

# **GIS and Retail Site Selection**

Final Paper

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**For**

**CRP 514: Introduction to GIS  
Term 061 – 13<sup>th</sup> Offer**

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**Date: January 24<sup>th</sup>, 2007**

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## **Introduction**

Retailers have long recognized that geography is one of the most important factors in their business. The major challenges facing retailers around the world vary from customer mapping, site selection, space demand, sales forecasting and other store portfolio management applications.

Added to store planning, the trend towards Efficient Consumer Response (ECR) has compounded the need to understand geographical issues. Aligning stocking with demand levels in order to manage distribution, ordering and inventory better can provide real cost benefits and potential competitive edge. It requires the ability to merge the information about location with data about consumption patterns and sales. Geographical information systems (GIS) have long been a mainstay of property portfolio management. The challenge now is to link these systems with marketing databases and use the total picture provided to support management decisions.

Approximately 80 percent of all business data are related to location. Businesses manage a world of information about sales, customers, inventory, demographic profiles, mailing lists, and so much more. No matter what industry you are in, business success means making wiser decisions faster than your competition. Being able to understand the market and obtain information quickly so you can take fast action is the key. The intuitive power of maps often reveals trends, patterns, and opportunities that may not be detected in tabular data alone. Maps are the key to success in business.

This report starts with a literature review on the subject that has been researched in the past. This is followed by a insight on the GIS technology and Retailing. Next, a case study is discussed. Next the approach and challenges faced by businesses in Retail site selection using GIS are explained in detail. And finally

other applications of GIS in Retailing are discussed briefly. The purpose of this report is to illustrate the applications of GIS in Retail Site Selection.

## **Literature Review**

In their review of retail location process models (Craig et. al. 1984) note that, "classical central place theory assumes that consumers patronize the nearest outlet," though larger centers of retail activity are found to be particularly attractive. While not without several serious shortcomings, central place theory has provided a useful mechanism for understanding certain types of shopping patterns, and has given guidance in regard to store location decisions. From a geodemographic perspective, the social and economic characteristics of blocks, neighborhoods, tracts or other geographic units are extremely important as long as product and service preferences and shopping behavior can be linked to the characteristics which comprise an actual or potential market area. With respect to a location decision, one simply has to identify the area with the right characteristics and place an outlet within acceptable time/distance parameters. However, not all consumers minimize distance traveled, and the location of other stores, both similar and dissimilar, along with a host of other factors, has an impact on where people shop.

Store choice models (Arnold et. al. 1980 and Louviere and Woodworth 1983) focus on the dynamics of how customers make store choices. Distance traveled (central place theory) is one attribute that can be measured against others such as price, selection of products, and quality of service among competing outlets. Shopping decisions (locations) are made after all factors are considered. Weisbrod et. al. 1984, present a model which estimates the impact of individual socioeconomic characteristics, transportation access, and shopping area characteristics on the choice of shopping destinations. Distance traveled in terms of time is one of the factors considered when a store choice is made. Even in the store choice context, geodemographic based research has an important role to

play because unless hypothetical situations are being considered, retail sites are location based and customers come from identifiable places. These customers have quantifiable demographic and other characteristics.

Goodchild's 1984, IACS location model makes use of geodemographic data to select optimum retail locations. Rust Brown 1986, use squared surface density analysis with customer residence location data to graph functions for lunch and dinner markets with respect to restaurant location. More recently, Johnson (1989) identifies how ACORN and Pinpoint, two of the main GIS packages available in the UK, can be used to make decisions regarding new store location, site selection, merchandising, and targeting local differences.

In sum, store location models have a close tie to geodemographic information. Characteristics of real or potential market areas must be known, and the effect of demographic change is clearly an important component of business strategy.

## **Geographic Information Systems**

Geographic Information Systems (GIS) exploded into the business world in the early 1990s when advances in personal computer systems enabled the powerful mapping technology to be ported from mainframe computers to desktop PCs. A technology that had heretofore been economically feasible to only municipalities and utility companies was suddenly available to the individual businessperson. Amid promises of greater productivity and enhanced decision making, many real estate professionals embraced GIS, often spending tens of thousands of dollars purchasing the fastest PCs and GIS software packages. Unfortunately, the capital expenditures on hardware and software were only the tip of the iceberg. Many users became frustrated with the steep learning curve necessary to implement a fully integrated GIS and abandoned the technology when they could no longer justify the cost of these "pretty maps."

GIS is a highly technological field that incorporates graphical information with tabular data to solve real world problems. It is a system of computer software, hardware, data, and personnel to help manipulate, analyze and present information that is tied to a spatial location. It is often called a "mapping software", as it links attributes and characteristics of an area to its geographic location. It is used in a variety of applications, including exploration, demographics, dispatching, tracking and map making.

Another definition of GIS:

*"A geographic information system (GIS) is a computer-based tool for mapping and analyzing things that exist and events that happen on earth. GIS technology integrates common database operations such as query and statistical analysis with the unique visualization and geographic analysis benefits offered by maps."*(ESRI- <http://gislounge.com>)

GIS, with their ability to combine information and mapping systems with analytical and modeling tools, allow the acquisition, storage, analysis, and presentation of large volumes of geographic and attribute data as well as providing a sophisticated tool for data management.

A GIS is not just an automated decision making system but a tool to query, analyze, and map data in support of the decision making process. Also, a GIS lets users to search the attribute data and relate it to the spatial data. Therefore, a GIS can combine geographic and other types of data to generate maps and reports, enabling users to collect, manage, and interpret location-based information in a planned and systematic way.

A GIS is essentially a spatial database that features geographic and attribute data. The geographic data define the location of attributes, such as hotels, roads, and wetlands. On a GIS map these attributes are shown as points, lines, and two-dimensional shapes. The full GIS is a system that includes the input,

management, manipulation and analysis, and output of geo-referenced data. Through geo-referencing a GIS allows the analyst to overlay (that is, to make unions or intersections of) multiple attributes on a map and thus examine the spatial relationship of, say, a possible hotel location to a road or wetland.

### ***Applications and use***

The ability to store and analyze spatial data affords many uses for a GIS. It can be used in diverse applications, such as land-use planning and management, infrastructure siting, site management, market analysis, automobile navigation systems, and emergency planning. Indeed, any information that can be referenced geographically can be analyzed in a GIS system. Thus, one could examine on a single map natural-resource data, infrastructure data, demographic data, and political boundaries, for instance.

### ***GIS Advantages and Disadvantages***

Because the digital data in a GIS are particularly efficient for storage, transfer, and retrieval, a GIS allows the user to see and analyze complex spatial relationships that may not be readily apparent. For example, an operator who is considering expanding a ski resort might want to map all locations in a given area that have households earning more than \$55,000 per year living within 150 miles of the resort. Using the GIS data, the would-be developer could then overlay that map with one that shows environmentally appropriate areas for development of additional ski lifts and condominiums. Furthermore, the developer can narrow (or widen) the scope of the search as appropriate, because digital data offer the flexibility of allowing the user to work at multiple scales. This means that data that are initially represented at a scale of, say, 1:50,000 can be used in the same analysis with data collected at a scale of 1:20,000 (as long as the user recognizes the limitations of data resolution when moving from broad to narrow scales). Additionally, a GIS offers the opportunity for iterative analysis including

sensitivity analysis to changes in the output area and variations in any individual criteria. That approach is similar to the sensitivity analysis that might be performed in a real-estate-valuation model, but the GIS allows multiple iterations given changes in base assumptions. For instance, one might look at potential hotel sites within 1,000 meters of the ocean and then check on sites within 2,000 meters.

Another most immediately noticeable benefit of using GIS is time savings. GIS can quickly assemble computer-based maps that combine visual representations of location characteristics such as utilities and transportation with demographic information. Without GIS, the process of representing several location search criteria on one map would be a daunting project. First, utilities would have to be plotted on one map, then demographic data on another, and so on. Finally, everything would be combined onto one master map. GIS automatically handles map integration, allowing companies to quickly get a visual snapshot of the characteristics of many locations.

### ***Disadvantages***

The primary disadvantages of GISs are the associated costs and technological expertise required. The cost for a complete GIS is currently approximately \$5,000 (not including data, but including the necessary hardware and software). Fortunately, the cost has decreased substantially in the past five years, while computers have improved to the point that GIS technology operates on a desktop computer. Although the software has become increasingly accessible and user friendly, the technical expertise and training required in maintaining a GIS is still a drawback.



## **Retailing**

Retailing consists of the sale of goods or merchandise for personal or household consumption either from a fixed location such as a department store or kiosk, or from a fixed location and related subordinated services. In commerce, a retailer buys goods or products in large quantities from manufacturers or importers, either directly or through a wholesaler, and then sells individual items or small quantities to the general public or end-user customers, usually in a shop, also called a store. Retailers are at the end of the supply chain. Marketers see retailing as part of their overall distribution strategy.

Shops may be on residential streets, or in shopping streets with few or no houses, or in a shopping center. Shopping streets may or may not be for pedestrians only. Sometimes a shopping street has a partial or full roof to protect customers from precipitation. Online retailing, also known as e-commerce is the latest form of non-shop retailing (cf. mail order).

### ***Retail types***

There are three major types of retailing. The first is the market, a physical location where buyers and sellers converge. Usually this is done on town squares, sidewalks or designated streets and may involve the construction of temporary structures (market stalls). The second form is shop or store trading. Some shops use counter-service, where goods are out of reach of buyers, and must be obtained from the seller. This type of retail is common for small expensive items (e.g. jewelry) and controlled items like medicine and liquor. Self-service, where goods may be handled and examined prior to purchase, has become more common since the Twentieth Century. A third form of retail is virtual retail, where products are ordered via mail, telephone or online without having been examined physically but instead in a catalog, on television or on a website. Sometimes this kind of retailing replicates existing retail types such as online shops or virtual marketplaces such as eBay.

Buildings for retail have changed considerably over time. Market halls were constructed in the middle ages, which were essentially just covered marketplaces. The first shops in the modern sense used to deal with just one type of article, and usually adjoined the producer (baker, tailor, cobbler). In the nineteenth century, in France, arcades were invented, which were a street of several different shops, roofed over. From this there soon developed, still in France, the notion of a large store of one ownership with many counters, each dealing with a different kind of article was invented; it was called a department store. One of the novelties of the department store was the introduction of fixed prices, making haggling unnecessary and browsing more enjoyable. This is commonly considered the birth of consumerism. In cities, these were multi-story buildings which pioneered the escalator.

In the 1920's the first supermarket opened in the United States, heralding in a new era of retail: self-service. Around the same time the first shopping mall was constructed which incorporated elements from both the arcade and the department store. A mall consists of several department stores linked by arcades (many of whose shops are owned by the same firm under different names). The design was perfected by the Austrian architect Victor Gruen. All the stores rent their space from the mall owner. By mid-century, most of these were being developed as single enclosed, climate-controlled, projects in suburban areas. The mall has had a considerable impact on the retail structure and urban development in the United States.

In addition to the enclosed malls, there are also strip malls which are 'outside' malls (in Britain they are called retail parks. These are often connected to supermarkets or big box stores. Also, in high traffic areas, other businesses may lease space from the supermarket or big box store to sell their goods or services from. A recent development is a very large shop called a superstore. These are

sometimes located as stand-alone outlets, but more commonly are part of a strip mall or retail park.

Local shops can be known as brick and mortar stores in the United States. Many shops are part of a chain: a number of similar shops with the same name selling the same products in different locations. The shops may be owned by one company, or there may be a franchising company that has franchising agreements with the shop owners (see also restaurant chain).

Some shops sell second-hand goods. Often the public can also sell goods to such shops, sometimes called 'pawn' shops. In other cases, especially in the case of a nonprofit shop, the public donates goods to the shop to be sold (see also thrift store). In give-away shops goods can be taken for free.

There are also 'consignment' shops, in which a person can place an item in a store, and if it sells the person gives the shop owner a percentage of the sale price. The advantage of selling an item this way is that the established shop gives the item exposure to more potential buyers.

### **Case study: Levi Strauss & Co. (LS&CO.)**

Levi Strauss, North America, a division of Levi Strauss & Co. (LS&CO.), encompasses the company's largest region and employs approximately 3,100 people throughout the United States, Canada, and Mexico. The North America region markets products under the Levi's®, Dockers®, and Levi Strauss Signature™ brands and includes three businesses: Levi Strauss U.S., Levi Strauss Canada, and Levi Strauss Mexico. Based in the company's San Francisco headquarters, the region accounted for \$2.4 billion of the company's \$4.1 billion in total sales in 2004.

## ***The Challenge***

LS&CO. wanted to increase distribution to more specialty stores such as general merchandise/ work wear and western apparel outfitters. These stores often serve a demographic that is traditionally underserved by other retail channels. LS&CO. wanted a tool that would geographically display its existing authorized retailers, potential retailers, and the customers the distributors serve. This application would ensure that new stores would not adversely impact the sales opportunities of existing stores.

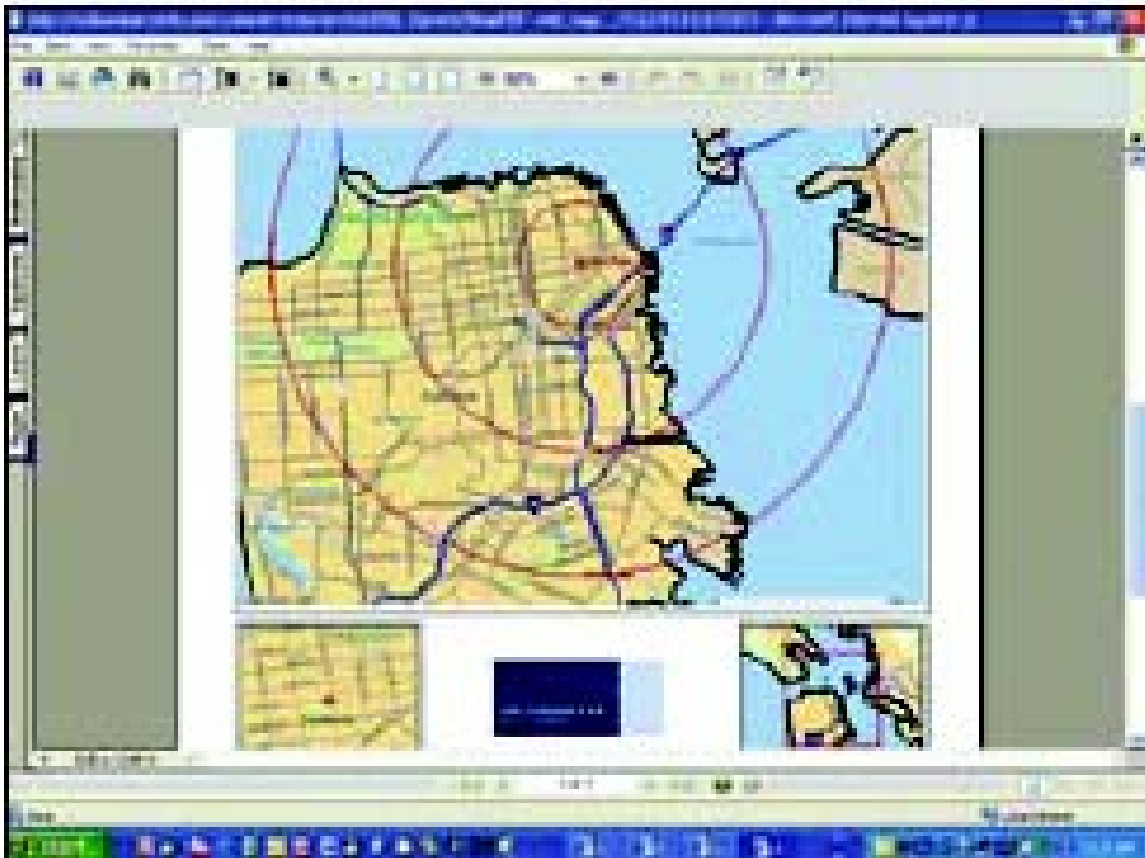
## ***The Solution***

The LS&CO. marketing group has used ESRI® software for several years. Based on the group's success with the software, the LS&CO. Sales Center decided to review geographic information system (GIS) software to help manage its distribution. It began using BusinessMAP® desktop mapping software to look for new accounts. "BusinessMAP was a great cost-effective tool for us to use in researching new look in these channels of distribution," says Maurice Kelly, new accounts manager, LS&CO.

Numerous new account applications arrive weekly, and LS&CO. needed a tool that would help it to view this incoming data accurately and stay abreast of it. LS&CO. selected ESRI Business Analyst OnlineSM, an on-demand reporting and mapping service that combines GIS technology with extensive business, demographic, and consumer household data and delivers it via the Web. Kelly imports existing store locations from the Market Trends and Analytics Division of LS&CO. and draws study area rings around the stores. A study area defines a boundary in a report.

Business Analyst Online enables users to choose an address or predetermined latitude and longitude coordinates as the center point of a ring study area in one-, three-, and five-mile ring reports. Next, the potential retailers' locations are

entered. If the location is deemed to be too close to an existing store, the application may not be accepted. "Geography is one of the key criteria we use when deciding to accept a new retailer," says Kelly. LS&CO. receives numerous retailer application packets each week. This information can now be entered into the database and the address viewed on a map. Each analysis is repeatable, applying the same evaluation criteria to each prospect.



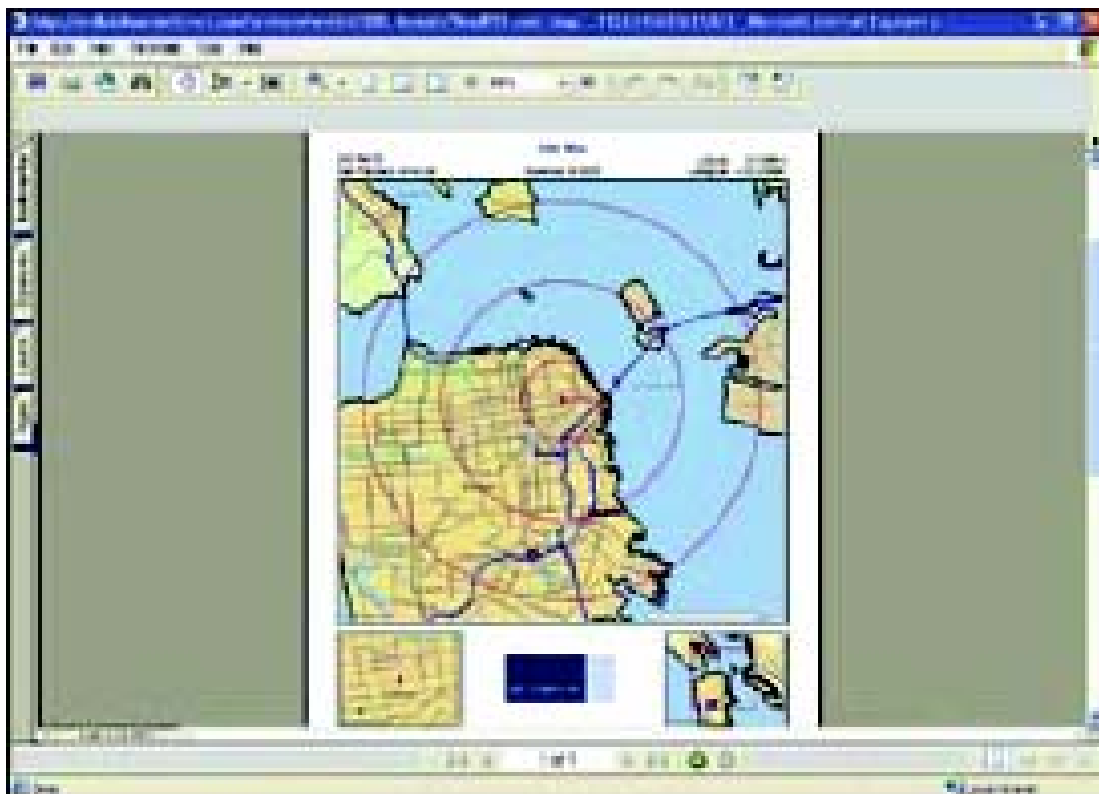
**Prospective retailers**

### ***Results***

LS&CO. streamlined its review process of new retailer applications into a solution that allows it to see prospects geographically in relation to existing stores. LS&CO. now uses Business Analyst Online to view the information accurately and consistently to make informed decisions before opening a new retail

account. These analyses were originally performed by an outside vendor, but LS&CO. wanted to streamline this process and gain more autonomy.

“Fortunately, ESRI helped us create the application we needed,” says Kelly. “This application is absolutely essential to my job. We previously didn’t have a readily accessible archive of retail store locations. Business Analyst Online allows us to manage them and see prospective retailers. We can avoid problems such as opening a store directly across the street from an existing account.” LS&CO. has found a cost-sensitive solution that allows it to accurately see where retailers are located, avoid unnecessary site visits, and open competitive stores. LS&CO. believes that this analysis better meets its customers’ needs by bringing the right products to the stores where these consumers shop. An easy-to-use, essential tool, Business Analyst Online allows LS&CO. to better manage its retail distribution strategies.



**Potential retailers and their impact on the market**

## **GIS and site selection**

GIS offers a better way to find the right site for a new store, distribution center, or service department. With GIS, businesses can blend customer surveys with census data to visualize market penetration, market share, and predict customer patronage for a new location. Retailers can also compare the best existing location with other proposed locations.

GIS helps business do site selection by answering questions like

- What is my market penetration?
- Where is my trade area?
- What is my market share?
- Where should I locate a new store, warehouse or other facility?

### ***Geodemographic data input into trade area analysis***

When focusing on trade area analysis drive times become the most important criterion, followed by population size and then demographics. This would seem to suggest that many retailers continue to use drive-times as the primary method of delineating trade-area boundaries. While the use of demographics is prevalent, their relative importance as an input may be seen to increase as their use becomes more widespread. Additionally, life-style databases are a relatively recent phenomenon and have as yet to gain popular acceptance.

Through current usage trends and point of sale data, retailers can calculate and display market share as well as total potential and unrealized potential. Additional site qualities including demographics, customer shopping patterns, competitor locations, and physical geography can all be analyzed and displayed through GIS.

Characteristics of the market area's population and housing are important, but they are not the only factors that determine market potential and the prospects of

a proposed retail site. Other factors such as expenditure patterns, buying power and existing competition are of equal importance.

Consumer demand in retail development is estimated using the number and buying power of households within the market area. The buying power is based on expenditure patterns and income levels.

### ***Demographics on Demand***

GIS can reveal many details about prospective customers in a potential location. The technology plugs in demographic and geographic data extracted from national databanks and paints a detailed picture of a site and its surrounding area. For retailers, it can track income levels and potential spending patterns and even make predictions about how much revenue a particular store will generate when placed near particular co-tenants.

Geographic Information System (GIS) software can produce maps complete with various demographic data. Want to know where two-income families making more than \$75,000 can be found in a particular city? The computer can create a four-color map showing the highest concentrations.

### ***Site Selection***

Many retailers use database information regarding customers to plan their next location. Unfortunately, fewer use equally important geographic information. Where you place your business is inherently bound with geographic considerations such as traffic counts and competitor locations, as well as information regarding your customers, including demographic reports and lifestyle data.



This section of the report discusses about the site selection process, and how businesses can use geographic and database information to obtain the best location for their retail store.

Where to place new franchises, which existing sites to further invest in, and which to close? It is a systematic approach to crucial decisions. These simplistic methods thrived even though information had existed since the early '60s on how to systematize site analysis. During that time, the best way to gain a competitive edge in site analysis was to contract with an organization to provide a suite of geographic software services. Early software was custom-developed for individual retailers, and included advantages such as quick and user-friendly operation, paired with the ability to derive application-oriented relationships between retail sites, street networks, and demographics.

Earlier software products were quite labor-intensive to develop, and expenses associated with constructing the data base and formulating the models forced prices beyond many organizations' reach. Over recent years, however, as site analysis has become affordable, the technology has become more feasible for all multi channel merchants to consider. With the emergence of geographic information systems (GIS) and cheaper processing power, even the humbler retail chains can potentially automate site analysis decisions. GIS makes complex, time-consuming analyses manageable by allowing analysts to marry unrelated data that has a geographic component. For instance, distance data and traffic pattern data can be married with information regarding competitors' locations and best-customer/demographic data. Often, the use of a GIS significantly reduces the amount of time needed to collect and input data, allowing more in-dept hand thorough analyses. With canned programs such as MapInfo or Atlas, and data from any number of sources such as Experian and your own customer database, effective answers on siting new franchises can be but a few dozen well-planned keystrokes away.

In today's dynamic business environment, savvy retailers are intent on utilizing data-driven site selection support programs as an integral part of the decision making process. Some organizations are simply relating potential locations to target customers, which can be a healthy step forward from years of "eyeballing" prospective sites. Other companies are leveraging GIS' capacity to make decisions based on comprehensive market information.

One of the best methods how businesses can use full advantage of GIS capabilities can be through carefully selecting a real estate firm with expertise in GIS applications. Many corporate real estate professionals use GIS for site selection purposes. Models are run to identify winning sites, and then real estate reps are sent out to determine whether the properties can be acquired. They incorporate data such as traffic count, current store location, and customer and competitor information into proprietary models to help them determine the sales potential of new and remodeled locations.

Some models are very sophisticated, and use complex algorithms and statistics to project potential sales, while others are not much more than a professional's instincts. In addition, commercial data is available on current and modeled sales of certain products by several geographic break downs. In short, GIS is inverting the entire site selection process, shifting the emphasis away from simply making deals and towards understanding the potential performance of these locations. The net result: potentially higher acquisition costs, but reduced risk and a greater likelihood of success. Now, it's difficult to deny: GIS is giving site analysis a much-needed overhaul.

In business, expectations are often expressed in terms of return on investment, and in retail real estate, the key element of ROI is the top line sales volume of a store. The ability to accurately estimate the sales volume of a proposed store is critical to the survival and growth of a retail company because closing a store is

costly, and the drag on earnings immediately translates into a hit to the value of the company's stock.

Sometimes you also have to step up and pay high prices for a location that will deliver a premium return. However, the core of your portfolio will consist of solid performing locations that meet the ROI target established by the leadership of the company. In each case, there is a target sales volume that will produce the desired result. The more reliable the sales estimate, the less risk of disappointment and financial pain.

The primary factors that affect sales performance of a store are as follows:

- Trade Area Demand (demographics and daytime population)
- Site Characteristics
- Competition and Sister Stores
- Management Quality
- Regional Differences
- Advertising and Promotion
- Weather and other environmental effects

### ***Challenges for GIS in Retail Site Selection***

Technology, competition, speed to market, and a highly fragmented consumer marketplace have changed the world of retail site selection. On top of that, e-commerce still wages the shopping war of bricks vs. clicks.

But despite these changes, many fundamentals remain constant in retail site selection. Today, as ever, many consumers want to see, feel, hold, and walk out of a store with the things they buy. The difference today is that site selectors can locate those consumers faster and more accurately than ever before. Data mining, national broker network availability, and speed-of-light information

sharing that technology offers provide the tools for quick and confident site selection.

To be successful in today's marketplace, commercial real estate practitioners still must be educated, prepared, and ready with sound negotiating skills. What has changed is how they educate themselves and execute deals in a complex, technology-rich environment.

Here's a look at a few of the new twists that technology adds to the enduring issues of retail site selection. The widespread use of geographic information systems has redefined the competition for local sites. At the same time, zoning boards often look askance at proposed growth that requires new infrastructure. To meet these challenges head-on, site selectors and consultants should retain old partnerships and form new ones with strategic information sources. They also must heed the new site selection rules. Attention to these details can provide the foundation for successful ongoing relationships with retail clients.

The importance of GIS will continue to grow as retailers operate in an increasingly competitive, global environment. Their marketing programs have become more sophisticated, and expansion costs are higher. For them, the trick is finding out how a local corner lot fits into their big world.

Thus, local knowledge and relationships are more critical than ever and are of great value to regional and national retailers. Although GIS gives an intimate look at a big world, ultimately, practitioners still operate in their own backyards. How they combine their knowledge of retailers' needs with their knowledge of the local market determines their success in today's market.

Today, the sophistication level of national and regional retailers has grown extensively. They know what their customers buy from them, when, where, and how often. This gives them an advantage when launching a site search.

## ***Competitive Analysis***

One big technology-driven change in the industry is the impact that competitors have on site selection decisions. Ten years ago, it made sense to avoid locating a new site close to the competition. Cannibalizing one another was hardly a good start to a new venture.

Today, however, many retailers' best new sites are within close range of their biggest competitors, because the numbers indicate plenty of untapped potential in such locations. Consumers often have more to spend on retailers' products, and they're looking for a reason to spend it. No longer is it enough for retailers to say they want to be where their competition isn't.

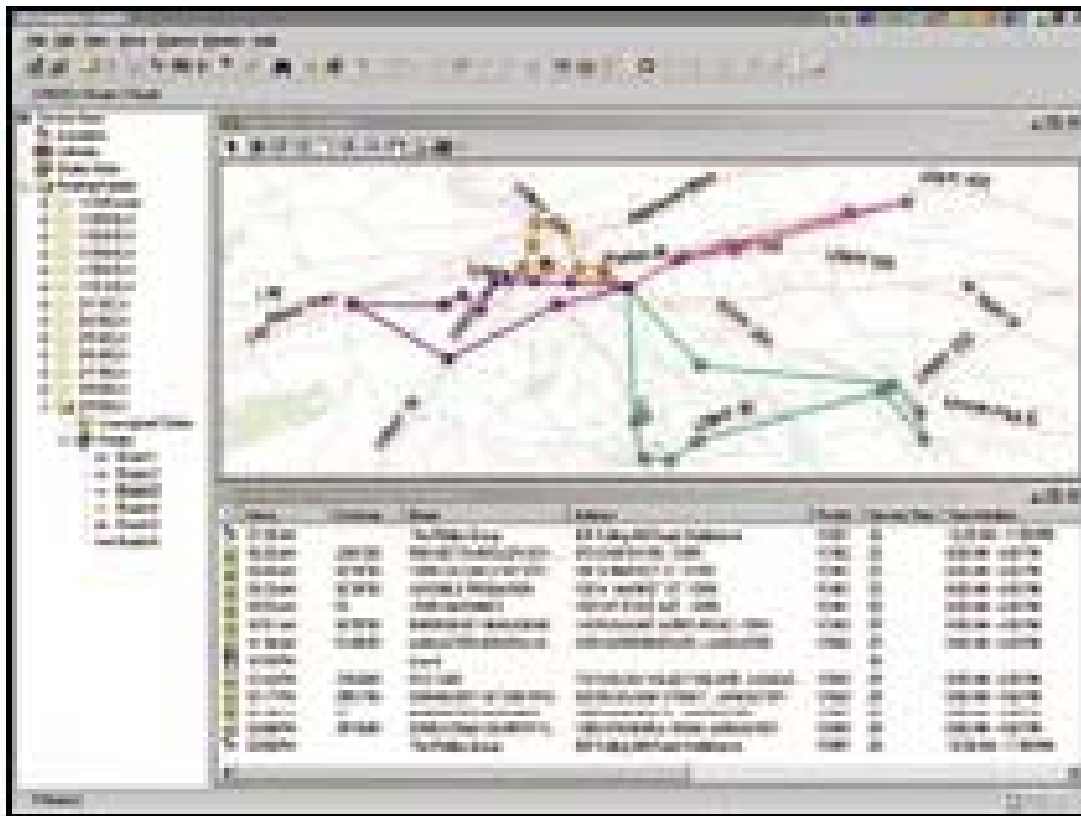
However, in a franchise environment, the challenge is to find the best site in a market where the franchisee lives which may not be the best market. Data mining and GIS can analyze the market to find a site where the franchise can thrive.

In the final analysis, GIS has introduced some helpful tools to retail site selection. By surveying the landscape of technology and learning what's available and of quality and how to harness it effectively, GIS can provide retailers with profitable sites, long-term solutions, and hopefully, productive, ongoing relationships.

## Other Applications of GIS in Retailing

### *Delivery Routing/Fleet Management*

GIS integrates mapping analysis into decision support for everything from calculated arrival times to customer sites and schedule requests.



Delivery Routing/Fleet Management

## ***Marketing/Advertising***

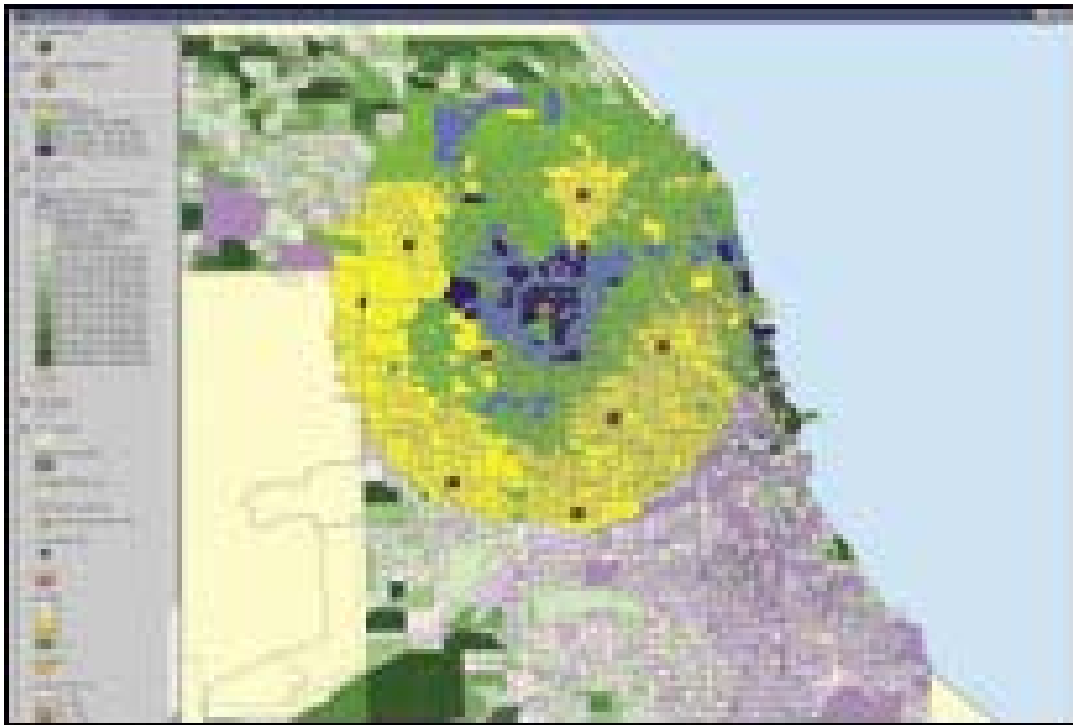
GIS market analysis tools can help retailers determine which products and promotions match the lifestyles and buying patterns of your customers. Create a multidimensional snapshot of trends to create trade areas, predict sales, design sales territories, plan media, and much more.



**Marketing/Advertising**

### ***Target Marketing/Direct Mail***

Knowing and understanding the customers' likes and dislikes are integral to the success of a direct mail campaign. GIS enables retailers to identify who their most valuable customers are, understand their demographic characteristics, measure their direct mail response by product category or promotion, and target where new customers with similar demographic characteristics are located.



**Target marketing/Direct Mail**

### ***Internet Store Locator***

Prospective customers visiting the retailer's Web site can display maps and get driving directions to your various store locations.



## ***Facilities Management***

Facilities management is the practice of coordinating the physical workplace with the people and work of an organization. Businesses know that it is vital to maintain a well-managed and efficient facility. GIS enhances the ability to provide current information and maps, locating facilities, such as conference rooms, restrooms, and emergency exits, within an organization.



**Facilities Management**

## **Conclusion**

The application areas of GIS are increasing very rapidly. The retail site selection requires the usage of GIS application for making strategies and operations more productive. By using the GIS applications retailers can make their operations

more efficient at low cost and at the same time they can extend their retail outlets at the most feasible locations. In order to utilize GIS features, retailers must have access to all the demographic datasets. GIS applications can help retailers in order to increase the return on their investment which is a basic motive of any business organization.

Besides increasing efficiency, retailers can also use GIS to locate the areas of high competition, which will help them in making their own strategies to compete in those areas. As far as cost reduction is concerned, retailers can use GIS applications to identify the feasible site locations for their new branch. We can say that GIS is a solution that can let the retailers lead in the market.

## List of References

1. Retailer use of geodemographic and other data sources: an empirical investigation. O'Malley, Lisa, Patterson, Maurice, Evans, Martin. International Journal of Retail & Distribution Management. Bradford: 1997.Vol.25, Iss. 6; pg. 188
2. Application of geographic information systems in site selection and location analysis. Barnett, Albert P, Okoruwa, A Ason. The Appraisal Journal. Chicago: Apr 1993.Vol.61, Iss. 2; pg. 245
3. Retail site selection and geographic information systems. Tayman, Jeff, Pol, Louis. Journal of Applied Business Research. Laramie: Spring 1995.Vol.11, Iss. 2; pg. 46
4. The Geography of markets: Spatial analysis for retailers. Ken Jones, Michael Pearce. Ivey Business Journal. London: Mar/Apr 1999.Vol.63, Iss. 3; pg. 66
5. <http://www.esri.com/retail>
6. CRP-514 Course Handouts, Dr. Baqer Al-Ramadan