

## Using SAS® Enterprise Guide®, SAS® Enterprise Miner™, and SAS® Marketing Automation to Make a Collection Campaign Smarter

Darwin Amezcua, Andres Gonzalez, Paulo Fuentes DIRECTV

### ABSTRACT

Companies are increasingly relying on analytics as the right solution to their problems. In order to use analytics and create value for the business, companies first need to store, transform, and structure the data to make it available and functional. This paper shows a successful business case where the extraction and transformation of the data combined with analytical solutions were developed to automate and optimize the management of the collections cycle for a TELCO company (DIRECTV Colombia). SAS® Data Integration Studio is used to extract, process, and store information from a diverse set of sources. SAS Information Map is used to integrate and structure the created databases. SAS® Enterprise Guide® and SAS® Enterprise Miner™ are used to analyze the data, find patterns, create profiles of clients, and develop churn predictive models. SAS® Customer Intelligence Studio is the platform on which the collection campaigns are created, tested, and executed. SAS® Web Report Studio is used to create a set of operational and management reports.

### INTRODUCTION

TELCO companies and international companies in general have to face several challenges in customer management. Acquisition, collection, retention, cross selling and engagement processes are examples of areas in which companies can use analytics to improve their process using information to focus its strategies and design their plans.

This paper aims to exemplify a successful case of the use of automation and analytics to improve customer management. In this particular case the focus will be on the collection process in a TELCO company, but the concept can be applied to many different areas across different businesses and industries. Development will begin with the storage of information, extraction of data, and structuring of information for campaign creation. This will lead to the development of scoring models and the implementation of champion challenger<sup>1</sup> strategies to optimize the collection process.

This article is grouped in four sections. The first section briefly describes the collection process before it has been optimized with emphasis on the key points that will be changed and improved with this project. The next step focuses on which changes were made to optimize the collection process and how the SAS® solutions were used to reach that goal. The third part highlights the uses and opportunities that this development brought such as implementation of champion challenger strategies, use of operational information to define campaigns and integrate collection with other company processes, and make substantial information available that can be used for forecasting. In the last section the results and main conclusions are presented.

### BUSINESS OPORUNITY

Firstly, a brief description of the operational process will be given. For collections the process was basically supported using queries and macros that were executed manually. The database creation to contact clients was supported in the first step using a macro that identified the clients that had the conditions to be contacted. A second macro was manually executed to create database structure needed to upload the database to the automatic dialer.

Under this operational scheme the information from other processes, like retention, loyalty and cross selling was invisible for the collection process and vice versa. In addition, the complete operation was

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<sup>1</sup> Champion Challenger is a methodology used to test a new strategy (challenger) that is quickly and easily evaluated against the current model (champion).

executed manually by the collection supervisors in the call center. The creation, upload and management of databases was a highly time consuming task that required full time work of a minimum of three people in the call center.

Regardless of the controls, the process was susceptible to operational and human errors. Analysts had to connect every day early in the morning to run processes to create and upload databases before the call center started business. There was difficulty making changes in the rules and strategies, like segmenting and creating different profiles to create a differentiated treatment for clients.

The last issue in the previous process was the manually created and updated reports. This was a highly time consuming task also, and had low versatility in regards to the possibility of grouping report information in relevant business segments, such as risk levels, tenure and product.

## OPTIMIZATION

### STORING INFORMATION

Much of the information used in the collection campaign had been stored for many years in different data warehouse systems. Current campaign information also should be stored in order to apply analytics. This data includes: clients sent to the call center, clients that mustn't be contacted, emails sent, messages sent, blasters, etc. A data warehouse system is needed to support the large amount of information that the collection process produces. This structure will be called the Common Data Model (CDM).

Once the data warehouse is developed, it is necessary to establish the connection between the different servers. These connections allow the transfer of information between different stages of the process. In this case the servers were connected to the SAS server where the information was extracted and transformed using @SAS Data Integration.

### EXTRACTION AND TRANSFORMING INFORMATION

With all the information available the next step is to extract and transform information that initially has different formats, structures and origins. In this step, the features are mapped, formatted and transformed. That task is executed using SAS® Data Integration as shown below:



**Figure 1. Extraction and transformation**

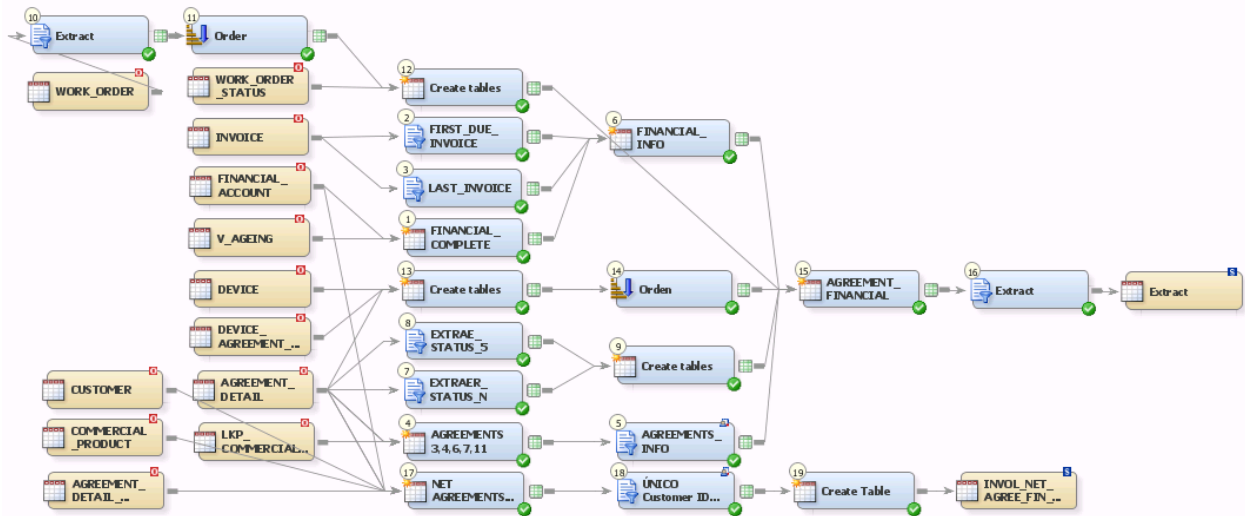
### SAS® Data Integration use

The use of SAS® Data Integration in this project can be divided into two parts, the first of which is extraction, creation or transformation of variables. This process is executed by extracting the information directly from the primary sources in different ways. **D¡Error! No se encuentra el origen de la referencia.**isplay 1 shows a simple flow that extracts information from a single source:



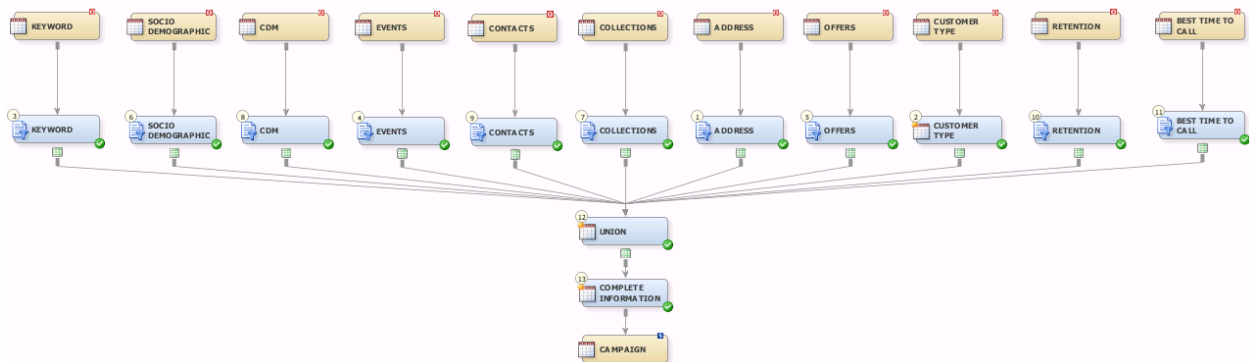
**Display 1. Single source information flow**

Display 2 shows another process that extracts and transforms the customer type information. In this case, many databases are used which requires transforming different features. In both situations, job keywords and job customer type merge information from primary sources to create a singular type of information.



**Display 2 Multiple source information flow**

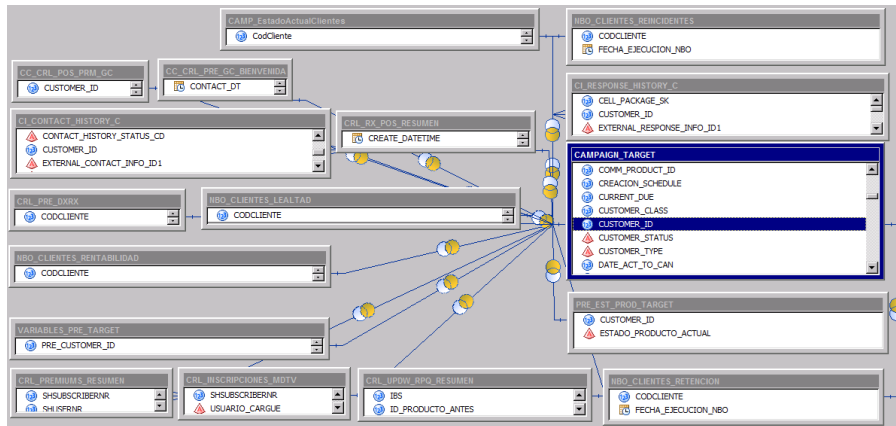
Each job in this first step extracts and transforms information from different dimensions of the client, but it is in the second step of the campaign where all the information is integrated in one unique table that the collection, loyalty and profitability campaigns need. The job campaign is shown in Display 3.



**Display 3. Merging information flow**

### STRUCTURING INFORMATION

In this stage of the process most variables and information needed to create a campaign are available in the Campaign database. However, there is additional information needed for other processes (loyalty, prepaid, cross selling and profitability) that is available in other databases. In this step the information is merged to the Campaign database usually by customer ID. Whether the variable is mapped through the Campaign database or another database depends on the source, type and characteristics of the variable.



#### Display 4. Structuring Information

So far all variables and information needed in the collection process are available in the Campaign which includes information from other jobs and databases, like the NBO\_Clientes\_rentabilidad data base that contains profitability information merged by the ID. However, the big and complete database is still unstructured; customer ID, keywords, overdue and all variables have the same status and function in the database. To define a different function and use for those variables, SAS® Information Map is used. In this step the Subject ID role is assigned the Customer\_ID variable, and the other variables are defined as nominal, interval, dichotomous or ordinal depending on its characteristics. This process is quite important because SAS® Customer Intelligence will know what role each variable will play and can give them their proper use.

Property	Value
Data item name	Customer Id
ID	Customer Id
Location	/IBS
Description	ID DEL CLIENTE (NU...
Default query	No
Expression type	Numeric
Expression	<<CAMPAIGN_TARG...
Classification	Category
Aggregations	
Default aggregation	
Format	10.
Default format	
Display as a hyperlink	No
Enable ranking	Yes
Enable sorting	Yes
Value-generation met...	Enter values

#### Display 5. Assigning variables role

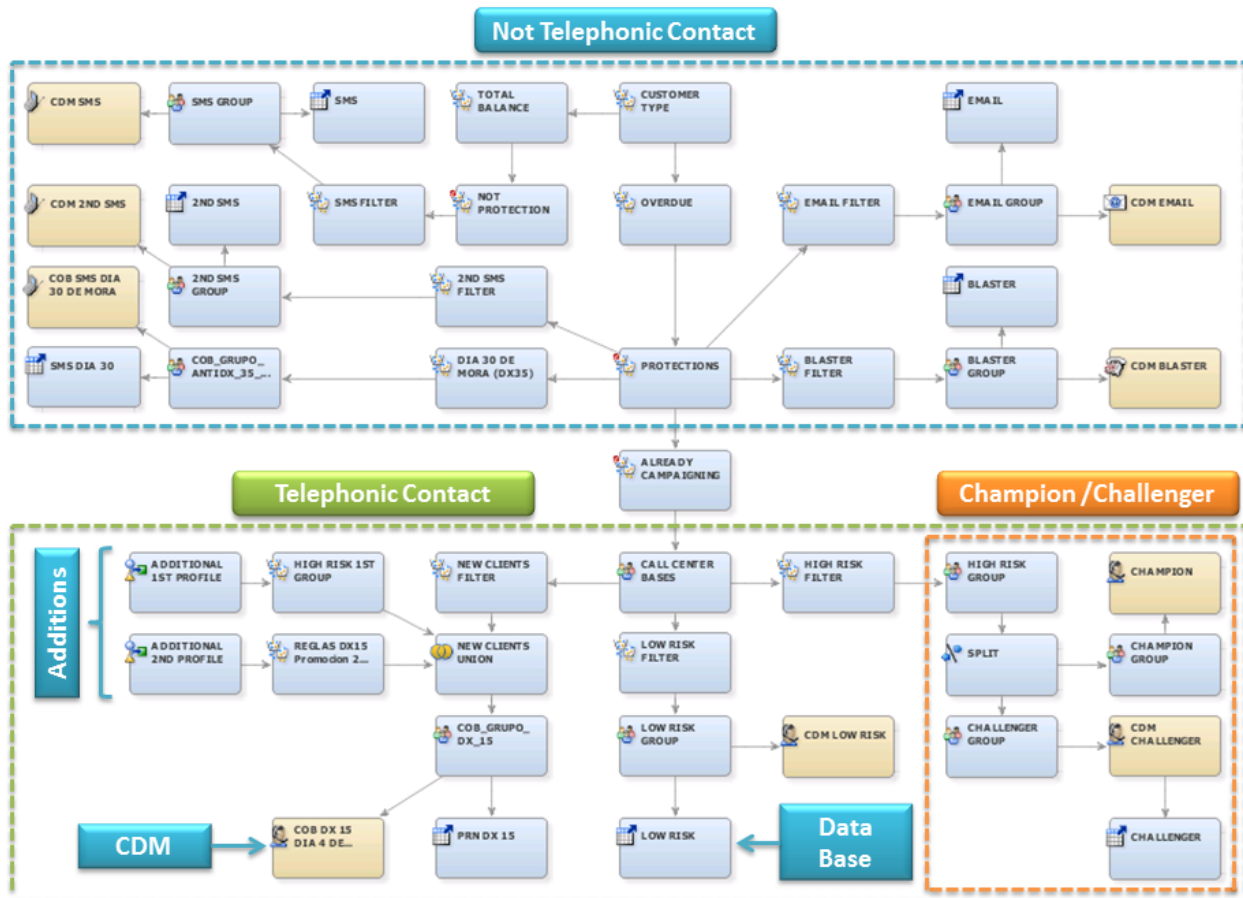
### CAMPAIGN

At this step the information is transformed, unified and structured, and is available to use in collection process. Now the business strategy can be embodied using SAS® Customer Intelligence. The next display shows the main collection campaign that produce most of the non-telephonic treatments and a significant part of the clients sent to the call center. In this flow can be seen how the business strategy is built using different nodes, inside the nodes are the rules that determine the type, overdue condition, keywords and profile that a client must have to receive each treatment.

In this flow, champion challenger strategy is highlighted and is shown how it is integrated with the rest of the flow, in this particular case, a new treatment (challenger) is set to compete with the current strategy

(champion); champion challenger proof is implemented as another treatment, and is executed every day at the same time along with the rest of the flow.

The collection flow is scheduled to be executed automatically, currently this flow is scheduled at 6 a.m. and is executed every day, during execution Common Data Model is fed with clients sent to each treatment and at the same time databases with required information for each treatment like phone number, addresses and e-mails. That information is created and sent to the default folders to be automatically uploaded to the dialers system or the system that send the e-mail, message or blaster to the client.



Display 6. Outbound treatments

## REPORTING

Reporting tools are the last integral part at this information integration and automation process, appending key performance indicators to collection operational control and management, to support these reports SAS® Web Report Studio is used. These reports become a head advantage for supported decision making regarding to actions needed to face behavioral changes in customer payment habits or any other risky situation.

## ANALYTICS

Information integration and automation of campaigns described above are the starting point for conducting analytical tasks, because they offer consistent and high volume data sources, as well as integrated variables from diverse business processes. Those inputs are processed using SAS solutions like SAS® Enterprise Guide® and SAS® Enterprise Miner™.

Specifically, the main analytical applications derived from the processes described consist of identifying customer profiles, used to define differential collection strategies; another worth application is the development and testing of predictive models aimed to estimate forced churn probability. The analytical solution is used to quantify and maximize money collection and define differential treatment for recovery.

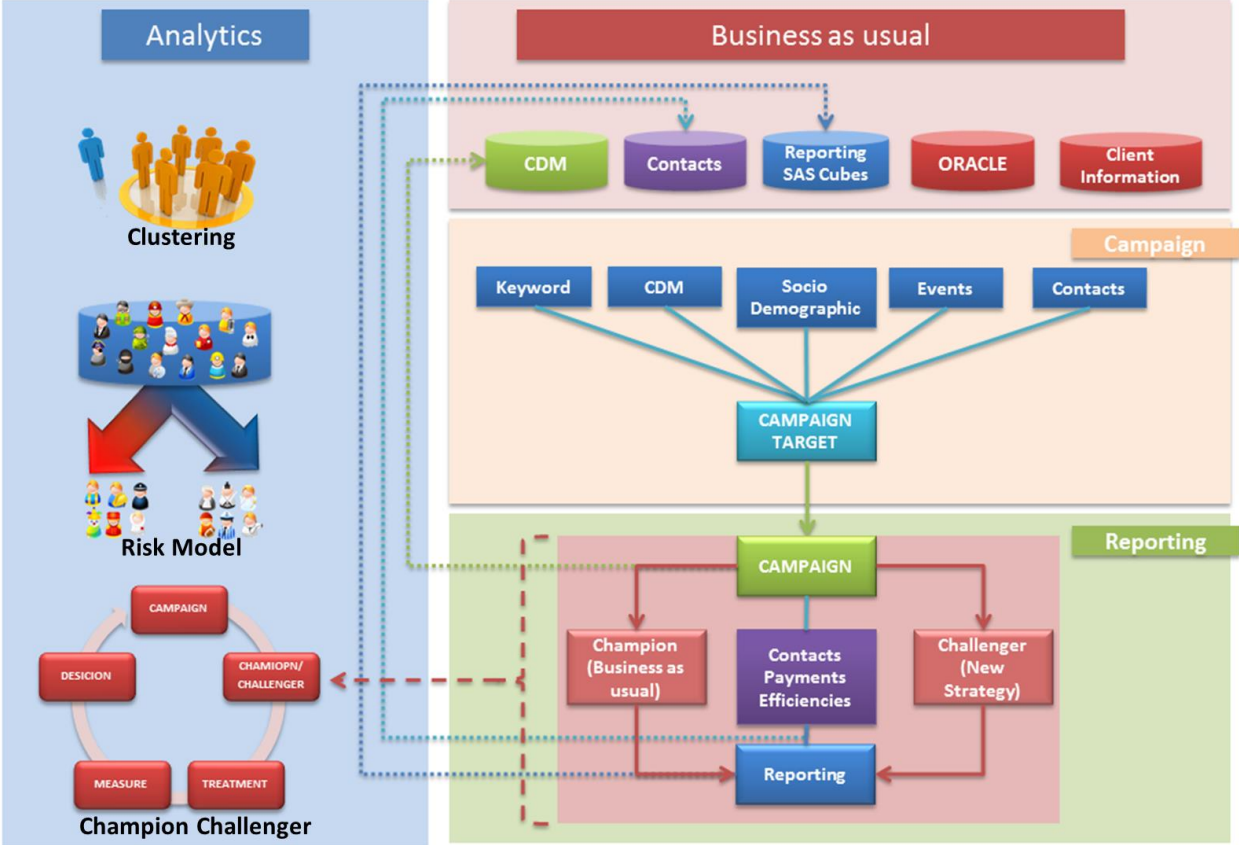


Figure 2. Business as usual and Analytics Integration

**SCORING MODELS FOR CUSTOMER SEGMENTATION AND CALLING PRIORITIZATION**

Risk scoring models were improved through data outputs raised from integration and automation processes described before. Those improvements allow the development of more competitive treatments in money collection intended for high risk clients. In addition, the model's outputs offer an additional advantage allowing calling prioritization, in which collection calls are fulfilled having a specific order, related to customer's default risk.

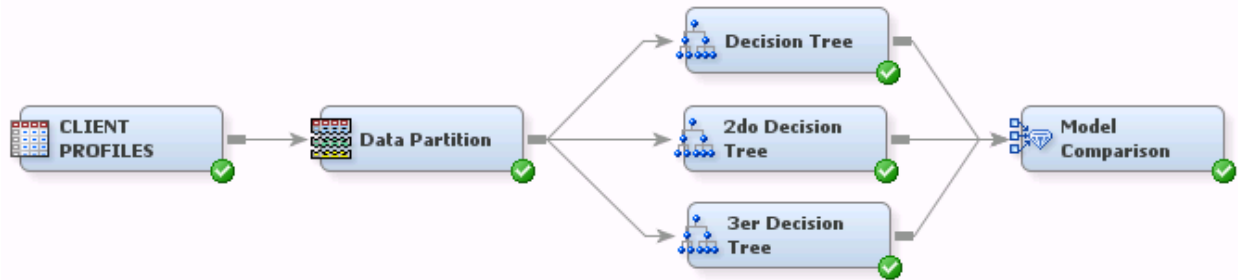
**EXTRAORDINARY CAMPAIGNS FOR HIGH RISK PROFILES**

The new campaign automation process grants quick changes in collection strategies, the origin of those changes is a customer profiling process using decision tree classifiers, used to identify riskier customers who are immediately allocated to extraordinary campaigns having more competitive treatments and special resources.

**DAILY FORECASTING BASED ON CUSTOMER PROFILES**

Available data have allowed a detailed forecasting process grouped by customers with similar risk profile, offering an overall improvement in forecast precision. To produce a more accurate forecast, statistical methods are implemented in SAS Enterprise Miner such as interactive binning, decision trees and

ANOVA analysis among others. This new forecasting process enable a competitive advantage creating a faster decision making process.<sup>2</sup>



**Display 7. Customer Profiling**

**CHAMPION CHALLENGER**

The champion-challenger strategy is the tool that brings dynamic in collection processes, it propose a complete framework to develop and test new treatments and assess their benefits afterwards. Particularly, this champion-challenger strategy has a complete assimilation to campaign’s information integration and automation that it behaves as just another piece of daily collection operation and it doesn’t cause any negative consequence at campaign’s performance.

**RESULTS**

1. From the beginning of the optimization, 3 champion challenger strategies have been made:

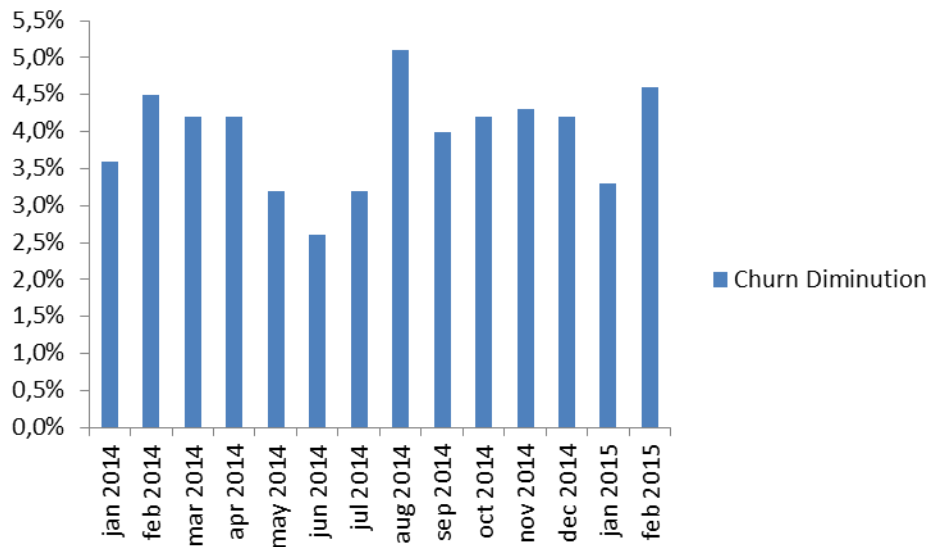
Champion Challenger	Challenger	Result	Decision
1	Start telephonic collection 10 days earlier than usual for low risk clients	Earlier collection calls don't increase collection efficiency.	Reallocate 7 Customer Service Representative to other duties.  Don't anticipate telephonic collection to this clients profile.
2	Start telephonic collection 20 days earlier than usual for high risk clients	New strategy increased money collection in 13.5% Challenger strategy increases customer reconnection in 9%.	Anticipate the phone collection of high delinquency clients
3	Eliminate extension in disconnection dates	Eliminate Extension in disconnection dates don't produce any negative result	Eliminate Extension in disconnection dates

**Table 1. Champion Challenger**

2. There are other winnings of campaign automation, one of them is complete adherence the collection policies and daily controls through e-mails and SAS® Web Report Studio
3. During the campaign automation were identified 5,4% of clients that previously were disconnected without any phone call, now those clients are call as a minimum 3 days before disconnection.

<sup>2</sup> ANOVA statistical model used to analyze the differences between group means, in this analysis is used to create customer profiles.

- Databases needed to collection management are generated at 6:00 am instead of be manually generated at 12:00 am, producing significant time savings and reducing the operational risk.
- Campaign automation can be measured in many ways such as time saving. Monthly 548 business hour are saved, this time is equivalent to 69 days that is a full time effort of 4 back officers in loyalty and collection operation; all that time was spent in databases and reports creation that now are automatically produced.
- The most important gain is churn diminution. With this project is reached a 3.9% diminution in forced churn equivalent to 13 days of selling every year, this earning is expected to increase in the future with use continue use of champion challenger strategies.



**Figure 3. Churn Diminution**

## CONCLUSION

- Campaign automation create a proper framework to develop and apply analytics.
- Daily information feedback makes the process dynamic and allows the process integration.
- Integrating business expertise and champion-challenger strategy is the path to make collection process smarter; business expertise helps identifying steps, strategies or procedures that can be improved and the strategy that can be proved; and finally champion-challenger strategy allows to take an informed decision, displaying the result of every strategy tested.
- Not all clients must have the same treatment, there are clients that must be called and contacted since the first day in overdue, in contrast other profiles of clients pay with a text message, those are the opportunities that analytics seek to find in order optimize money, time and resources.

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## CONTACT INFORMATION

Your comments and questions are valued and encouraged. Contact the author at:

Darwin Amezcua  
Business Partner of Forced churn, Directv Colombia  
(+57) 321 4969 356  
alberto24d@gmail.com

Andres Gonzalez  
Decision Analytics Manager for Customer Experience, Directv Colombia  
(+57) 310 3595 239  
andrezfg@gmail.com

Paulo Fuentes  
Customer Experience Analyst, Directv Colombia  
(+57) 318 6901 691  
formacero10@gmail.com

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