

GIS in Indian Retail Industry-A Deliberate Tool

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Abstract: Geographic Information Systems (GIS) is gradually becoming more important in the business world due to its applicability in several areas. In today's highly competitive retail site, it is becoming ever more vital for retailers to monitor their trade areas, measure the effect of competition, and choose new store locations deliberately. GIS with its ability to manage, display, and examine business information spatially, is evolving as a powerful location intellect tool. The emphasis of this paper is on the use of GIS by retailers in their retail site decisions. In spite of its abundant benefits, usage of GIS in retail in India is in embryonic stage. There has been a slow diffusion of consciousness and acceptance of its benefits. Therefore, in this paper attempt is made to summaries the benefits and difficulties to the effective use of GIS as a deliberate tool in retail industry in India.

Keywords: GIS, Geographic information systems, Retail location, deliberate tool, intellect systems.

I. INTRODUCTION

One of the most important components of effective decision making is appropriate information. Management must identify the value of information as a vital resource to the organization and, indeed, to some extent management has already become an information-processing function. Hess et al. in their review of the probable of GIS as part of a marketing information system observed how the analytical and data incorporation strengths of GIS can be used in internal reports, marketing intellect systems, marketing decision support analysis and marketing exploration, with the overall aim of further understanding customer behavior. In today's vibrant and highly competitive retail environment, the importance of related information cannot be exaggerated. Geographic information systems (GIS) constitute a prevailing new technology that can address

many of the information needs of decision makers. GIS are becoming more predominant in both day-to-day and tactical decision-making by retailers. GIS is giving retail analysts the skill to compute spatial features, and to add these into the analytical mix combined with more customary measures such as sales area and turnover. Today, Environmental System Research Institute (ESRI) has reformed GIS to show where probable growth can and can't occur. ESRI uses aerial pictures combined with GIS technology to map geographic features. Finally, retail real estate experts have access to technology capable of demonstrating demographics into assessments of sales capabilities among different locations. Geographic Information Systems (GIS) permits decision makers to influence their spatial data more proficiently, by visually bringing together relations between customers, suppliers, and competitors. GIS vary in terms of their scope and complexity but GIS are a powerful technology in terms of data storage, exploration and conception, with the ability to combine information and mapping systems as diagnostic and modeling tools. GIS can be realistic to many aspects of business viz. facilities management, logistics, portfolio control, target marketing, market analysis, and site location. Today, retail has been one of the growth areas in the global economy. It has observed a high growth rate in the industrialized countries and is composed for an exponential growth, in the emerging economies. The Indian retail market is likely to grow to US\$ 843 billion by 2013 and to \$1.6 trillion by 2018, at a CAGR of 12 percent. According to a review produced by Euro monitor International (Aug 2007), Indian retailers are driving their way into the Top 500 of retailers in Asia Pacific. There is great assurance in India's potential to tolerate a period of high growth. Retail location

and real estate are one of leading keys to the growth of organized retail in India. The value of location as a business measure is fast becoming an important deliberation for organizations. Making better site locality decisions for the retail sector is about enduring ahead of the competition, entering a new market, or just disseminating oneself with the advancements in methods and technology. Though globally, GIS is emerging as a powerful location intellect tool but vendors in India are still not using GIS much. Although, the usage of GIS-based technologies is currently emerging in India, it is coming up at a fast pace as more and more users comprehend its benefits. In today's competitive markets, GIS-based applications can be of incredible use in sectors like retail. In the US and Europe, vendors started using GIS in the early '90s.

It's open that early retail users of GIS have focused on marketing applications and on-site selection. Miracle Food Mart of Canada executed a system to replace hand-drawn maps that were used to evaluate customer supply and to look at market share on a store-by-store basis. Few stores have used GIS as a deliberate tool permitting it to determine which areas are not being correctly served. In the US, Starbucks, Blockbuster, Sears, and many other companies used survey data and GIS software to help them recognize what types of people buy their products and services, and how to enhance market to these. McDonald's uses a GIS system to join demographic information on maps to help recognize promising new store sites. In spite of its global use, there is little available work on GIS implementation as applied to retailing in India. As mention by SBL Geomatics (2008) GIS is not as popular in India as in the western countries, the term GIS and its solicitations has just started gaining importance in India. Therefore, this paper focuses on how retailers can use GIS in various decisions specifically location, to gain competitive advantage. This is because retail location decisions are tremendously capital-intensive and locations themselves, once chosen, are (in the short term at least) fixed. Due to existing economic climate

and amplified competition, it is becoming more vital for retailers to evaluate their trade areas, evaluate the effect of competition, and choose new store locations deliberately.

2. UNDERSTANDING OF GIS:

A common definition of Geographical Information Systems (GIS) found in literature relates this expertise with a tool that links databases and digitalized maps. Geographic Information Systems is a high-tech system that trusts physical geography with cultural geography. Geography fundamentally influences and connects culture, business, society, and regime. Geography answers many business and marketing inquiries. Therefore, the tools that influence geography, such as GIS, are very useful for business and bring significance to organization and improve their bottom line. A computer-based GIS provides an electronic process for handling, assimilating, and evaluating huge amounts of geographic information by combining locational features with vivid data in a relational database management system. According to Environmental System Research Institute (ESRI), A GIS is a systematized collection of computer hardware, software, geographic data, and personnel intended to efficiently capture, store, update, manipulate, analyze, and display all forms of geographically referenced information.

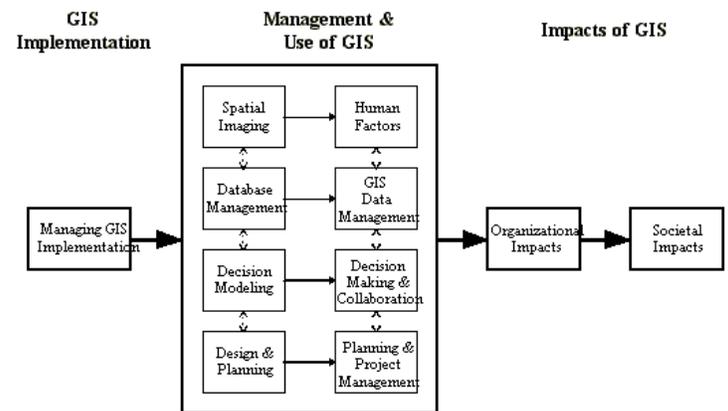


Figure.1. Method of Geographic Information System

Roger Tomlinson, one of the developers of GIS defines it as an arrangement of computer hardware and software specially designed for the procurement, maintenance and use of

cartographic data. GIS as a powerful set of tools for gathering, storing and recovering at will, transforming and displaying three-dimensional data from the real world. A geographic information system (GIS) is an information system that is intended to work with data referenced by spatial or geographic coordinates. In other words, a GIS is both a databank system with specific competences for spatially reference data, as well as a set of actions for working with data. Thus, a complete GIS contains of at least five components: software, hardware, geographical data, publics and the organization. If a system is applied in a company, only the software is not enough to work with the databank and the digitalized map, is important that exists: capable personal, an objective in the use of the system and the communication with other areas inside of the organization. Therefore, GIS is a pool of software, hardware, geographical data and people to enable the process of decision taking into consideration that comprises the use of geo-referencing information in the business. It digitized mapping with key locational data to graphically illustrate trading-area characteristics such as population demographics, data on customer procurements, listings of existing, projected, and competitor locations. GIS mapping has evolved out of a long practice of map making. Earlier all spatial investigation were done by physical processing procedures but now with the development of GIS, efficient handling of huge data and effective spatial analysis is possible. GIS mapping have developed as very powerful technology because it allows geographers to assimilate their data and methods in ways that support customary forms of geographical analysis, such as map overlay analysis as well as new types of analysis and demonstrating that are afar the competence of manual methods.

3. PROMINENCE OF GIS:

GIS is an information integration vehicle with a remarkable range of uses. It becomes more powerful, and intensely more cost effective, the more different types of information are available for integration. The main benefit of GIS, the prospect of integrating spatial and alphanumeric data, has made it widely valid to a variety of fields. Digital

geographic information, once taken, can be used for many dynamic purposes. The key to operational GIS use is creating appliances to share that data. In recent times, there has been a rising interest in the business communal to use GIS to augment decision making methods at both deliberate and operative levels. The GIS system "is a very operative tool in accepting our local market, supporting us to respond to opportunities within key areas. It has been specifically useful in understanding and replying to competitors' activity". Ginger mentioned retailers' use of the GIS technology for applications beyond mapping for store site ranges. GIS also allows the retailer to trail its competition in a region, as well as its customer base. Moloney highlighted that GIS allows retailers, and almost any business association, to go beyond data integration and map generation to search associations within a wide range of data. Smith and Webb demonstrated how the use of GIS can improve estimates of future retail space demand. GIS plotting supports spatial decision making and tactical planning and it is a quickly evolving area that continues to expand. Everybody wants information in functional formats and this has led to repeated increase in GIS as it is easier to use, more instinctive, more investigative and more rooted within a variety of technologies.

Geo-marketing is today a basic part for the decision making process. Through the use of a system based on digital maps, GIS software and diverse databases, the data are intensely distributed, being able itself, for example, to examine the market trends, to monitor the competition, to envisage opportunities and to launch marketing operations. It can even be used for sales area planning, meaning that a business will know how to organize its sales staff so they don't overlap with each other's' regions. GIS can also help augment their catchment area. Understanding location is even more vital when businesses go into new location. To achieve a economical edge, telecommunication companies such as Reliance Infocom Limited based in Mumbai, India,

have comprised GIS as a technology that will enable them to endure, strive, and win market share.

4. GIS - A DELIBERATE ECONOMICAL TOOL FOR RETAILERS:

Advances in technology are redrafting the rules of the game in gradually rapid cycles. ESRI considers that the upcoming success of retail, real estate, and restaurants will be resolute to a large degree by the competitive advantages of capitalizing in and implementing smart technology. GIS is one of the smart tools through which retailers can gain competitive advantage. In today's competitive marketplace geographical positioning of the retail business is a decisive issue with which the retailers must grab with. All operating costs, except for contract rentals, are typically location neutral. Hence the retailer's viability at a given location is directly reliant on the revenue potential through the tenure cost. A poorly located store can impact intensely on the retailers bottom-line. An incorrect decision of localization stimulates a series of consecutive errors in the concept of the marketing mix. This means that the 4 P's - place, price, product and promotion - are profoundly related and depend one on the other. If a store is opened in the wrong place, all the others P's (price, product and promotion) will also have to be reviewed.

In today's competitive environment, retailers must use every advantage to gain and retain customers, plan market growth and reduction, locate lucrative sites, stay in touch of changing consumer tastes, and act faster than the competition. Retail location review activity within the retail business deals with the collection, analysis and distribution of spatially referenced information which is preferably handled by geographical information systems. GIS adds spatial intelligence, the one true source of justifiable competitive advantage, to retail organization. GIS can be applied to many aspects of retail business such as Demographic Study, Trade area analysis, competitive market analysis, site selection. Thus, GIS is a tool for handling business information of any kind according to

where it's located. Retailers can keep track of where customers are, site businesses, target marketing drives, enhance sales territories, and model retail spending outlines. Fig 2 portrays incorporation of GIS with various retail decisions. A GIS gives retailers extra advantage to:

- Improve Intelligent-marketing policies by merging census, street, and area information; Examine target cities for roll-out, best suited locations for their setups.
- Inspect that whether the stores should be on the high street, in a shopping mall or part of an out-of town complex; inspecting where exactly the high-income consumer group is situated, which retail outlet has maximum customers traffic, which vicinity has maximum number of double income families
- Investigating whether retail outlets close to consumer living places; Analyzing customer movement and whether customers moving from a specific locality; Change analysis by finding new trends created by variations in the city like new shopping malls, cafe strips or major roads.
- Analyze sales design and trends through geography and retail link; Documentation of a series of existing locations that resemble the proposed location; Assembling of maps and reports that focus the crucial information about a potential site in a reliable and similar manner, which shows changes in customer behavior through major surveys.
- Measure the influence of new store openings, transfers, remodels, closures, and competitive attainments.
- Analyzing competitor's locations and understanding the effects of viable market changes.
- Gap analysis and Links to CRM's.

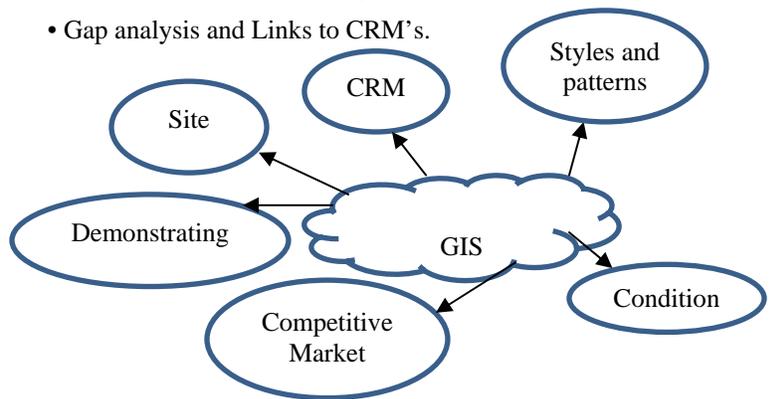


Figure.2. Integrating GIS with Retail Decisions

5. CAUSES FOR SLOW ACCEPTANCE OF GIS:

Trubent et al. mentioned that companies that have made large reserves in GIS have attained considerable cost savings. Robins specified that due to falling costs and increasing PC power, more retailers are instigating geographic information systems (GIS). Despite several benefits of GIS, many retailers have been slow to examine the possibilities of GISs. It's mentioned that at a more instant level GIS suffers from all of the problems of a fast expanding industry. It shortages a clear focus, a set of organized structures around which it might be structured. Despite progress has been made, the lack of clear consent on these issues remains a significant impairment to the use of GIS in market analysis. Clarke mentioned that there are a small but increasing number of persons who feel that GISs are dwindling to deliver the much-promised business solutions about which there has been much publicity and even more exaggeration. Clarke and Rowley highlighted that despite some significant success stories, there has been only a slow dispersal of awareness of the benefits and application of site assessment practices in general, and the application of geographical information systems (GISs) in particular. So, the diffusion of the benefits and applications has been strangely slow, with location planning still being, by and large, the reserve of the major grocery chains, joined more recently by retailers, department and variety store operators, pubs, banks and building societies. As deliberated earlier, worldwide GIS is measured to be a powerful tool. Irrespective of benefits which can be gained from investment in such systems retailers in India are still not using GIS to a wide level.

This paper effort to summarize the obstacles to the actual use of geographical information systems (GIS) as a deliberate tool in retail organizations in India. Some of the deceptive reasons are: Relative balance between the costs and benefits of GISs- Reynold mentioned the various aids of GIS in terms of efficiency, speed, direction, quality and

Steadiness. GIS can act as both a valuable tool in early location planning and also as a tool for observing and evolving the marketing policy of a specific store. The competences of most GIS allow data to be compared temporally as well as geographically, simplifying identification of styles and patterns. As a result, one would expect their extensive use as an input into both deliberate and tactical decision making. It was revealed that GIS is endemic among retailers. A study of more than 100 UK retailers showed at the 2003 Geo Business conference revealed that 33 percent of members felt that their panels did not understand the impact of GIS. Only 28 percent fully recognize its working and marketing benefits. All managers are unwilling to sustain the costs associated with the implementation of information systems, unless swayed of the benefits. Costs of implementing GISs, both in terms of early capital investment for hardware and software and also in terms of its effect on organizational structures and tactics to management decision making can be high. Over and above the costs of the systems themselves, supplementary staff in technical and executive roles to manage them is also vital. Another major element is the cost of datasets which can be created either internally or externally. There is an increasing credit that, for information systems to be real in supporting decision making, it is necessary that the manager has a understanding of the data and prototypes used by the information systems and an input into the scheme of these information systems.

Therefore, a real three-dimensional decision support system (SDSS) needs to be established and used jointly by managers and professional location planners. Geographical information systems can be established successfully only with today's database management systems. Database management is defined as linking topology data and traits to geographical elements. In India, exact statistical data on population density may not be available. Data available from the census narrate to

territorial units of such size as is not sufficient enough for locating retail service users. Location problems arising in practice are, often, not a illustrative of single theoretical models but of their combination. There are, of course, many other factors we have to take concurrently into consideration. Last but not the least, fortified by flexible rentals and comparatively low real estate costs in India, many retailers does not pay sophisticated location research methods.

6. CONCLUSION:

Retail location decisions are said to be the most vital decisions because it simplifies getting the stock to the ultimate consumer at the right place, at the right time, in the right quantities, and at the right price. In addition, location choices are deliberately important for the retailer because they help in evolving sustainable competitive advantage over the competitors that cannot be copied at any cost. Given an optimistic picture of Indian retail sector, retailers need to use information technology more wisely to manage their retail businesses. It can be clinched that GIS helps vendors to make careful business plans with a narrow set of planning services which helps them to make decisions in various uncertain retail business segments. GIS will provide a final solution to a user, but it will bring the capabilities for a better and more prepared analysis of information, which is a must for making eminence decisions. Thus, retailers can go outside standard data analysis by using GIS tools to assimilate, view, and analyze data using geography.

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