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Role of geospatial technology for agree- business management: A case study of Chitrakoot Satna MP

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Abstract

India is an influencing and fast changing economy. In recent decades, India has progressed towards high industrialization and technological advancement. As a consequence, decision-makers will continue to face several challenges for effective governance such as rapid growth in population, environmental concerns, resource shortages and security issues. India will require an efficient and advanced information and knowledge regime to brace itself for the envisaged economic growth. Geospatial technologies, with their unique ability for acquisition, integration and analysis of geographically-referenced spatial information, have in recent times been recognized as an effective tool for planning, management and decision making locally and globally. Among various other technologies, geospatial technologies with proven capabilities for supporting decision-making would be fundamental for information management in future with applications of social and national significance.

Keywords: Chhani, consumption, fuel-wood, households, Lanchaan

Introduction

Geographic information has application in practically all walks of human existence. This technology is therefore relevant to a multitude of sectors such as agriculture, telecommunications, oil & gas, environmental management, forestry, public safety, infrastructure, logistics etc. The common perception regarding the utility of Geographic information Systems (GIS) is in the form of web applications that are used for maps and directions, but these tools have several features which go beyond location based services. Geospatial technologies as a tool for decision making can add immense value to planning and development. This multifaceted technology can effectively support governance, enable sustainable development, assist in better management of business process as well as bring location based information closer to people.

Geospatial sector is now a full-fledged industry in itself and not a niche area of IT. Major IT companies have started dedicated practices in geospatial technologies. GIS is the core platform of many critical infrastructure and development projects worldwide and serves as a valuable tool for civil society. India offers several advantages which enhance the prospects for this industry manifold. The Government has whole heartedly accepted this technology as being pivotal in facilitating good governance. State government departments are more aware with respect to the benefits and are gradually emerging as the major users.

The geospatial industry is presently witnessing tremendous opportunity within the country as the government has initiated reform projects in several infrastructure segments like rural development, power, land and natural resources and mandated the use of geospatial technologies in these projects. Geographical information is a ubiquitous part of the governance. The primary role of Governments is decision making in public interest which involves geographically related issues, therefore, GIS can play a critical role in all spheres of good governance. Several local governments have now come to depend on geospatial technologies to not only organize and manage spatial data, but also for dissemination of information and services to citizens.

There are now various types of geospatial technologies

- **Remote sensing:** Imagery and data collected from space or airborne camera and sensor platforms

- **GIS:** Suite of software tools to map and analyze geo-referenced data; can be used to detect geographic patterns in other data.
- **GPS:** A network of satellites that can give precise coordinate locations to civilian and military users with proper receiving equipment
- **Internet mapping technologies:** Software like Google Earth and web features like Microsoft Virtual Earth to view and share geospatial data.

GIS Technology

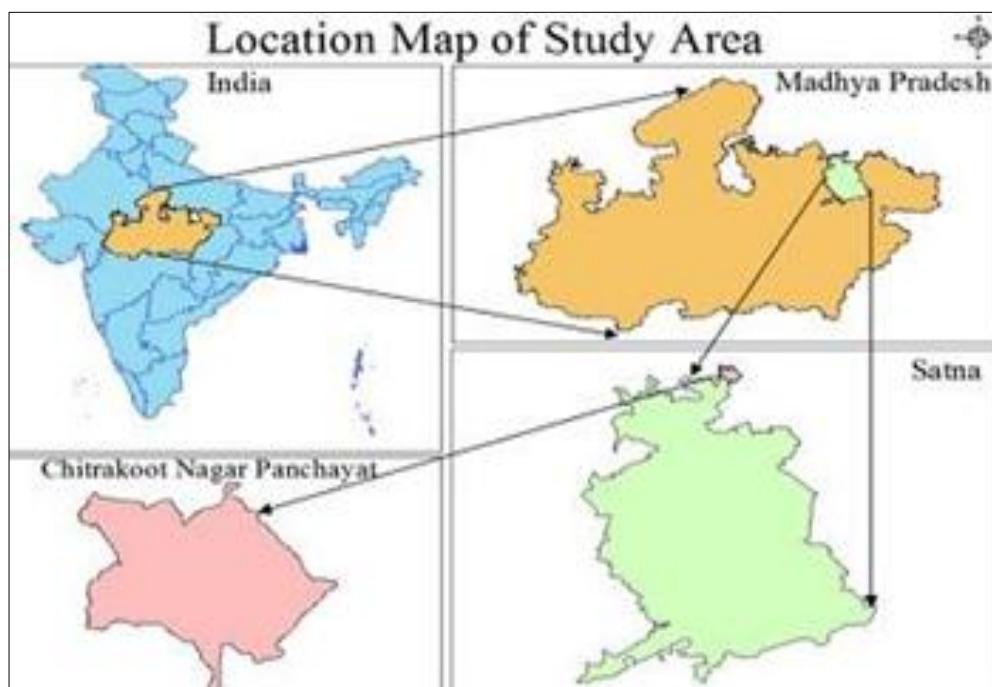
GIS in agriculture is not a new phenomenon anymore. The agricultural sector is the mainstay of the rural Indian economy around which socio-economic privileges and deprivations revolve, and any change in its structure is likely to have a corresponding impact on the existing pattern of social equality. No strategy of economic reform can succeed without sustained and broad-based agricultural development, which is critical for raising living standards, alleviating poverty, assuring food security, generating a

buoyant market for expansion of industry and services and making a substantial contribution to the national economic growth.

The future growth in agriculture must come from new technologies which are not only cost-effective but also in conformity with natural climatic regime of the country; technologies relevant to rain-fed areas specifically; continued genetic improvements for better seeds and yields; data improvements for better research, better results, and sustainable planning; bridging the gap between knowledge and practice; and judicious land use resource surveys, efficient management practices and sustainable use of natural resources.

Sustainable agricultural production depends on the judicious use of natural resources (soil, water, livestock, plant genetic, fisheries, forest, climate, rainfall, and topography) in an acceptable technology management under the prevailing socioeconomic infrastructure. Technology plays an important role in the rapid economic growth and social transformation in developing countries.

About the Study Area



Chitrakoot Nagar Panchayat comes under Majhagawan tehsil of Satna district, Madhya Pradesh. It is divided into 15 wards for which elections are held every 5 years. The Chitrakoot Nagar Panchayat has population of 23,316 of which 12,675 are males while 10,641 are females as per report released by Census India 2011. Chitrakoot Nagar Panchayat has total administration over 4,752 houses to which it supplies basic amenities like water and sewerage. It is also authorized to build roads within Nagar Panchayat limits and impose taxes on properties coming under its jurisdiction.

Result and Discussion

Utilization of Forest Product for Business Purpose

Mahua flowers, fruits and seeds, tendu leaves and firewood are a major source of livelihood for people living in the area of Chitrakoot. Mahua flower, collected in March-April, is used to make alcohol locally for domestic consumption and

sale. Mahua fruit, collected in June-July, is used in production of medicines and oil, and sold to middlemen. Whole families, including children and the aged, are engaged in collection of these products.

In terms of value, tendu leaves are the most important forest produce in Chitrakoot and its collection and sale is done through state agencies in both UP and MP. Wages from tendu collection are a crucial source of supplementary income to tribal families in the lean agriculture season. However, compared to final sale value, quantity-based wages paid for collection are low and instances of delayed or improperly calculated wage payments are common. Tendu leaves, collected by tribals, are used to wrap beedis, after drying and curing. Mature leaves are collected from around the middle of April to the middle of May, over a period of around six weeks. Whole families are engaged in tendu leaf collection, receiving wages as per number of bundles.

Collection of firewood and sale in nearby markets is a regular source of income for families with little or no productive land. The extent of this business can be gauged any morning in Chitrakoot district, when hundreds of bundles of firewood collected from the Patha jungles, are loaded in passenger trains, for sale at other places. A study revealed that the households earned a total annual income of around Rs. 3.23 lakhs through collection of tendu leaves, mahua products and firewood. The households plucked tendu leaves worth Rs. 1.5 lakh, which were sold to cooperatives. Mahua leaves and nuts worth Rs. 98,000 were either sold in local markets (haats) or to traders in barter. Fuel wood worth Rs. 65,000 annually, was sold to employees of the Majhgawan diamond mines nearby. While the 53 households also had other income sources, the income from forest produce accounted for 85 % of the total income. Each family on an average earned Rs 9450 from the forests. (MP Human Development Report 2002, pp:85) Other forest produce collected and sold is medicinal plants and products like harra, gond, imli, khair, chiraunji, babul, anjan and salbeaj in the study area.

Utilization of Crops for Business Purpose

Although the rainfall pattern and the extent of irrigation in Chitrakoot theoretically favours kharif (monsoon) cultivation, most of the land is cultivated in the *Rabi* (post-monsoon) season. Area cultivated more than once a year does not generally exceed 30% of total cultivated area. Cropping intensity in Chitrakoot shows that the net area sown in a year is 172052 hc, and area sown more than once a year is 21269 hc. and the cropping intensity is 112%. Chitrakoot is predominantly a pulses-growing country. Wheat accounts for the largest area under cultivation, but there has been a huge drop in cultivation of cereals and millets. This would be on account of virtual disappearance of bajra and barley, and reduction in area under cultivation of jowar.

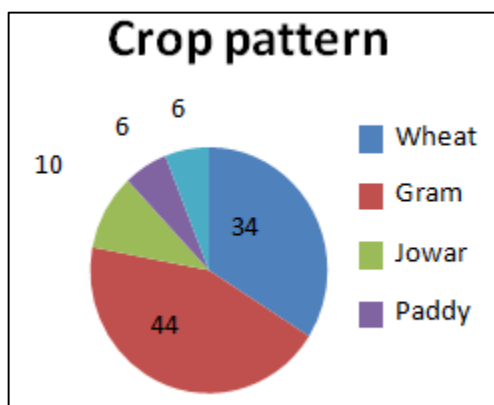


Fig 1: Bar Graph showing pattern of crops in Chitrakoot

The proper management of the crops by the farmers can increase their profit. There are many crop based business which can increase the source of income for the area.

Horticulture, Animal Husbandry, Dairying & Fisheries

The area under horticultural crops i. e. fruits, vegetable and flowers except spices can be utilized for business purposes. These things are needed in daily routine life for eating and decorative purposes. There is a lot of scope for Animal Husbandry, Dairying & Fisheries. Here cattle, buffalo and goat found in abundance. There is sufficient improvement of

poultry of high breed in Madhya Pradesh. The Kadaknath breed of cock (Jhabua) is famous for their taste and dark black bones and blood. The area has also progressed in fisheries. The productivity of fish production is found more in rural pond and tanks. All these activities should be proper managed in order to widen the scope of agriculture and agricultural based products. Additionally, proper management is needed in the field of Horticulture, Animal Husbandry, Dairying and Fisheries.

Conclusion

Geospatial software in general helps to develop algorithms which are able to segregate different crops in different phases leading to more precise crop yield estimates. The classification techniques are useful in crop classification by providing multi-date imagery analysis for sowing/harvesting trends, thus providing better results for efficient decision making. Chitrakoot district is rich in forestations. There are many forest products are found including Indian gooseberry, Mahua Leaves and Bel. These products are collected as raw materials from the forest. These products are used in making juice, medicine and food. There are many scopes for dairy products. The online marketing system can be increased in order to collect and sell milk and milk-products. In the district, wheat and pulses are grown in plenty. It requires proper management to utilize it from business view point. These crops and pulses should be used for the economic point of view so that maximum profit can be attained by the local farmers.

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