

**Using SAS DDE/ODS Together with SAS Access and %Windows to Automate
Campaign Analysis: A Case Study in Automation
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**“Civilization advances by extending the number of operations we can perform without
thinking about them.” Alfred North Whitehead**

ABSTRACT

This paper discusses the automation of a campaign analysis procedure that, when done manually requires about two weeks of analyst work, yet with the fusion of several SAS operations, can be completed in a matter of hours. The union of SAS Access, SAS Output Delivery System (ODS), SAS Dynamic Data Exchange (DDE), and %WINDOW enables SAS to function as the central hub bringing together several components of a complex analysis process, essentially replacing the analyst role by automating the process.

INTRODUCTION/OVERVIEW

To meet our client needs we create and manage marketing campaigns, utilizing information gathered through our loyalty programs, that result in more frequent and sustained customer purchasing. In order to track the effectiveness of these marketing programs we must continually analyze the success of these programs in a timely manner. Standard reporting procedures preferred by our clients dictate the final product. Therefore, we can best serve our client by reducing processing time it takes to deliver the standard report.

%WINDOW

The code is setup to remain flexible in the types of marketing campaigns it analyzes. That is to say, the code needs to be able to report results for various types of campaigns, dependant upon which brand is being analyzed, whether controls were used, whether the campaign is being studied at the household level or consumer level, what the promotion dates were, etc. The SAS operation %WINDOW enables the code to retain this high level of flexibility without requiring the user to be a knowledgeable SAS coder.

The %WINDOW operation allows the user to establish which variables should be used each time the code is run in order to manipulate the output to the end user's needs. Heavy emphasis is placed on an existing Excel template for the pre-analysis setup in order to maximize flexibility and ease of use for the client. This template, which dictates the appearance of the end result, is then “read” by SAS through SAS DDE, which will be covered later in this paper. This setup allows for only the simplest of variables to be input into the %WINDOW interface, i.e. for which brand the report is being generated, username and password, and the file name and path of the Excel template.

After the input variables have been established through the %WINDOW interface, the user need not touch the code or any other part of the process, rather they simply

need to wait for the resulting final report to appear at the specified location on the SAS server.

SAS DDE (Reading From Excel)

At this point in the process, SAS reads in the Excel template input through the Dynamic Data Exchange operation. DDE enables SAS to physically open MS Excel and read from specified cells in order to identify the type of analysis which is being requested by the client.

MS Excel templates are used as common ground for communication between the actual code and the end user.

In an effort to utilize the simplicity of the code as well as maintaining flexibility for the end user to manipulate the analysis, DDE will be used only as a collector of information. In our case there are existing MS Excel files that pertain to the analysis that currently possess their own dynamic and existing complexity. Therefore DDE is the perfect solution to the redundancy of input and possibility for user error.

In order to accommodate for a server-based SAS system, modifications to the current setup had to be made. DDE by default controls the exchange of information between a PC's hard drive and SAS being run off that same PC. A copy of the software SAS is interacting with, in this case Excel must therefore exist on the server when using a server-based SAS setup. Individual profiles are established on the server system, and each application of SAS launched points at the individual user's profile on the server. Due to this, initial attempts at using DDE through a server-based platform resulted in several failures (and several emails and phone calls to the SAS Institute) as attempts at forcing SAS to look for the Excel application on an individual's hard drive were unsuccessful. As it is highly inefficient to install a copy of Excel on each user's individual profile, the solution is a generic profile to which anyone could connect in order to use SAS DDE in conjunction with Excel.

SAS ACCESS

At the next point in the process, SAS, now armed with the information necessary to create a custom report, queries the database through SAS Access remote submit in order to collect the appropriate point-of-sale (POS) data into a SAS dataset through a series of proc sql statements. Previously, the analyst would write these same SQL statements free-hand, pulling the data into a flat file and then reading the file into SAS in order to manipulate the data as needed. This process allowed for simple keystroke fumbles and other user-error mistakes which usually went unnoticed until the creation of the final report, at which point the analyst would have to start the process over from the beginning in order to correct the mistakes. Furthermore, breaking the process into so many shorter steps, each requiring analyst initiative, meant no progress was made during the evenings and early mornings. Using SAS

Access to retrieve the necessary data from the database enables a seamless process with less room for error.

PROCS AND SUCH

Once the data is collected, it is manipulated through a variety of proc means, merges, and simple statistical procedures in order to produce the raw result file reporting on metrics such as net sales, traffic, and incrementality, segmented in the requested manner. Originally, this was the only point in the campaign analysis process at which SAS was used.

ODS

At various positions within the code it is necessary to output a record for the end user to verify the validity of the analysis. To assist those clients or end users these frequency checks are displayed using the Output Delivery System. The benefit of using ODS rather than a simple proc export is that ODS enables SAS to output a heavily formatted report.

SAS DDE (Writing to Excel)

Once the raw results dataset is produced, SAS DDE is once again called upon, this time to write the unformatted campaign results to the appropriate tab in the extensive Excel template used to display campaign results to our clients. Finally, SAS is used to send keystrokes through DDE in order to initiate Visual Basic macros within the Excel template. The resulting output is a final, client-friendly spreadsheet detailing the results of the marketing campaign.

SUMMARY

Historically, SAS was one step in an extremely hands-on and time-consuming process of analysis. This piece of code changes the role of SAS from a step in the process to controlling the process. This shift to using SAS as the central mechanism in the analysis process has enabled us to produce the same final report in less time with less room for user error.