Chapter XII

The Geographical Edge: Spatial Analysis of Retail Loyalty Program Adoption

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Abstract

This chapter demonstrates important insights gained by adding spatial capabilities to marketing analyses. Four steps are described to produce a geographically enabled data set of the first year’s daily use for a major retailer’s loyalty card program at one store in a mid-western U.S. city. Traditional analysis is contrasted with results from a geographic information system (GIS). Probabilities of adoption were clearly tied to the geographic variables generated by the GIS; for example, over the whole year, the likelihood of someone adopting on a given day decreased 13.4% for each mile they resided away from the store, while each Innovator (adopted in the first two days) located within .6 mile of a prospective adopter increased adoption likelihood by 13.2%. Further, three very distinct spatial diffusion stages are visible showing adoption as a function of distance to the store itself, to the billboards, and to the earliest adopters.
Introduction

Today’s retail marketing managers have access to better information than ever before. In particular, the spread of point-of-sale automation in retail stores has turned what used to be a trickle of data into a flood. For many retailers, this technology has become the basis for the development of innovative, customer-centered loyalty card programs. A battalion of intercept interviewers in a store for weeks or a buyer’s panel operating for months can capture only a small portion of the data gathered by a point-of-sale loyalty card program every day. To make sense of this data deluge, marketers are having to rely on a battery of both familiar statistical techniques such as regression analysis and newer ones such as chaid and diffusion modeling.

Much of the value of the data generated by a POS-based loyalty card program is its ability to capture the speed and duration of market reaction to new store openings, product launches, advertising campaigns, promotions, and so on. As such, loyalty programs often lend themselves to a diffusion of innovations analysis approach. Yet, even though retailing (except web-retailing) is necessarily a geographically anchored activity, diffusion research has typically ignored geographic factors. The reasons for this neglect have for the most part been practical. Prior to the advent of geographic information systems (GIS), spatial data was difficult to use, expensive to collect, and often of uncertain quality. The most common tools for analyzing spatial data were paper maps and overlays — both cumbersome to use and difficult to update and refine. As a result, even marketers who clearly recognized the importance of geography in both their and their customers’ decision-making seldom received the tools or training that would make geography worth addressing at the individual consumer level (Murphy, 1996).

The application of GIS to retail point-of-sale data holds great promise in allowing retailers to gain greater insights into consumer spatial behavior. With that in mind, this chapter attempts to add to the body of retail theory and practice by demonstrating how a GIS-centered spatial approach can expand researcher understanding of the diffusion of a new loyalty card program. Household-level data from the entire first year of a new loyalty program launched by a very large retailer in a major U.S. city is combined with GIS-generated measures to explore the effect of distance, marketing efforts, and other adopters on the diffusion process of consumer adoptions.

This chapter will demonstrate how adding spatial analysis to traditional market innovation approaches can help make sense of a huge volume of data, provide insights into the patterns of adoption and the influences on adopters, and ultimately help improve decision-making. Our goal is not to demonstrate the absolute superiority of spatial techniques over other approaches nor to develop new theory about spatial influences on diffusion, but to illuminate for both practitioners and researchers some areas where new insights may await both discovery and application. We consider this to be a particularly relevant goal with the new opportunities presented by having significant actual purchasing data and geographic analysis tools.

The chapter proceeds with an overview of background material followed by a description of this study and its data sources. Keeping with the objectives of this book, the steps required to utilize GIS with this particular data set are described step-by-step. The results
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