

**DETERMINING THE APPROPRIATE  
AMOUNT OF DATA FOR CLASSIFYING  
CONSUMERS FOR DIRECT  
MARKETING PURPOSES**

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**ABSTRACT**

This article examines the impact of using incremental amounts of purchasing data on the ability to classify consumers in consumer packaged goods categories for direct marketing purposes. Building on the work of Rossi, McCulloch, and Allenby (1996), who focused on the impact of three information sets—(a) demographics only, (b) demographics and one purchase made by a consumer, and (c) demographics plus an entire purchasing history of a consumer—we examine the impact of *each* additional purchase, starting with no purchasing information (i.e., demographics only) through 20 purchases. Using two different classification models, a Multinomial

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Logit model and an Artificial Neural Network model, we examine the sensitivity of classification accuracy to each additional purchase. We use these results in a profitability analysis of a hypothetical direct marketing campaign to determine the optimal number of purchases to use for classification in the category studied. The findings suggest an optimal number of purchasing observations exists for classification and targeting purposes and this optimal number falls between one purchase and a “history” of purchases as studied by Rossi et al. Our findings illustrate the importance of conducting a sensitivity analysis to identify the optimal amount of purchasing data to use when classifying consumers for the purpose of a direct marketing campaign.

## INTRODUCTION

Data collection in consumer packaged goods (CPG) categories has grown dramatically over the past decade due to (a) technological advances that have made it possible for marketers to collect, store, and analyze such data and (b) consumers’ willingness to let marketers collect data on their purchasing behavior. Despite this growing amount of available data, direct marketing using such data is not yet widespread. This is partially due to the expenses of using such data for micromarketing purposes, which may include administrative costs, as well as the general costs of managing and analyzing the information (Kahn & McCalister, 1997). Given these expenses, it would be useful for marketers to comprehend exactly how much purchasing information truly is necessary to understand consumers’ purchasing behavior and preferences. For example, while it may be relatively inexpensive to only use demographic information to profile a set of potential customers, and many marketers do this, it is well-documented in the direct marketing literature and the choice literature that purchasing information, while expensive, is a far better predictor of behavior than are demographic variables alone

(Fader & Lattin, 1993; Guadagni & Little, 1983; Gupta & Chintagunta, 1994; Rossi et al., 1996; Schmittlein & Peterson, 1994). As such, a trade-off between the costs of using additional purchasing information to profile prospective customers and the benefits of improved targeting accuracy must be made in order to determine the optimal amount of information to use when classifying consumers for direct marketing purposes. However, no study has examined this problem based on incremental purchasing information. Therefore, we are interested in examining the impact of using incremental amounts of purchasing data on the ability to classify and effectively target potential customers in a CPG category.

### *Purchasing Data in CPG Categories*

One method of collecting purchasing data on consumers in CPG categories is through the use of a diary panel. Global market research companies like TNS and Ipsos-NPD, to name a couple, use this method by having panelists record (in diaries) their weekly or monthly purchases in the categories of interest. Direct marketers could theoretically use this purchasing information to determine the set of potential customers to target with promotional materials (e.g., their “good prospects”) and the type of incentive to aim at the different segments of consumers targeted. However, nearly all rely on demographic information alone to guide direct marketing decisions.

Another type of data collected for CPG categories and used for direct marketing purposes is scanner data. Scanner data originated in the grocery store industry as a result of 1) technological advances that made it possible to collect vast amounts of purchasing information and 2) the growth of frequent shopper programs that made it possible for retailers to link this information back to the consumer who made the purchases. Companies like Catalina Marketing Incorporated (CMI), one of the world’s leading companies providing targeting marketing services, have developed different direct marketing programs that use different subsets of purchasing information to guide the distribution of direct marketing materials. CMI’s Checkout

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