

Optimizing Marketing Campaign ROI through Process Automation

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Abstract

This paper provides solutions to campaign management challenges that perhaps every marketing company experiences while managing & reporting direct marketing campaigns. To optimize marketing campaign ROI, the campaign tracking teams need to respond quickly on targeted population behavior during a campaign and evaluate campaign effectiveness after a campaign has ended. The Customer Insight & Campaign Management is highly data intensive and a challenge particularly when you have to manage data from disparate sources. By using SAS[®] we were able to improve the operating efficiencies through systems integration & automation of data intensive processes. Business rules were embedded within the SAS[®] application to further reduce the data processing time and ensure the integrity of the data. The application provides campaign behavior snapshot and significantly reduces time required to produce the final campaign reports. This allows time for understanding the data and developing campaign insight. Efficient use of SAS[®] tools has not only made the automation possible, but also increased the accuracy and reliability of key performance indicators (*kpi*) metrics.

Introduction

Javelin Direct manages marketing campaigns for its large clients. As a lead agency, one of the major deliverables is to provide the key performance indicators (*kpi*) to its clients that measure the effectiveness of target marketing campaigns. These *kpi* measure the behavior (response) of target population during a campaign and evaluate campaign effectiveness after a campaign has ended. Majority of the issues we come across stem from disparate data sources in general. Data from various agencies and vendors come in different formats. This requires data conversion and data cleanup effort.

We have uncovered several problems in marketing campaign management, particularly where large enterprises are using thousands of toll free 800#s so that their customers can respond to the campaigns. For the purposes of this paper we will call it 800# overlap issues. Data issues in general and 800# overlap issues in particular arise from human errors or ill designed campaigns where same 800# gets assigned to more than one campaign running at the same time. This causes problems in correctly identifying the campaign for which the customers might have responded. Thus leading to chaos during campaign analysis and reporting, because *kpi* metrics cannot be correctly reported. This also causes problems in future campaign planning. The solutions, presented here, to underlying data issues and 800# overlapping issues were resolved using SAS[®].

Campaign management applications were developed in SAS[®] with built in business logic for data mining and statistical analysis. This not only improved campaign efficiency and execution, but also provided solutions to company's complex business issues. The application has been designed in such manners that even a non- SAS[®] user can use it with ease. For this reason a user friendly header was created where campaign attributes and variables can be defined by the user.

When the application is executed a comprehensive report is produced which can be shared with clients, without further modifications.

Process Automation - Benefit

Data conversion process often gets intermingled with data cleanup effort. Ideally, the data cleanup effort should happen prior to data conversion. However, we focused on converting the data first on a SQL server, followed by data cleanup in SAS[®] environment. Data clean up was left for the analysts, as they are more familiar with the specifics of data requirements for the marketing campaigns. Multiple processes were developed and appropriate business rules were established to sanitize and standardize data from multiple sources. This reduced the redundancy in campaign data to support more accurate reporting, analysis and business decisions. SAS[®] applications were developed and the process was automated to handle the data cleanup and final analysis. Data intensive processes were automated and reporting systems were integrated with the help of SAS[®].

One of the major challenges for Customer Insight & Campaign Management team at Javelin Direct[®] is to mine data and provide campaign insight in a timely manner to our telecommunications client. The business rules were built within the core application to ensure the integrity of the data, and also to cut down on the data processing time. The built in logic is directly applied to the data during kpi calculations to generate customer insight reports.

The modular approach ensured that only those modules that are needed will run. This reduced the time required for the campaign analysis and gave the analysts an opportunity to focus on the core business of developing customer insight.

Application Design Architecture

For processes to be effective, error free and repeatable, the following specific programming module layout was designed to perform current tasks and for future enhancements. The core code was developed with all business rules applied and key metrics computed. Modular software design approach was chosen so that:

- Code can be easily maintained and it can be reused in other programs.
- related functions that can benefit from a common implementation or the code could be used in many parts of our campaign analysis system,
- module may encapsulate functionality that is likely to change during later design or deployment, and/or
- a module may encapsulate aspects of a problem that are particularly complex,

By enforcing logical boundaries between modules / components, it was ensured that each module performed one or two tasks, then passes control to another module. By breaking up the code into "bite-sized chunks", so to speak, we were able to better control the flow of data and control. Each module encapsulated information that was not available to the rest of the program. This approach reduced the cost and time required for subsequent design changes.



Each module performs its own specific functions. Modular approach gave us the flexibility that is absolutely necessary in an environment where business requirements are constantly changing. If and when needed each module can be de-attached without breaking the code and the process. Modular structure allows the analysts to build new modules from core code based on clients' specific needs.

Converting Business Rules into SAS[®] Code

Passing Parameters Using Global Macro Variables

SAS[®] macros proved to be extremely useful for implementing repeatable processes reliability, modularity, flexibility and maintainability of the code, The “%let” statement was used for reducing the amount of text analysts must enter to do common tasks.

```
%let v_define=%quote(
if form_cd= 'C4AEEMJ2' and region= 'E' then version= 'EAST V4 MJ2';
else if form_cd= 'CCASES3' and region= 'SE ' then version= 'SE
V12 S3';
else version = 'unknown';);
```

Use of powerful SAS[®] routine CALL SYMPUT provided the flexibility for creating data values at execution time by assigning a value produced in a DATA step to a macro variable.

```
data _null_;
  set tele_metx2 end=last;
  call symput('data' || left(_n_), trim(datasex));
  if last then call symput('cnt', _n_);
```

```
run;
```

Applying Business Rules to code

It is important to validate that data meets the requirements for solving the business problem. Data clean up reduced the redundancy in campaign data to support more accurate reporting, analysis and business decisions. Different business rules were required since data came from disparate sources in different forms. Following are couple of good examples of converting business rules into SAS[®] code.

```
Data se_call;  
  Set source.se2007;  
where tfn in (&n800) and   connectdate between "&indate"d and "&outdate"d;  
run;
```

```
data calls_allreg;  
  set callsource.c2008q1 callsource.c2007q4;  
where tfn in (&n800) and postdate between "&indate"d and "&outdate"d;
```

Identifying and Obtaining Data

For a single campaign analysis, different data sources were used. In some case, data need to be read in from desktop, which may have important attributes about campaigns, products, and so on. This process was achieved by using SQL or Data Step in SAS[®]. The following is an example of using macro to loop through multiple campaign data files:

```
%macro metrix ;  
  %do i=1 %to &count. ;  
    %let Combined_table=datafile_&&dat&i.. ;  
  
    %put i= &i. ;  
    %put Combined_table=&Combined_table. ;  
  
    Proc SQL Noprint;  
      Select  
        Left(trim(libname)) || "." || MEMNAME into  
:tables_with_camp separated by ' '  
      From  
        Sashelp.Vtable  
      Where  
        LIBNAME=upper("&libname.")  
        and MEMNAME contains upper("&Combined_table.");  
    quit;  
  
    data &Combined_table. ;  
      set  
        &tables_with_camp. ;  
  
  %end;  
%mend metrix;  
%metrix;
```

Consolidation - Automation

Final step is to put all pieces to together. All the modules including data set, variables are designed with standard names. Now, analysts can use the following header to enter all their campaign parameters and press submit button. All reports will be generated automatically:

```
%let jobnum='CAMPAIGN2008Q2';
%let media=DM;
%let indate=2-jun-2008;          *tracking begin date;
%let outdate=28-jul-2008;       *tracking end date;
%let n800=800888888888;
%let v_define=%quote(
    if code='12078'and region='E' then version='EAST V4'
    else if code='11098'and region='SE'then version='SE V12';
    else version ='unknown'););
%include "\\campaign\product\report_q2_08.sas";
```

Calculating the ROI

It is very difficult to calculate accurately a company's total investment in software, hardware, consulting, personnel, training and other investments over a 2-3 year period to manage their client's marketing campaign, analysis and reporting. However, for Javelin[®] the direct benefits quantified over last 2 years include the additional developer and analyst hours avoided in rework of reports and client dissatisfaction. Indirect benefits quantified include the broader increase in developer and analysts' productivity driven by adoption of SAS[®]. Not quantified in this analysis is the benefit of greater flexibility, scalability and accelerated time to turn around the routinely produced reports and ad-hoc reports. Today the process in place is repeatable and ensures the superior quality of work.

Conclusion - Lessons Learned

Fast delivery of credible information by embedding business rules, data quality is achieved by automation with embedded business rules within the application. Now, at Javelin Direct, Reporting & Tracking team can transform data into actionable results at any stage of a campaign. New application reduces costly error and improves efficiency significantly.

We are looking forward to making the SAS[®] data available over the intranet. In the near future we would like to explore how existing system can be wrapped around in Web Services to provide users / clients with transparent access to analytics reports, perhaps using SAS[®] technology. This will enable accelerated delivery of campaign reports through online WebPages.