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Journal of Interactive Marketing 27 (2013) 112–129

JOURNAL OF INTERACTIVE MARKETING

www.elsevier.com/locate/intmar

Finding Donors by Relationship Fundraising☆

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Available online 9 January 2013

Abstract

Our research utilizes revenue–business-based relationships and data to expand the donor bases of non-profit organizations. Fundraisers desire to predict *who* will donate and *how much* to allocate their marketing resources effectively. To answer both questions, we develop the Spatial Tobit Type 2 (ST2) model that integrates the auto-Logistic (AL) and auto-Gaussian (AG) models into the Tobit type 2 framework. The AL component is used to predict *who* is likely to donate by inferring inter-client similarities based on the clients' transaction information from the revenue businesses. Similarly, the AG component is used to predict *how much* based on a similar measure of inter-client similarities. The Tobit type 2 framework combines both components into the single framework of ST2. Our empirical application linking a veterinary school's medical treatment records to its donation records demonstrates that clients' relationships built through their medical treatments at the school hospital positively contribute to their donation decisions.

Keywords: Relationship marketing; Relationship fundraising; Non-profit organization; Spatial model

Introduction

The late Randall B. Terry, Jr. had six golden retrievers treated at the Veterinary Teaching Hospital at North Carolina State University's College of Veterinary Medicine. His relationship with the College established by the long-term treatment led him to give over $4 million in donations during his life, and, after his death, his estate made over $25 million in gifts and pledges to the College. The College will name its new companion animal medical center after him (cvm.ncsu.edu/ncvmf/rb-terry.html). Also, at the same hospital, Susan and Randall Ward are hospital clients whose dog, a Newfoundland named Hannah, was successfully treated for a life-threatening heart condition. This treatment cemented a relationship that led to a large philanthropic gift: a $1.5 million donation to fund a cardiac pavilion. Similarly, the University of North Carolina Health Care has received large and small donations from its human patients who are grateful for the medical services they received (andrews.med.unc.edu/mf/mfncinc.mov). In brief, all these gifts resulted from clients' long-term relationships with the organizations through medical treatment.

Unlike for-profit organizations generating their own revenues as the primary function, fundraising is a major money source for non-profit organizations such as educational, medical, research, and cultural institutions (Arnold and Tapp 2001; Bennett and Sargeant 2005; Sargeant 2005). Over time, many of these non-profit organizations have gradually embraced the concepts of relationship marketing and customer relationship management (CRM) along with database marketing techniques to enhance their fundraising performance (Andreasen and Kotler 2008; Arnett, German, and Hunt 2003; Bryson 1988). Such *relationship fundraising* (Burnett 2002; Weir and Hibbert 2000) is becoming more and more important in the present environment, where more non-profit organizations are competing for limited dollars more effectively using the combination of relationship marketing and database marketing (Balabanis, Stables, and Phillips 1997). In 2007, 14.1% ($43.32 billion) of philanthropic gifts in the United States were made to educational institutions.

☆ We thank the College of Veterinary Medicine at North Carolina State University for providing data and consulting for this research.

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1094-9968/$ -see front matter
http://dx.doi.org/10.1016/j.intmar.2012.10.002

Religious organizations received the largest percentage of gifts (33%). The recent economic downturn initiated by the subprime mortgage and credit crises, however, has slowed down charities severely. Specifically, giving rose only 2% in 2007, when personal income rose 3.3% in the same year (Tong 2008). The situation is expected to get worse until the economy recovers.

Fundraisers conducting relationship fundraising for non-profit organizations inevitably encounter an insufficient data problem because information on donors' giving histories is very limited compared to customer relationship information of for-profit organizations which benefit from a wealth of client data created by their frequent interactions with their clients (Rust, Zeithaml, and Lemon 2000). Individual donations are typically made less than once per year, much less frequently than for-profit customers make business transactions. It is widely known that managerial decisions may not generate desired results in the context of limited data. This research is aimed at developing a modeling procedure to overcome this insufficient data problem for fundraisers looking for new sources of donors by looking at their organizations' revenue clients.

When fundraisers attempt to identify prospective donors among their revenue clients, demographic information (e.g., gender identity, social identity and income) is known to be very useful (Shang, Reed, II, and Croson 2008; Winterich, Mittal, and Ross 2009), but is hard to come by due to their privacy concerns. Similarly, internal traits (e.g., moral identity, altruism and volunteering orientation) are proven to influence individuals' donation decisions significantly (Fennis, Jansen, and Vohs 2009; Reed, II, Aquino, and Levy 2007), but would not be available to fundraisers without time-consuming high-cost surveys and interviews. In particular, non-profit organizations are less proactive in collecting such useful but sensitive data than for-profit organizations (Macedo and Pinho 2006). Typically, fundraisers know only potential donors' affiliation statuses (e.g., school alumnus) and contact information in addition to their giving histories.

For the most part, fundraising belongs to the non-profit sector, but fundraising organizations often run their own revenue businesses. For example, universities have education programs (e.g., intensive weekend MBA programs) and/or hospitals targeting the general public beyond their focused but narrow constituents. From a broad perspective, this revenue business practice is not limited to educational institutions and can be applied to a variety of non-profit organizations such as municipalities (e.g., residential services and educational programs) and cultural organizations (e.g., cultural events). Such organizations' relatively frequent contacts with clients arising from such revenue businesses can generate relatively rich information on the clients, the majority of whom is not otherwise associated with the organizations. In brief, such contacts provide great opportunities not only to build significant client relationships but also to generate critical information that can be utilized for relationship fundraising.

We provide a modeling procedure that can partially account for key demographic and lifestyle information missing in the organizations' databases, e.g., income and general interest in giving (Liu and Aaker 2008), through spatial statistics techniques. Specifically, this study is aimed at responding to two typical questions in relationship fundraising — *who* and *how much*. First, how can fundraisers identify prospective donors based on their organizations' revenue clients' transaction information? Second, how much will those donors give? We intend to shed light on these questions by focusing on client information that is usually overlooked by fundraising practitioners and researchers. To that end, we develop a procedure that combines two distinct spatial statistics techniques — auto-Logistic (AL) and auto-Gaussian (AG) models. Specifically, whereas we use the AL model (Besag 1972; Moon and Russell 2008; Russell and Petersen 2000) to identify likely donors out of a huge pool of revenue business clients, we apply the AG model (Cressie 1993; Cressie and Chan 1989) to estimate how much those donors will give. Furthermore, we use the Tobit type 2 framework (Amemiya 1985) to combine both the AL and AG models in a single framework. In brief, since our proposed model combines the Tobit type 2 model and the two spatial models (AL and AG), we name it the Spatial Tobit Type 2 (ST2) model. Importantly, this comprehensive modeling procedure is intended to provide an inventive way to integrate two sources of spatial correlations from the AL and AG components in a unified framework. To empirically test the model, we use two sources of data from a veterinary college — medical treatment records on hospital clients and donation records limited to donors. Using the concept of relationship fundraising and our ST2 modeling procedure, we link both sets of data to identify prospective donors out of a vast pool of hospital clients to effectively expand the donor base for the college. Our empirical results show that our proposed model outperforms four reasonable benchmark models in the forecasting task.

In summary, in answering non-profit organization fundraisers' questions of *who* and *how much*, this research makes two contributions. First, given that non-profit organizations have scarce donation activity information, this research makes use of their revenue business transaction information based on the concept of relationship fundraising in order to help non-profit organizations expand their donor base beyond their existing donor pool. Second, to provide a way to conduct the analytics task, this research provides the ST2 modeling procedure by integrating two sources of spatial correlations from the AL and AG components in a unified Tobit type 2 framework.

Literature Review

Relationship Fundraising

Much of early fundraising research focused on what type of static characteristics (e.g., demographics and association with fundraising organizations) can raise fundraising performance. A number of studies of this nature used college alumni donation data due to the easy availability to researchers (Harrison, Mitchell, and Peterson 1995; Okunade 1993; Okunade and Berl 1997). Some studies used more general data that went beyond college boundaries (Bult, van der Scheer, and Wansbeek 1997;