Geographic Information System & Marketing

Final Paper

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<u>Introduction</u>

Marketing is an integral function of any company. It involves identifying the needs of its customers and fulfilling those needs. Advertising is a very integral part of the marketing mix. This consists of promotion and communication. Advertising can be outdoor as well as using print and other media sources. But the effectiveness of advertising depends on how closely the company reaches its customer.

Geographic Information System has two major elements mainly the location and the descriptive attributes attached to that. This means that the firm can use geographic information system to identify the cluster of its customers and target that cluster with a better marketing program.

This term paper would try to identify the potential of Geographic Information System to help marketers better target its customers and satisfy their needs better. We will start with understanding the Geographic Information System. This will be followed by a brief introduction about the marketing process. Further few case studies will be presented about the use of Geographic Information System in the field of marketing. Finally we will try to identify how can Geographic Information Systems can be helpful in marketing and advertising.

Geographic Information System

GIS essentially is a computer-based hardware and software system which stores analyses, and provides reports on geographically referenced data. GIS is not simply a tool to generate maps. GIS has analytical powers to answer such questions as: "what is adjacent to this intersection?", "what are the conditions like within 15 miles of this point?", "how far is the nearest water line?", and, "how long will it take to get to a place?" GIS does not store a computer map in any traditional sense, but stores all of the data necessary to create map products which convey information on geographic relationships.

For example, a database of manufacturing industries is enhanced through GIS to include the location of each industry so spatial relationships can be explored. GIS may be viewed as a series of data layers with each data element fitting on top of each other. These layers may appear to be related, as in industrial locations and primary transportation arteries. However, these layers may not be generally considered related, but may have some type of geographic correlation when viewed together. For example, the location of utility service lines may be overlaid on census demographic files to review the income levels in areas served versus those not served.

An increasingly common GIS application is in the area of site selection for commercial enterprises. Since GIS allows for the examination of sub-county data, the demographics within a user designated distance from any intersection can be examined and used to predict the potential return from a particular location. With a clear understanding of income levels, total population, and age distribution in a market area coupled with the locations of competitors as they

relate to the functional market area, the potential income from an operation may be modeled. With better information, the risks associated with a capital investment decision are more effectively assessed.

This improved decision-support information is of particular benefit to communities in targeting industries. In the case of a target industry application, GIS can be used to examine industry mixes for potential suppliers or end markets, demographics as they relate to labor availability (e.g., wage rates, skill levels) and commuting patterns. GIS allows a review of these site-location factors without the limitations posed when data are aggregated within political boundaries. The actual commuter shed (for example, one hour from a community) can be examined rather than data for the county and surrounding counties.

Marketing Process

Marketing is an integral function of any company. It involves identifying the needs of its customers and fulfilling those needs. The major definitions of marketing are as follows:

Marketing (traditional), as suggested by the American Marketing Association is the process of planning and executing the conception, pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual and organizational objectives.

Philip Kotler, in his books, defines marketing as: "human activity directed at satisfying needs and wants through exchange processes".

Still another marketing definition, coined by Brian Norris is "The process of repeatedly moving people closer to making a decision to purchase, use, follow, refer, upload, download, obey, reject, conform, become complacent to another person's, society's or organization's value. Simply, if it doesn't facilitate a "sale" then it's not marketing."

Hence we can see that the major functions of marketing involve:

1. Market Research
2. Segmentation
3. Targeting
4. Positioning
5. Advertising & Sales Promotion
6. Public Relations
7. Selling
8. Servicing

Case Studies

Case 1: Lamar Advertising Company

About the company

Lamar Advertising Company is one of the largest and most experienced outdoor advertising companies in the United States. By combining innovation, products, and strategic growth, Lamar has been helping clients find the right audiences for its products since 1902.

Lamar currently operates 152 outdoor advertising companies in 43 states and is a leader in the highway logo sign business. Currently, Lamar operates more than 149,000 billboards and 97,500 logo sign displays across the country.

The Challenge

Lamar strives to be the premier provider of outdoor advertising in the markets it serves. One way it achieves this goal is by providing clients with targeted placements for their outdoor advertising. Finding vacant billboards in the best areas for various products requires managing vast amounts of data including the actual location of the billboards and demographics of the areas where the billboards are located.

In early 2003, Lamar began actively researching new options for its Maps and Photos system. This map system allows the sales staff to create a map proposal for a prospective customer that contains a map of the billboard panel locations and can also contain a photo sheet that shows a close-up map of the billboard panel's location, pictures of the location, and detailed information about the panel.

Users were requesting many features that the map system could not accommodate at the time including attaching multiple maps to one proposal, using demographic maps, the ability to distinguish between different types of panels Lamar uses, and saving maps in different formats. Lamar needed to find a mapping system that could accommodate the increasing sophisticated needs of its clients.

The Solution

After researching several vendors, Lamar chose ESRI® ArcWebSM Services because they provided all the data and features its clients were requesting.
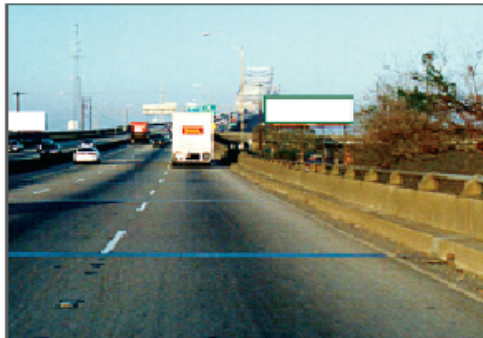
ArcWeb Services offered Lamar a way to include geographic information system (GIS) content and capabilities in its applications without having to host the data or develop the necessary tools in-house. With ArcWeb Services, data storage, maintenance, and updates are handled by ESRI, eliminating the overhead of purchasing and maintaining large datasets.

Lamar introduced the online service in two phases. The first phase was completed in September 2003 when all maps in the system were redone using ESRI's batch geo coding process to ensure placement accuracy of the billboards. Now Lamar's sales staff can log on to their intranet, enter an address location requested by a client, and do a radius search in miles to find all available billboard panels within that radius, displaying them on a map.

The second phase introduced a map-editing system, allowing sales staff to change and edit the maps on the intranet for use in client proposals. Now sales staff can zoom in on a cluster of icons so each one can be seen, and the subsequent map can be saved as a new map in the proposal. They now have the ability to change the background of a map to new map types including U.S. streets, North American streets, census data, and aerial photographs. Users can also add icons showing locations of billboards if needed.

The map editor is as shown below:

Results

More than 1,200 sales staff requests an average of 1,600 map proposals each day. The average number of maps included in a proposal is 15. "Lamar has received lots of positive feedback from our users," says McNamee. "They have expressed their appreciation for the new features that have been added."

Case 2: McHenry County College

The first graduating class of Crystal City, Illinois' McHenry County College (MCC) in 1970 was comprised of 42 students. Today, the institution enrolls more than 11,600 students per year in baccalaureate transfer courses, and college officials expect to see continued growth in enrollment — thanks in part to the use of GIS to streamline marketing initiatives. In addition to those taking baccalaureate transfer courses, over 45,000 students participate in educational opportunities each year for professional training, workforce development, and continuing or adult education. College officials expect the number of baccalaureate transfer students to increase to more than 17,000 annually in the next 15 years. In fact, as of spring 2004, the college has experienced a 42 percent growth rate for its enrolled credit hours (when compared to enrollment 10 years ago).

Historically, MCC employed direct-mail marketing campaigns to attract prospective students. The college's Office of Marketing and Public Relations (OMPR) publishes and distributes 15 printed course schedules to area households, but only recently has it begun using analytical mapping resources to target prospects more effectively.

Every registered postal address received these mailings, whether someone was living at residence or not, including construction sites, unoccupied rental units or unused post office boxes. Today, MCC aligns the college's geo coded databases with consumer information obtained from various software providers to create a spatial representation of the college's demographic base. This allows for wiser decision-making regarding the spending of marketing dollars and it enables MCC to "whittle" unfruitful demographic areas from his direct-mail campaigns.

To geo code the college's two types of databases (prospect and enrollment) MCC enlisted the help of TETRAD Computer Applications Inc, a Bellingham, Washington, firm specializing in the use of consumer location applications using GIS technology.

MCC worked together with TETRAD in a collaborative team to materialize the outcome of this effort. The prospect databases include names and addresses of individuals who have received credit and noncredit course schedules during the years. MCC considers people in these databases to be potential enrollees. Enrollment databases include names, addresses, and spending information about those students who have already taken courses at the college. Using the geo coding tool within a proprietary GIS, TETRAD geo coded all of the addresses in both the enrollment and the prospect databases. "Now we can see where MCC students reside and where course schedules were being distributed," Walker said. The firm then helped Walker to create color-coded thematic maps to illustrate the density of course catalog distribution as well as enrollment throughout MCC service area and surrounding counties. This was accomplished by aggregating the number of students and schedules by U.S. Census Bureau block-group geography. The software solution provided by TETRAD relied on census data to profile schedule recipients and enrollees, which could then be displayed spatially on a GIS map.

The maps displaying service area credit enrollment, noncredit enrollment and credit enrollment respectively are shown below:
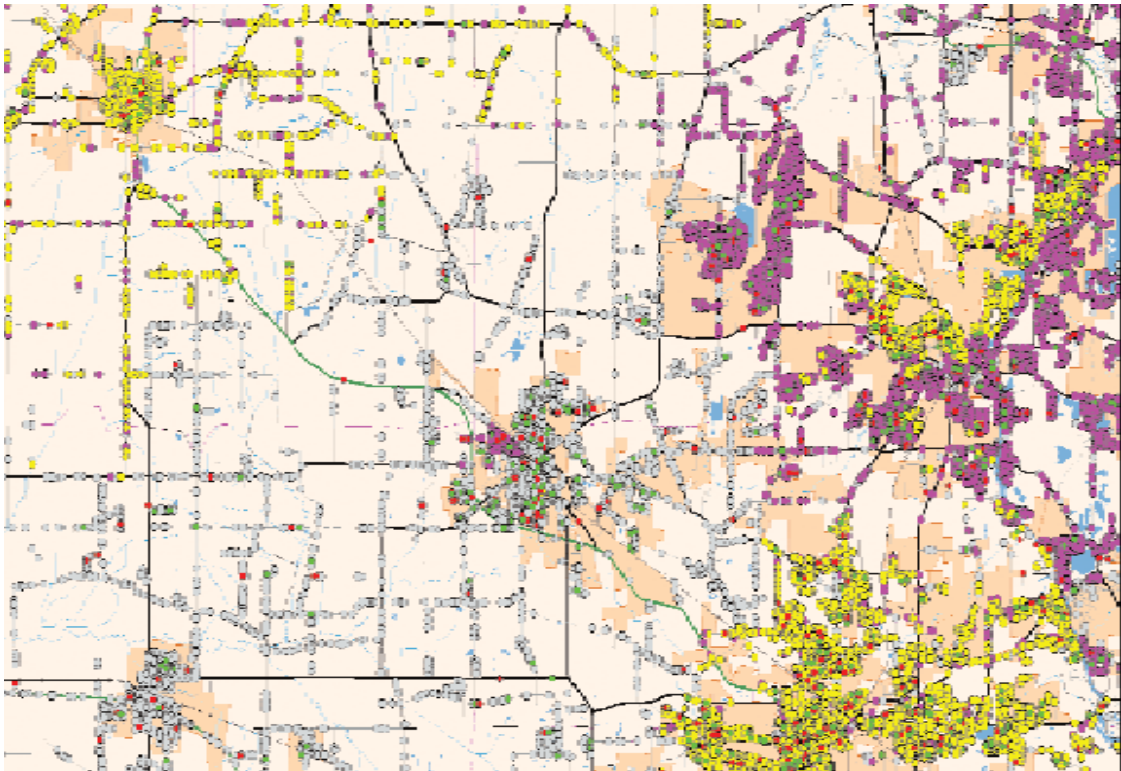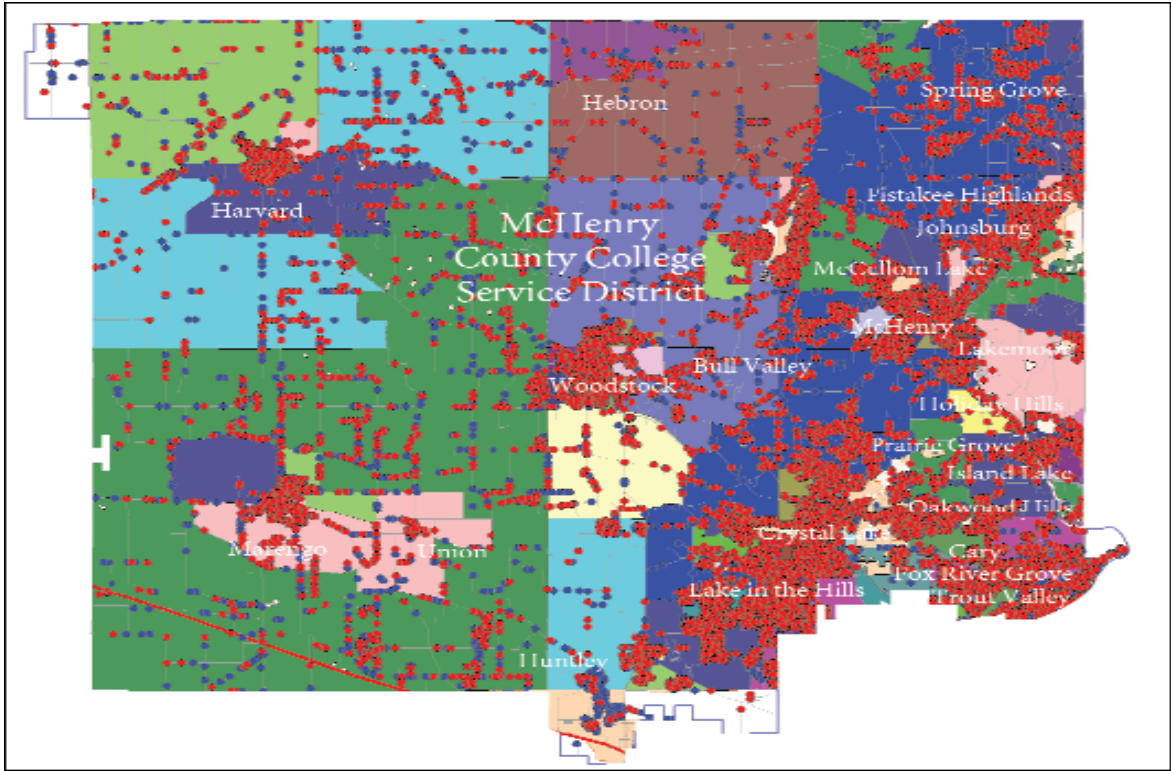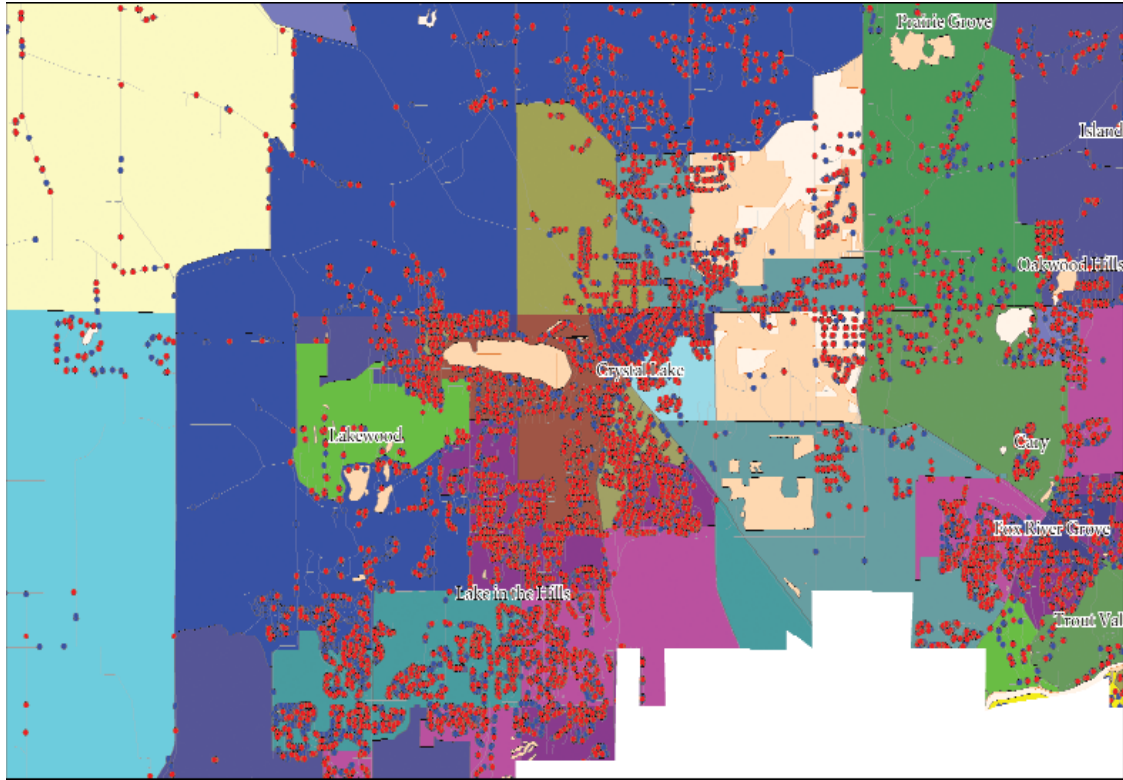
Through a collaborative effort between MCC and TETRAD, the project used a proprietary segmentation solution to profile individuals found in its databases. Many businesses interested in location and site selection use such solutions to understand their customer base and where customers reside. The product classifies national households into 66 segments, which are organized into 11 age-driven life-stage groups and 14 social groups, all of which are driven by socioeconomic variables. The provider of the geo coding tool sent the geo coded databases to the segmentation-solution developer, where the files were appended with the segments based on the ZIP+4 in which a person resides. MCC also used a site- and market-analysis tool that provides census data from the U.S. Census Bureau and Statistics Canada. That tool's structure accommodates data derived from statistics and from the blending of census data with data from private

surveys and other sources. This practice can provide such metrics as current-year estimates, future-year projections, consumer spending and consumption estimates, business data, demographic segmentation, crime-risk analysis, and financial behavior.

The Map showing US census block group geography is shown below:
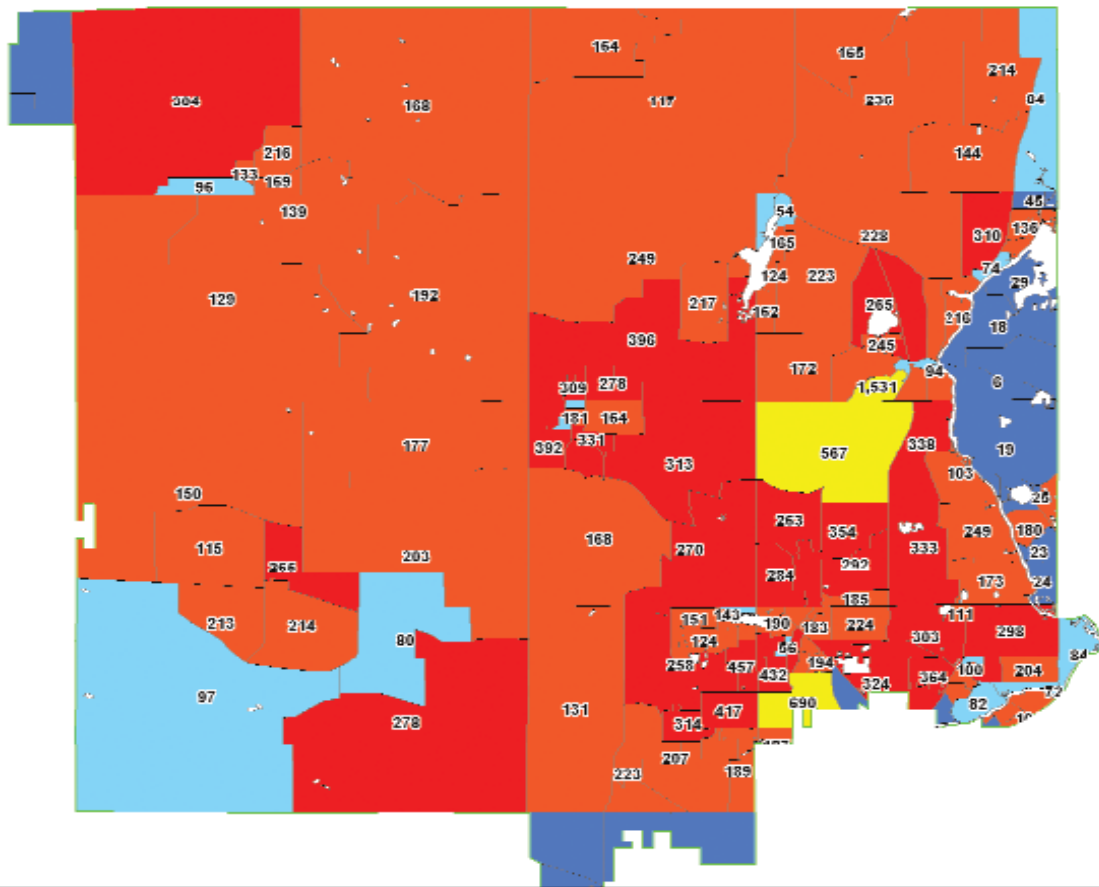
Presently using the geographic information system, MCC profiles its customer base, enabling recipients of course catalogs as well as current students to update and customize their customer profile information online. This has proved to be the key in developing the market potential of those with an interest in the college's programs.

Application of GIS to Marketing

Geographic Information System can be helpful for marketers in seven ways. They are:

1. Profile Customers

2. Segment Customers

3. Acquire & Retain Customers

4. Market via Multi channel to Customers

5. Analyze Customers

6. Establish Customer Relationship

7. Advertise to customers & prospects

Customer Profiling

Geographic Information System can be useful in customer profiling by

- Mapping the best customers who purchase more frequently

- Targeting these customers for loyalty campaigns and new promotions

- Analyzing "best customer" sales related to your channels

- Investigating relationships between underperforming products and customer preferences

Customer Segmentation

Geographic Information System can be useful in customer segmentation by

- Grouping customers by product preferences

- Displaying customer subsets by product

- Analyzing customer groups by sales territories

- Creating messages targeted to your best segments

Acquiring & Retaining Customers

Geographic Information System can be useful in acquiring and retaining customers by

- Generating more qualified leads

- Identifying best prospects

- Turning prospects into buyers faster

- Shortening sales cycles

- Building customer relationships

Market via Multi channels to customers

Geographic Information System can be useful in marketing to customers via different channels by

- Segmenting customers by point of purchase: store, Web, catalog

- Analyzing sales by channel

- Mapping channel productivity

- Understanding customer channel preferences

Analyze Customers

Geographic Information System can be useful in analyzing the customers by

- Uncovering new response markets

- Targeting messages by segment

- Analyzing purchasing power versus product mix

- Mapping current customers

- Examining under and over performing markets

Establish Customer Relationship

Geographic Information System can be useful in Establish Customer Relationship by

- Locating customers on maps

- Assigning customer service staff to each customer

- Creating customer service groups based on product territories

- Recording customer contact

- Initiating customer feedback

Advertise to customers & prospects

Geographic Information System can be useful in Advertising to customers & prospects by

- Tracking advertising success

- Mapping successful campaign territories

- Examining regional response to new products

- Screening product use by region

<u>Conclusion</u>

Technology has become a competitive advantage for companies in the present business world. The old and traditional ways of doing business can soon drive any company out of business. This applies to all the business function and marketing is no other than that. New ways of reaching to the customers are being utilized by companies day after day. Many companies in the developed world have been using new advances in technologies to gain market share and lure their customers by targeting them in a better and more efficient manner.

Many companies in the developed world are using geographic information system as a strategic tool for a better marketing and advertising tool. These companies have gained competitive advantage because of this field of study. Since Saudi Arabia has joined has faced World Trade Organization last year, more and more foreign companies mainly from the developed world will be entering the Saudi market in search for new market and customers. Their use of geographic information system as a strategic tool for marketing can easily drive the local Saudi companies out of business. Hence Saudi companies should start thinking about using this new technology and better marketing its products to its customers. The cost might be high but the benefits are even higher.

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