Paper 3369:

Analysis of customer answers to calls from collection, through SAS Text Mining in order to respond to customer in a more efficient and effective way

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ABSTRACT

At the Multibanca Colpatria of Scotiabank, we offer a broad range of financial services and products in Colombia. In collection management, we currently manage more than 400,000 customers each month. In the call center, agents collect answers from each contact with the customer, and this information is saved in databases. However, this information has not been explored to know more about our customers and our own operation. The objective of this paper is to develop a classification model using the words in the answers from each customer from the call about receiving payment. Using a combination of text mining and cluster methodologies, we identify the possible conversations that can occur in each stage of delinquency. This knowledge makes developing specialized scripts for collection management possible.

Key words: Text Mining, Segmentation, Collect, document.

INTRODUCTION

In Multibanca Colpatria by Scotiabank exists collections area, this area is responsible for making calls to customers to remember paying their obligations. In the same way, this area is also responsible for calling customers who had not paid; in summary it is an area where your main objective is to collect the bank's portfolio.

Given the amount of data that we have, it is important to analysis for subsequent decision making. There is a field in the database, where the collection agent writes all about the call that the client say. In an average month you can have up to 400,000 responses; these responses are text that in this paper calls documents.

Using traditional techniques is very complex to create analysis of these documents, what is in these responses; in many cases given their complexity analysis is not performed because the information is contained in a text, in this way is difficult to interpret automatically.

The goal is to apply text mining techniques to extract this information on variables, whit this variables we have knowledge about of what is customers are saying.

1. DATA INFORMATION

There Clients who are called by the collections area, these costumers give an answer, the operator writes the same phrases that costumer say, word by word. This information is saved in a data base, and this data base is 'ORIGINAL DATA'.

One example of this data base for one costumer:

"The customer is not at home, message is left with her mom"

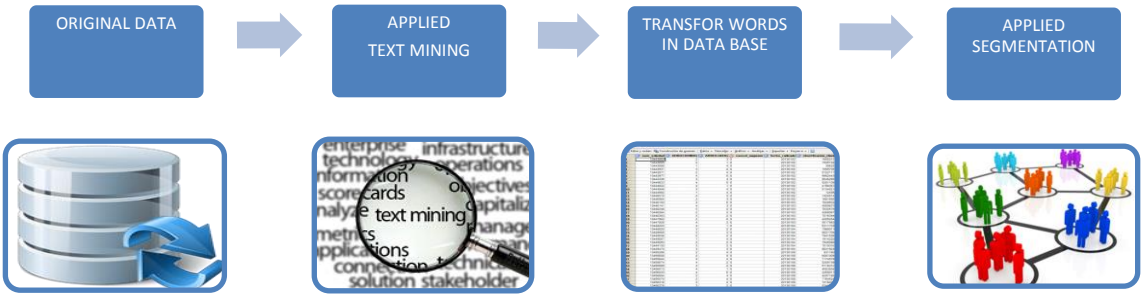
"Commitment to customer makes payment the day 01/01 ..."

"Costumer says payment report"

With techniques of text mining, we create a data base with words like variables. This data base contains columns as frequent words are in the data base. Whit this Data Base, its possible to determine whitch is the most typical conversation.

Finally with this data base we apply segmentation techniques.

This is the structure for the data base:



Graphic 1: Process Data Base

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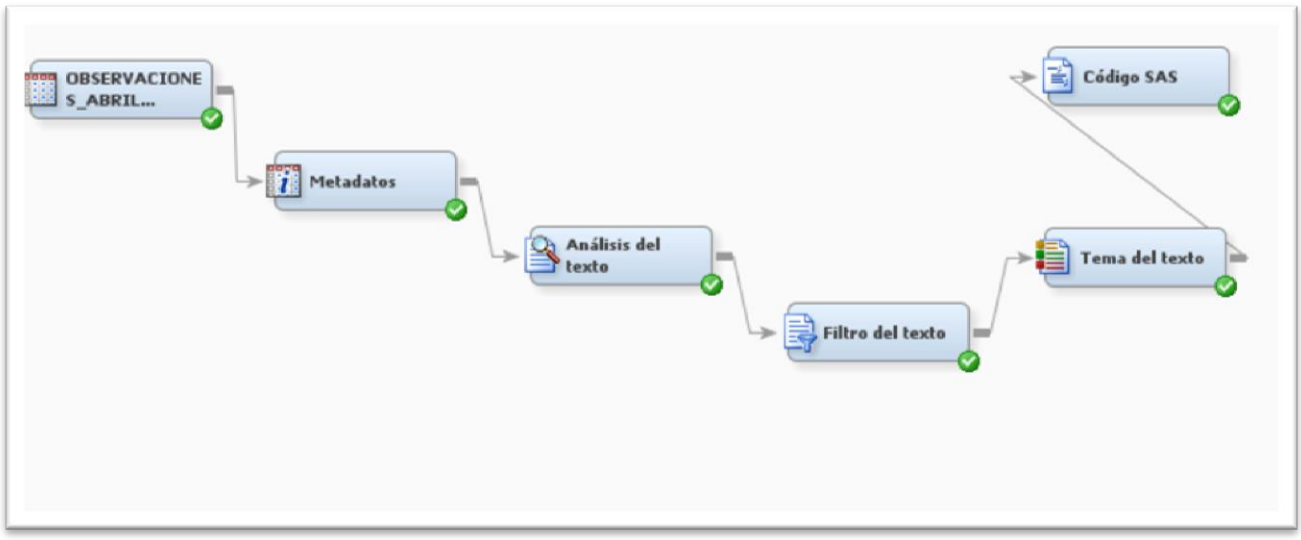
2. APPLY TEXT MINING

With the database of documents of each of our clients, is necessary to apply techniques of text mining for this data base, in this paper SAS Text Miner is applied

a. SAS Text Mining

The following graph shows the diagram nodes to transform the database of text in a database with dummy variables.



Graphic 2: Process Text Mining

The figure shows the different nodes for the extraction of words database of variables.

The Analysis node processes words in text variables; these variables are most frequent according to de set documents.

The filter text node forbids the words that are irrelevant to the analysis of text.

The theme of the text node gives a rating to each of the words as verbs, nouns, adjectives, etc. Finaly we export our data base.

b. Stop Words

Is necessary to apply a filter of words before to processing data information

In this process we include the stop-words, we take two groups of words.

The first group is words connectors according whit the original language

The second group is words with “Obvious meaning ”, this is most important because is necessary to control some words, for example “Call”, is most frequency to have this word in all calls.

c. Data Base

Finally has a database with words converted into variables.

These variables are the result of a series of more frequent words. This result is text mining; we have a database, whit these Data Base we can apply other statistical techniques that lead to better performances for better performances and better analysis of information.

3. SEGMENTATION

With the database, we create a segmentation using the variables of the extracted words in the application of text mining

The characteristics of each group are shown in the following table

Segment 1 (32%)	**Segment 2 (46%)**	**Segment 3 (22%)**
Report	**Expenses**	**Message**
Forget	**Collection**	**Family,Mom, Husband**
Pay	**Hangs Call**	**Cancel**
Busy	**Cancel**	**Collection**
Commitment	**Busy**	**Reports**
Confirm	**Refinance**	**Unemployment**
Loans	**Negotiation**	**Money**
Value	**Deal**	**Cash**
	Benefit	**Wait**

Table 1: Segmentation

RESULTS

Segment 1 have words related to early payment, forget, securities, loans, commitments, or report the payment, if we can summarize these words, these customers are those who have good reception to the call for payment, they made a commitment.

In Segment 2 customers who make a commitment, a refinancing, or clients are busy or hanging the call.

Segment 3, on the other hand are people who are not located, the message is left with the family or who are unemployed. The say they have not money.

CONCLUSION

In this paper we applied two techniques, one of them is text mining and the other is Segmentation. With the first technique, we create a data base, this is the most important conclusion because the technique of text mining is a good way to convert words or phrases in variables.

The second conclusion is to apply other statistical techniques with a database that is extracted with data mining techniques and improves the analysis in a quick time.

REFERENCES

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Recommended Reading

For more information about application, can you review the principal characteristic of Sas Text Miner, this application can you find it the products of SAS Advanced Analytics.

- *SAS® Text Miner*

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