ABSTRACT

Fast and accurate Decision-making has become essential element for any successful management. Every procedure, may it be selection of a site till the location of target customer, must be done in a scientific and a more reliable way so that the decisions taken are more accurate and consistent. Geographic information system is a computer-based system that is used to store and manipulate Geographic information GIS is a design for the collection, storage and analysis of objects and phenomena where geographic location is an important characteristic or critical to analysis. While handling and analyzing data that are referenced to a geographic location are key capabilities of GIS, the power of system is most apparent where quantity of data is too large to be handled manually. There may be hundreds and thousands of features to be considered or there may be hundreds of factors associated with each feature or location. These data may exist as maps, tables or data or even as list of names and addresses. Such large volumes of data are not efficiently handled using manual methods. However, when those data have been input into a GIS, they can be easily manipulated and analyzed in ways that would be too costly, too time consuming or practically impossible to do using manual methods. With the use of Computer to integrate large amounts of database, to perform the mathematical and statistical transactions, and other complex operations has become easy and effective. The use of computers and IT has been taken up extensively in both public and private sectors. But still there is a gap to be filled. There are some IT enabled services through which the quality and performance can still be enhanced beyond imagination. In the present study, an attempt is made to study the role and application of Geographical information system in improving business, Service sector, Planning and Management.
FORMULATION OF THE PROBLEM:

Studies are conducted thoroughly in all the three sectors viz., Business, Management, Service and Utility Sectors individually to develop a GIS for understanding the existing situation and to identify the problems in each sector and provide GIS based solutions.

BUSINESS SECTOR:

This study is conducted, to study the impact of GIS technology on Business sector and thereby aiming to develop an Information System that can help to increase the business efficiency. Present study is carried out for a municipal locality area (Sultan Bazaar) of Hyderabad City.

Firstly, a survey is conducted to identify basic problems of Businessmen and following are the problems associated with geographic space.

- Starting a business in a commodity with highest demand in the area.
- Identifying the target customers.
- Identification of the most business potential location.
- Delineating the areas with most footfalls of pedestrians.
- Identifying the tastes and preferences of the customer in the area.

The study for this sector aims at improving the existing systems by providing suggestions with the help of GIS tools.
MANAGEMENT AND PLANNING OF AN ORGANISATION:

A study has been conducted to identify certain problems relating to management of an organization and planning. For this, Commercial Taxes Department has been selected. Here is a review of the department studied and problems identified.

REVIEW OF COMMERCIAL TAXES DEPARTMENT:

- Identification of Un-registered potential Tax payers
- Identification of Tax Leakages and fraud
- Identification of Tax Defaulters.
- Identification of Dealer Location with Address
- Understanding Trading Patterns and Behaviour

UTILITY AND SERVICE SECTOR:

To understand the impact of IT and GIS Technology on the utility sector, Electricity department is selected among several utility services. The problems faced by the department are studied and one among them—Fuse Off Call Management Service is selected to provide a GIS solution to it.

OBJECTIVES:

The main objective of the study is to analyze various approaches for implementing spatial analysis functionality and applications of spatial analysis in GIS for Business and service sector planning and management.
THE SPECIFIC OBJECTIVES OF THE STUDY ARE AS FOLLOWS:

1. To perform feasibility studies of various applications in Business Sector and to test a range of GIS applications for small business houses.

2. To carry out a study to identify the promising applications of GIS in Commercial Taxes Department.

3. To reckon the viability of GIS applications in Electricity Department and to provide a better Fault Recovery Services.

4. To study the potential of applying GIS technology in other service sectors.

The thesis consists of 6 chapters. Aspects related to Introduction, GIS and conclusions are given in Chapters 1, 2 and 6 respectively. Chapters 3, 4 and 5 deal with all aspects of the study as mentioned in the objectives. References are separately appended.

STUDY AREA:

The area chosen for our study is the Hyderabad city. This city has experienced spontaneous growth since a decade. It is developing in all phases of life and especially the field of information technology is worth mentioning. With the development of IT there has been considerable interest in the field of GIS too. In the matter of business and service sector, the development and growth in the basic infrastructure, has led to a sound foundation for the parallel increase in the business and other related fields, which led to the improvement of the standard of living of the people in this
Hi-Tech city. Of the several locations in the city, major commercial center like Sultan Bazaar area is selected for field data collection and development of geographical information system. This area identified for the study is a prime business center. The existence of commercial establishments carrying out different business activities essentially in the form of a few clusters is an ideal situation for exploiting the full benefits of the technology for effective business planning and also for monitoring by the law enforcing authorities.

METHODOLOGY:

Entire study has been carried out in three steps / phases. They are

- Delineation of the business locations.
- Delineation of the registered / unregistered dealers of the Commercial Taxes Department.
- Preparation of electric pole network.

DELINEATION OF THE BUSINESS LOCATIONS:

The main aim of this study is to use the Municipal Information System and to test the feasibility of the GIS applications in improving the business in an area and to help even small business people to use the technology of GIS. All the business locations are identified in survey conducted for Ground truth collection. All the existing business locations and also vacant locations where business can be started and flourished are identified. This data is used to locate the business locations, which are having high business potential and those, which are having potential to develop if given special attention. This work has been carried out by performing several analysis using GIS. The major types of analysis carried out are proximity analysis, demographic analysis, commodity sales analysis and site location analysis.
DELINEATION OF THE REGISTERED / UNREGISTERED DEALERS OF THE COMMERCIAL TAXES DEPARTMENT:

All the dealers that are registered and unregistered with the commercial taxes are identified and delineated. This is done by comparing the ground truth collected with the data of registered dealers with the Commercial Taxes Department. The ground truth is collected for each and every business shop. The database obtained from the Commercial Taxes department consists of the details of those dealers who are registered with the department. So by simple comparison we can delineate the registered and unregistered dealers. Our main aim is to identify the unregistered dealers and plan some strategies to make them register with the department to enhance tax revenues.

UTILITY NETWORK – CASE OF SERVICE SECTOR APPLICATION:

The third aspect of this project is to test the feasibility analysis of GIS in utility sector. As a part of this, a study is taken up to improve the fuse call management service (FCMS) for the electricity department. For this the data required was assumed for much of the area. The electric service number (meter number) was assumed and this data was attached to the map using GIS software. Each Parcel will receive its power supply through an electric pole and the electric pole gets the low voltage electricity from the transformer which converts high voltage electric current into household usable voltage. Every transformer is in turn connected to the sub station. So all the electric poles, transformers and the sub station are assumed to be present in one part of the locality. These features were represented on the map and a network and flow of the electric current was made.
CONCLUSIONS:

A brief account of the details of the results is summarized in the form of conclusions as given below:

1. By carrying out location analysis it could be possible to identify all potential customers in a locality for various types of businesses.

2. Mapping of trading areas of all types of stores was done.

3. Evaluation of the demographics of the area for different stores was performed.

4. Mapping of percentage of goods customers for a particular type of business was done.

5. Potential business location in an area is identified.

6. The best location for different types of businesses is identified.

7. Business and commerce can be increased in an area by starting most suitable and remunerative business, suitable for the location.

8. By carrying out proximity analysis we could find out whether the good and potential customers exist for a particular business or not.

9. Ranking of the percentage of potential customers to perform the economic analysis of a business was done.

Depending on the result, we could ascertain whether the identified good customers are enough to get profits for a business or not. We could also perform commodity sales analysis for the given area.
Secondly, the information system created by applying GIS tools is useful in more ways than one. The system can be used successfully for better organization. Management and planning of many government departments like Income Tax, Commercial Taxes, Excise and other business organizations as well. The basis of this type of study is a well-updated information system that contains information regarding each and every parcel in that locality and with an ability to map all the facilities in it. It is found that a GIS system developed as in the present study can be used in many ways to improve the planning and management standards of any organization. As a specific application GIS is used to achieve the following results efficiently and effectively.

1. This study has proved that updated complete information is required for identification of the unregistered business dealers.

2. A Database Management system integrated with Geographical information system can help find solutions like identification of each and every potential business location in the area.

3. This GIS based system helps in not only identification of each and every business location but also provides complete information of the type of business done, their business turnovers, and tax paid etc.

4. This enables to carry out analysis of each and every trader and to find the marker average turnover for each and every commodity sold in the market, and possible evasion of taxes.

5. The GIS based system thus helps to perform different types of analysis such as proximity analysis, location analysis, market analysis, sales analysis etc.
6. By conducting market and turnover analysis of the various registered dealers, we are able to evolve a methodology to identify tax leakages.

7. The GIS based system helps us to find the shortest route from one location to another location. This is found very much helpful to the enforcement authorities of the commercial taxes department in carrying out their surveillance work by identifying and reaching their tax defaulters very easily and even in less time even though they are not familiar with the place.

In the third study undertaken, finding a GIS solution for a service sector was done. Fault Recovery Service (FRS) of the electricity department was selected to conduct the study. As part of the study, GIS solutions like mapping of electricity flow in a locality was taken up showing along with the electric poles and transformers in the network. Identification of the place of complaint was also a problem for the FCMS personnel. This was effectively handled in this study using GIS technology. Finding a shortest route from the office of FRS to the place of complaint was also found using GIS software so as to increase the efficiency of the FCMS staff by reaching the place of complaint without any delay and rectify the problem and thereby bring cheers to consumers.
Schematic sketch of the methodology developed for GIS applications.