Abstract

This chapter examines the existing uses and potential uses of GIS in marketing. In examining the interaction of marketing and geography, the variables of demographics, space, and time are used as a framework. Specific applications of GIS in customer relationship management, market segmentation, and competitive analysis are illustrated with hypothetical and real world examples. Additional areas of GIS application include product strategy, price strategy, promotion strategy, and place or distribution strategy. The author hopes that understanding the existing and potential uses of GIS in marketing will spur the interest of marketing practitioners to integrate GIS into marketing strategy to create competitive advantage. Furthermore, it is hoped that this chapter will serve as an outline for the broader consideration of the applications of GIS in marketing.

Introduction

Geographic information systems (GIS) may be defined as a set of automatic tools and information systems, typically involving the use of computers, that are used to collect, organize, analyze, and use as an aid to decision-making all data that can be related to a specific geographical location on earth. While geographic data have always existed historically, the arrival of the personal computer and the development of mapping software that could process and present geographic information visually has enhanced the ability of the decision maker to leverage geographic data.
To understand the true power of GIS, consider the ease of decision-making using GIS in the following hypothetical situations.

**A:** Imagine a marketing manager of a restaurant chain attempting to perform competitive analysis of competing chains in a geographic market, incorporating demographic trends in the market, distances between customers and restaurants, the location of competing restaurants, freeways, and driving patterns.

**B:** Imagine a marketing manager of an automobile firm attempting to forecast demand for cars based on the demographic composition of a market, new neighborhoods that are being built in the area, and incorporating zoning demarcations, including information on residential and commercial establishments.

**C:** Imagine a marketer of detergents in a developing economy that has millions of small retailers and a salesperson that needs to plan sales routes for the coming month taking into account the layout of retail locations in a geographic area, the size of the retail outlet, the time of the day when retail outlets are open, and retailer inventory policies.

Prior to the arrival of GIS, in all the scenarios cited above, marketing managers had to rely on data formats, involving hundreds of rows and columns of information that could not be visually represented. This meant that decisions were difficult and made in the abstract. Visualizing zone demarcations, distances between outlets, and freeway and transportation patterns without a map is almost impossible.

The arrival of GIS gave decision makers the power to visually represent and combine data that were geocoded in any form in an interactive manner. For example, data pertaining to zip codes that were geographically contiguous could now be seen on a map next to each other rather than represented as abstract bits of information. The effect of different decisions, such as demand forecasting, retail location, route planning, or competitive analysis could be observed interactively on a map enhancing the decision maker’s understanding of the spatial context of the market. GIS enables the decision maker therefore to convert data into information and knowledge that could aid in decision-making.

The importance of geography to marketing has been noted in prior research (Huff & Batsell, 1977). According to Huff & Batsell:

"Knowledge of the geographic location and aerial extent of a market is crucial in planning and evaluating marketing strategy. Examples of how such knowledge can be used include analyzing variations in sales penetration, determining sales territories, evaluating differences in promotional response, assessing the location of new facilities, pinpointing promotional efforts, forecasting sales, and analyzing market potentials."

Jones & Pearce (1999) suggest that geography is important to marketing since supply and demand vary with space, points of supply and demand are spatially separate, and space costs money to business. Though prior research points to the utility of geographic marketing knowledge, the use of geographic knowledge in marketing in the past has been
Towards a Rwandan NSDI: An Update
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