit, Credit Unit and Loan Documentation Unit. When an error is found the Boarding Package is returned to the Loan Documentation Unit for corrections causing a delay in the boarding process.

This errors found in the different areas/units of the loan boarding package are the responsible that not all packages received can be boarded the same day.

For October 55.4% or 62 loans out of 112 were boarded the same day. Four (4) of four (4) loans received from LPU has errors. This month the LPU unit has the highest percentage of errors. In November 80.3% or 5loans out of 71 were boarded same day. The New York Region has the highest percentage of errors.

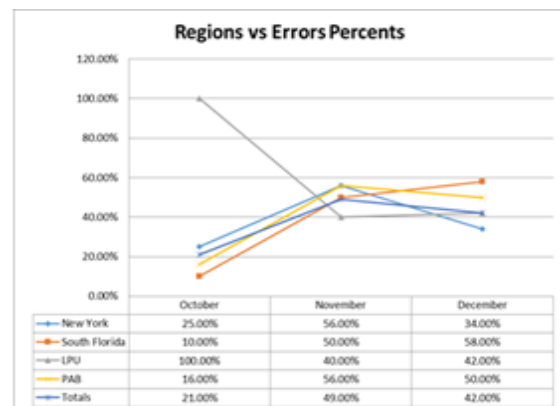


Figure 3
Errors Percents Graph

December 65.1% or 99 loans out of 152 were boarded the same day. In this month the South Florida Region has the highest percentage of errors. Figure 3 shows a comparison of errors by Region show that the New York Region, for the months of October and November, has the highest percentage of error and the LPU unit has the highest percentage of errors. In December the South Florida Region has the highest percentage of errors.

When comparing loan boarding package taking into consideration the loans complexity, the highest percentage of errors were identified in Complex loans.

Among the factors to be consider for its impact in the boarding process are the errors found in the Boarding Packages. The errors found can be summarizing as follow:

- Errors in interest rate
- LOD / Fees
- Incorrect or Missing Information
- Missing Documents
- Loan Code Errors
- CLP
- Others

For measuring purpose, we did a comparison between Loan Complexity and type of errors. In the Simple complexity the loans the highest percentage of errors consist in Missing or incorrect information. Figure 4

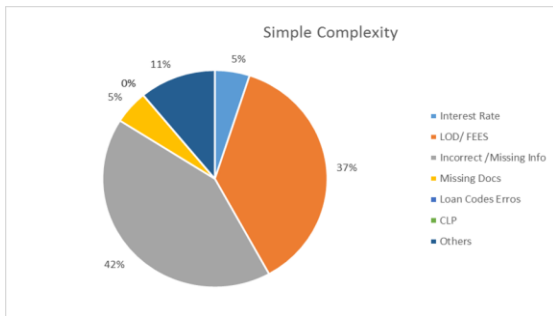


Figure 4
Simple Complexity Errors Percent

For medium complexity loans the highest percentage was in CLP (Commercial Pipe Line) with 29% of errors. Figure 5

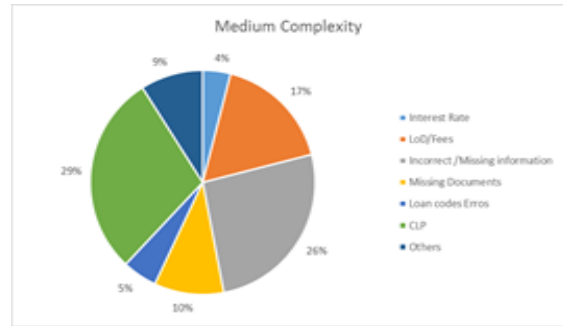


Figure 5
Medium Complexity Errors Percent

For Complex Loans the incorrect/missing information composed 33% of errors. Figure 6

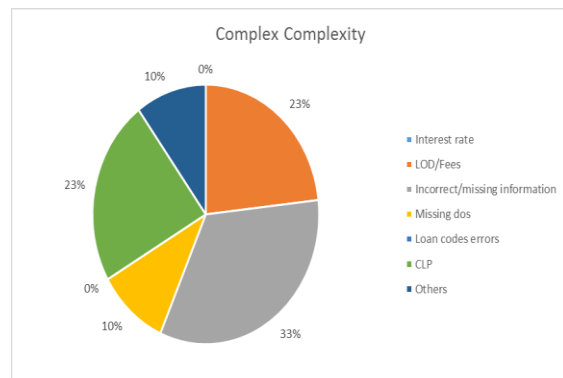


Figure 6
Complex Complexity Errors Percent

The common errors in all loan types is the Incorrect Missing information, even though in medium complexity loan the CLP was the main source of error the Incorrect/ Missing information composed the 26% of the errors in this type.

ANALYZE PHASE

During the analyze phase we are searching the causes affecting our input and output variables connected to the projects goals [4].

The cause and effect diagram in Figure 7 gives us an idea of the potential causes of the effects.

Based on the gathered information in a Cause and effect diagram for the Business Unit, the following X's seem to be impacting the Y's the most:

- Lack of training.
- None dedicated personnel.
- Lack of data integrity.

- Excessive post boarding review.
- Lack of process and system standardization.
- Lack of measurement.

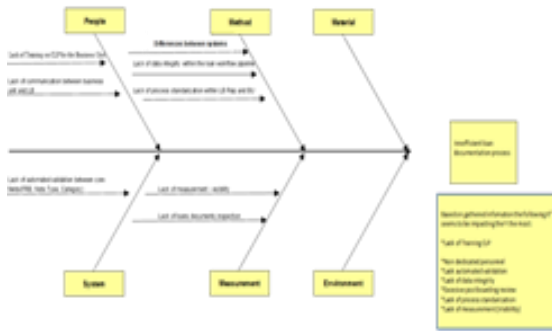


Figure 7
Cause and Effect Diagram

The Figure 8 shows an Anova test was conducted to verify if there exist any significant different between Months and the error and the relation or variation between the types of Errors.

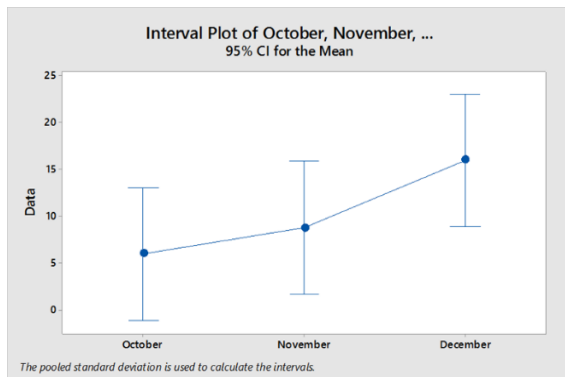


Figure 8
ANOVA Test

Method:

- >Null hypothesis: All means are equal
- >Alternative hypothesis: At least one mean is different
- >Significance level $\alpha = 0.05$
- Equal variances were assumed for the analysis.

Factor Information

Factor Levels Values
Factor 4 NEW YORK, SOUTH FLORIDA, LPU, PAB.

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	3	272.3	90.75	2.47	0.136

Error	8	294.0	36.75
Total	11	566.3	

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
6.06218	48.08%	28.61%	0.00%

Means

Factor	N	Mean	StDev	95% CI
NEW YORK	3	18.00	7.81	(9.93, 26.07)
SOUTH FL	3	9.00	6.00	(0.93, 17.07)
LPU	3	5.000	1.000	(-3.071,13.071)
PAB	3	9.00	7.00	(0.93, 17.07)

Pooled StDev = 6.06218

Conclusion: There are no significant variant between Month and errors.

Also there were no significant variant between Regions or Business Unit, with a P-Value > 0.05.

On the other hand, the ANOVA conducted for Errors Types shows a significant variant among them as shown on Figure 9 and Figure 10.

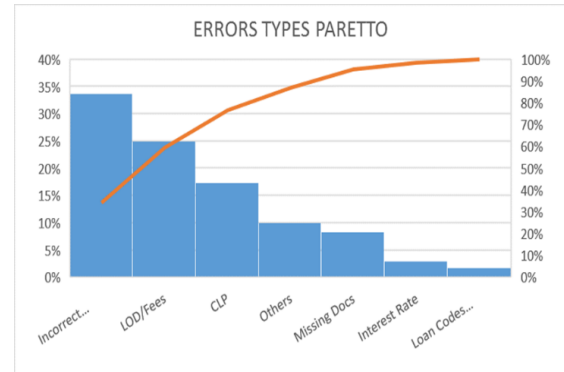


Figure 9
Errors Type Pareto

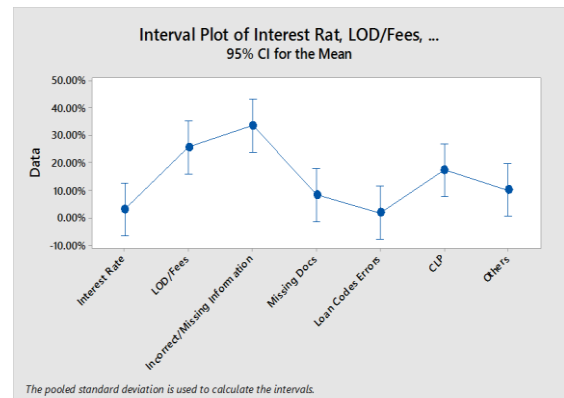


Figure 10
ANOVA Test

One-way ANOVA: Interest Rat, LOD/Fees, Incorrect/Mi, Missing Docs, Loan Codes E, CLP, Others

Method

>Null hypothesis All means are equal
 >Alternative hypothesis At least one mean is different
 >Significance level $\alpha = 0.05$
 Equal variances were assumed for the analysis.

Factor Information

Factor	Levels	Values
Factor	7	Interest Rate, LOD/Fees, Incorrect/Missing Information, Missing Docs, Loan Codes Errors, CLP, Others.

Analysis of Variance

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Factor	6	0.25645	0.042741	6.98	0.001
Error	14	0.08573	0.006124		
Total	20	0.34218			

Model Summary

S	R-sq	R-sq(adj)	R-sq(pred)
0.0782548	74.95%	64.21%	43.63%

Means

Factor	N	Mean	StDev	95% CI
Interest Rate	3	0.0300	0.0265	(-0.0669, 0.1269)
LOD/Fees	3	0.2567	0.1026	(0.1598, 0.3536)
Incorrect/Missing Information	3	0.3367	0.0802	(0.2398, 0.4336)
Missing Docs	3	0.0833	0.0289	(-0.0136, 0.1802)
Loan Codes Errors	3	0.0167	0.0289	(-0.0802, 0.1136)
CLP	3	0.1733	0.1531	(0.0764, 0.2702)
Others	3	0.1000	0.0100	(0.00310, 0.19690)

Pooled StDev = 0.0782548

Interval Plot of Interest Rat, LOD/Fees.

Conclusion: There exist a significant variant between types of errors. P value is < than 0.05.

As per ANOVA test for Errors Types the following errors type need to be for improvement

- Incorrect or Missing Information.
- LOD/Fees.
- Commercial Loan Pipeline (CLP).

IMPROVE PHASE

The Analyze phase proved that there exists a significant variant among types of error.

The loan boarding package usually comes with errors from different stages of the boarding documentation process. The most critical errors types are Incorrect Missing / Information; LOD /Fees, CLP.

A Plan-Do-Act-Check will be or model for carrying out the improvement and changes need for the success of our goals.

Plan

- Improve the loan boarding cycle time and,
- Reduce or eliminate errors in Boarding Packages.

Do

- Review actual checklist to add necessary changes for categories.
- Detect the enhancement needed for the CLP to detect discrepancies, re-trained personnel, add quality reviews or inspections before send documentation. Dual control inspection.
- Create metrics to measure performance.
- Re-assign no related duties/activities.

Act

- Training schedules for all personnel (continuous education).
- Implementation of checklist (for all Business Unit).
- Enhance the CLP.
- Place a dual control program.

Check

- Measure performance and variables.
- Measure boarding time.
- Loans documentation sent the same day of the closing not the last day of the month.
- Keep tracking error behaviors. As the PDAC a new operating procedure will come to Business Unit.

CONTROL PHASE

To maintain our unit boarding 100% of packages received some measures have to be applied.

All Business Unit have to complete the Checklist to validate information before send documents to the other unit. The Checklist will validate the following information:

- A training program will Interest rate.
- Fees / Letter of direction.
- If documents to be send are attached and properly complete.
- A dual control system will be place to revise the information be put in practice to re-train all personnel in charge of gather information to complete the boarding packages. This training will impact all levels of the loan process and loans complexity.
- Standardization of forms.

Changes in the Information system will be applied. These changes will include enhancements to the system and quality control metrics and measures as well.

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