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INNOVATIONS IN RURAL MARKETING – A CASE STUDY OF GEOINFORMATICS

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Abstract
The facet of marketing in the era of globalized environment has been under tremendous transformation right from identification of opportunities to satisfying the needs of the customers in a best way than the competitors. Increase competition in the global market place has not only created pressure but also provided the opportunities for the rural markets. The scenario of rural marketing is expected to change with the introduction of dynamic application of geo informatics. As it is observed that, Geoinformatics has found to be one of the most advanced tool for collection of techniques, technologies for acquisition, processing, management , analysis and presentation of accurate geospatial data that can be used for better decision in the area of marketing. Rural markets in India considered as wide untapped area which has been providing huge scope of demand but due to non-availability of sufficient information systems, the producers, marketers and especially the rural farmers have been facing extreme deficiency in identifying the potential markets, potential source for promotion and lack of information support has been the major weakness for rural people to tap the untapped markets. Geo informatics especially provides the information sources with regard to rural land, accessibility to various potential markets and produces and also provides the decision maker to understand and make strategic decisions in the area of rural markets. Geoinformatics provide the sources of geographical information, geo browsing which can be a great contributory for potential marketers. Geo informatics is also expected to contribute significantly for the marketers in identification of potential market, analysis of information and further processed information for timely evaluation of market conditions. The present paper is a descriptive based which primarily examines the role of Geoinformatics in the area of rural marketing. Further, the paper examines the need and factors which encourages for the utilization of Geoinformatics in the rural markets and also the paper discusses the opportunities, problems and prospects of Geoinformatics in select rural areas. The paper is based on both primary and secondary data sources. The study covers the field survey results in the select rural areas in Telangana and Andhra Pradesh states.

Key Words: Digital India, Digital Marketing, Geo-Browsers, Information System, PPGIS.

Introduction to Geoinformatics

Geoinformatics is considered as the application of science and technology that is aimed to provide the assistance in storing geographic data, retrieving and combining the data to create new representations of geographic space, provide tools for spatial analysis, and performs simulations to help expert users to organize their work in many areas like public administration, transportation networks, military applications and environmental information systems. Geoinformatics takes the information technology used to manipulate objects in geographic space, and to acquire knowledge from spatial facts. Spatial information theory provides a basis for GIS by bringing together fields that deal with spatial reasoning, the representation of space, and human understanding of space.

Geoinformatics was found as the latest innovation which is considered to match the expectation of addressing the interface of spatial information from spatial facts. From the study on Geoinformatics, it is observed that, the framework of Geoinformatics covers the models for space and time, and the relationship that can be identified between objects in a spatio-temporal model of real word phenomenon. A GIS that has been designed in a proper manner has the capability of providing quick and easy access to large volumes of data of these geographical features. The user can access & select information by area or by theme to merge one data set with another, to analyze spatial characteristics of data, to search for particular features, to update quickly and cheaply and asses alternatives.

GIAR in its report of Geoinformatics has opined that, Geoinformatics is a combination of theory, geoinformation, geocomputation, technology/systems and applications. Geo information provide spatial models, spatial algorithms, spatial reasoning, spatial database maps and attributes as part of geoinformation, supports the computation, spatial analysis and data mining under geo computation, consists the remote sensing, navigation system, spatial decisions and telecommunication for the users. The main applications of geo informatics include agro-eco systems, environment including biodiversity and crop improvement, analyzing the climate change, land and water resources, projects on crop and livestock productions, socio-economics, markets and policy.

Singh A.K.(2007) in his research paper on Geoinformatics has opined that, concept of Geoinformatics has been evolved by the integration of diversified disciplines to deal with spatial information. The structure and character of spatial information, storing, processing, and dissemination were found to be the core elements of Geoinformatics. As per Ehlers and Amer(1991), Geoinformatics is considered as the art, science or technology dealing with the acquisition, storage, processing

production, presentation and dissemination of geoinformation. It is observed that, Geoinformatics is considered as a tool for decision-makers for identifying the resources and yield in case of agriculture, providing estimation on resource allocation and requirements, land and water resources assessment, development and management of information for the needs of the people for multiple causes.

The nature of Geoinformatics which is based on Information and Communications Technology that integrates hardware, software, and data for capturing, managing, analyzing and displaying all forms of geographically referenced information for comprehending geography and making intelligent decisions. The application of GIS can be visualized in diversified areas where GIS is capable to provide the needed information at maximum extent with the support of advanced technology.

From the study on Samo Drobne et al.(202008), it is understood that, GIS methodology can be developed for measuring the accessibility of land plots, the determination of accessibility made easy and the rural land market in a country can be analyzed easy by adopting the Geoinformation system. Hence, it is observed that, one of the key benefits that Geoinformatics can provide is the developing and measuring the accessibility. As shown in figure 2, Geoinformatics provide diversified applications through spatial technology to understand the biodiversity, energy sources, eco system development, forecasting the weather, flood, horticulture, river flow, habitat and communication.

Hence, from the study on various references by the experts, it is observed that Geoinformatics has the scope of converting the traditional practices of production, identifying the marketing opportunities to next level, there by assisting to convert the rural marketing practices to be part of Digital India. Rural marketing taking the assistance of Geo informatics helps to achieve the status of Digital marketing, where the producers can reduce the risk of identifying the potential markets for selling the produce and also the buyers can ease their efforts of identifying the availability of agricultural produce.

Need and Importance of the Study

The development especially in the rural India has been progressing at a very slow rate despite various measures taken by central and state governments along with the support of NGOs and other supporting associations. Since rural India accounts for around 70% of the total population, there is a desperate need for development in order to ensure that nation achieves overall development. As majority of the rural people depends on agriculture and agricultural related activities in rural India, it is observed that, though the effort made for cultivation and production of yield found to be more typical, the results generated through selling of agricultural commodity has found not fruitful for the farmers and the people who depend on agriculture. Further, lack of knowledge in market prices, inability of identification of potential markets, lack of promotion for their yield and lack of support in technology are creating them to face the hurdles in reaching the value for their efforts. In view of this problem, the present study is expected to provide valuable inputs by making assumptions and analysis on using of Geoinformatics in rural marketing with an aim of understanding how this Geoinformatics is capable of providing the valuable support to the farmers as well as the people living in rural areas in achieving the potentiality in their work. Any organization, government private is in some way or another strongly linked to the geography in which it operates.

Objectives of the Study

The main objective of the study is to analyze the application of Geoinformatics in rural marketing. Further, the study concentrates on the following objectives.

1. To analyze the role of Geoinformatics in the area of rural marketing.
2. To study the opportunistic scenario for Geoinformatics in rural markets.
3. To examine the problems and prospects for applying Geoinformatics in rural marketing.

Further, the study provide the conclusions and suggestions emerged from the study.

Methodology of the Study

The study concentrates on both primary and secondary data sources. Primary data is collected from the sample pool of farmers, agricultural labour and the marketers selected from select villages of Warangal, Nizamabad Districts from Telangana state and Prakasam, Kurnool districts from Andhra Pradesh state. Secondary data is collected from the web references, select journals, publications in news papers. For the purpose of collecting the information from sample respondents, convenience sampling method is applied.

Analysis

Detailed analysis is segregated on the basis of objectives considered for the study. Results from both secondary and primary data sources are presented in the following heads.

Role and Importance of Geoinformatics in Rural Market

Rural market in India is the major part of the nation which comprises around 70% of the total Indian population. About two-third of rural people engaged in agriculture hence, it is considered as the major source of employment in the rural India. Through adopting rural marketing, companies are adopting the process of developing, pricing, promoting, distributing rural specific product and a service leading to exchange between rural and urban market which satisfied consumer demand and also achieved organizational objectives. From 2009 to 2012, spending by India's 800+ million rural residents reached $69 billion, some 25% more than their urban counterparts spent over the same period. And projected growth rates are simply astounding: According to recent Nielsen estimates, consumption in rural areas is growing at 1.5 times the rate in urban areas, and today's $12 billion consumer goods market in rural India is expected to hit $100 billion by 2025. What's more, rural Indians are trading up. Commodities are giving way to branded products, and more-expensive goods are replacing entry-level versions, as consumers gain more disposable income. Their increased purchasing power is largely due to the steady migration of manufacturing jobs to the countryside. Credit Suisse estimates that nearly 75% of the factories that opened in India in the past decade were built in rural areas; they now account for almost 55% of the country's manufacturing GDP and 70% of all new manufacturing jobs. As a result, per capita GDP in the countryside has grown at a compound annual rate of 6.2% since 2000, eclipsing the 4.7% urban growth rate. Many corporations are recognizing this enormous opportunity and stepping up efforts to gain a strong foothold in India's rural markets. But they are meeting with mixed results. An undeveloped transportation infrastructure, unreliable telecommunications and electricity services, inadequate distribution networks, and widely dispersed consumers make it costly to establish a profitable presence at scale. And finding partners to help identify, sell to, and service rural customers is no simple matter either.

Some of the important features that encourage the need for the Geoinformatics is the large, diverse and scattered market. Rural market in India is one of the untapped markets as still many companies are competing to enter and excel in rural market. Major income of rural consumers is from agriculture. This shows that, rural prosperity is tied with agriculture prosperity. In the event of a crop failure, the income of the rural masses is directly affected. With regard to infrastructure facilities, it is a challenge for marketers; it is a challenge to marketers who have found innovative ways to market their products. Further, the potentiality of rural market in generating large agricultural produce is the main attraction of rural market. With regard to problems for rural markets, it is observed that lack of communication system is still lacking despite the efforts of many companies and the initiatives of state and central government. The literacy rate in the rural areas have been resulting in failure in adoption of technology to analyze the market prices of the agricultural commodities, current scenario and the market fluctuations for different agricultural produce. Apart from this, the purchasing power of rural people is directly influenced to seasonal demand. Due to the dependency in the agricultural income, harvest season might see an increase in disposable income and hence more purchasing power is shown in the favorable seasons. Further, the cost is an important factor that determines the purchasing decision in rural areas. A lot of spurious brands or look-alikes are available, providing a low cost option to the rural customer. Many a time the rural customer may not be aware of the difference due to illiteracy. Overall, the rural market in India is quite fascinating and challenging in spite of all the difficulties existing. The potential is enormous even though, these markets have weaknesses they also have tremendous opportunities which should be availed by the marketers.

In order to understand the importance of Geoinformatics in the scenario of current rural markets, field survey is adopted and analyzed the requirements of the rural people from the Geoinformatics. Survey results are presented in the following table.

Table 4.13: Rural Peoples Rating Towards The Requirements

S.No.	Statement	Rating								Rank
		Strongly Agree W= +2	Agree W= +1	Neither Agree nor Disagree W= 0	Disagree W=-1	Strongly Disagree W=-2	Total N	Total (∑wf)	Weighted average (∑wf/w)	
1	Training to adopt to the technology for knowing the benefits of Geoinformatics	102	119	85	49	35	390	274	0.7	5
2	Increase the demand for village	100	102	125	48	15	390	254	0.7	7

	products in the urban market.									
3	Promoting the specialty of agricultural produce in the potential market.	119	152	65	36	18	390	354	0.9	4
4	Promoting the availability of agricultural produce for buyers.	146	153	12	50	29	390	395	1	3
5	To expand distribution networks.	102	84	70	78	56	390	210	0.5	9
6	Initiation of rural incubation centers for awareness and adoption of GIS.	106	115	56	74	39	390	253	0.6	8
7	Identification of potential market for selling the agricultural produce.	182	141	45	14	8	390	491	1.3	1
8	Understanding the spatial technology for integrating in the agriculture.	126	84	70	65	45	390	271	0.7	6
9	Understanding the market prices for agricultural produce	189	120	35	25	21	390	473	1.2	2
10	Mapping the physical presence of agricultural yield to the potential purchasers	85	72	119	49	65	390	135	0.3	10

Source: field survey &Weighted Averages

10 select requirements are identified through pilot study and these requirements are tested by adopting a rating scale. Based on the rating, the ranks are given by applying weighted averages method. From the results, it is to interpret that, highest rank was achieved to the requirement 'identification of potential market for selling the agricultural produce'. The second highest rating was achieved for 'understanding the market prices for agricultural produce'. Apart from these, respondents have given next highest rating to 'promoting the availability of agricultural produce for buyers' and promoting the specialty of agricultural produce in the potential market. From the results it is to conclude that, rural farmers are expecting high for identifying the potential markets and to understand market prices and promoting these to buyers.

Hence, from the survey, it is clear that, Geoinformatics is expected to play key role in the following areas.

1. Identifying the potential in both rural and urban markets for agricultural produce.
2. Promoting the presence of yield available to the world market.
3. Identifying the penetration region wise and area wise.
4. To identify the network coverage in rural markets as well as identifying new stock points.
5. Providing dealer, marketers and potential surveys
6. Generating location element to the sales and distribution data used by the enterprises.
7. Identifying the key geographical areas with potentiality for agricultural growth in yield
8. Finding the areas with more revenue potential in rural markets.
9. Mapping the physical presence.
10. Micro level profiling of consumer markets.

Opportunistic Scenario for Geoinformatics In Rural Markets

From the study on literature review done by various experts on Geoinformatics for rural development and rural markets, the following observations are drawn. With the technology that is being integrated in Geoinformatics, the farmers and marketers who are found to be main beneficiaries in rural markets are expected to found the following advantages presented in Table 2.

Table 2: Opportunities for Rural Marketers and Farmers

S.No.	Function	Description	Target beneficiaries
1	Market analysis	Assisting the farmers and marketers to analyze, identify target areas for marketing the commodities	Farmers, marketers, distributors, intermediaries and researchers
2	Congregation	Expected to facilitate in the form mela, mandi and haat in rural villages	Rural customers, farmers, sellers
3	Wide-range information	Provide spatial information on potential markets, growth in the agricultural produce, quality of agricultural produce, growth in the quantity of agricultural produce	Cultivators, intermediaries, state government and buyers
4	Diverse route plan (route design)	Assists the buyers to reach the place of agricultural production,function to design various types of route plan having maximum coverage, flexibility in contacting the crop producers, making deals with the farmers at the point of production	Farmers, buyers, government agencies, agricultural markets
5	Save & storage facility	Provides the source for storing the spatial information and databases on past performance of crops, industry, market fluctuations	Researchers, farmers, buyers, government.
6	Data updating	Facility for future expansion	Farmers, researchers
7	Spatial distribution	Provide the assistance on land use, land cover mapping, developing food security project, stock inventory of agricultural commodities	Government, cultivators, researchers
8	Replacement of manual maps with technology	Expected assist the beneficiaries in reducing the set up of manual maps and detecting the needs more accurately	Farmers, government and researchers
9	Improved analysis	Result in optimum decision making towards yield forecasting, public information, monitoring the growth and development of agriculture produce and prices	Sellers of agricultural produce, government and researchers.
10	PPGIS	Works with the co-ordination of pubic private partnership in developing Geoinformation system for assisting the beneficiaries and developers	Private companies, developers, experts and beneficiaries including farmers, marketing intermediaries

Challenges for the Adoption Of Geoinformatics For Rural Marketing

With reference to the problems and prospects towards Geoinformatics, the beneficiaries including farmers, intermediaries and the buyers have rated the problems shown in the following table.

Table 4: Beneficiaries Rating On Problems of Adoption of Geoinformatics

Motivated Factors	To a very great extent W=5	To a great extent W=4	To some extent W=3	To a very small extent W=2	Not at all W=1	Total N	Total (∑wf)	Weighted Score (∑wf/w)	Ranks
Measuring the accuracy of Geoinformatics	49	57	187	58	39	390	1189	79.26	6
Getting awareness towards technology used in Geoinformatics	150	125	85	21	9	390	1556	103.73	1
Lack of assistance from experts	49	87	198	51	5	390	1294	86.26	3
Price of facilities for Geoinformatics	58	85	159	39	49	390	1234	82.26	4
Lack of training and infrastructure facilities	58	189	73	56	14	390	1391	92.73	2
Integrating the problems of marketing through technology	25	59	258	32	16	390	1215	81	5

Source: field survey

From the survey on select problems, it is observed that, beneficiaries have rated high for the problem, i.e., 'getting awareness towards technology used in Geoinformatics', further, 2nd rating was achieved for 'lack of training and infrastructure facilities' for getting the benefit of geo informatics. Respondents have given the 3rd highest rating to 'lack of assistance from experts'. Overall, the results clearly shown that, despite Geoinformatics expected to provide assistance for identifying and generating potential markets for selling the agricultural commodities, there is a need for creating the awareness among the beneficiaries towards the applications, usage and taking the assistance for diversified needs.

Time limit for developing application and creating database was just six months, which was a short period. As the agricultural commodities production and demand always keep changing due to weather conditions, availability of resources, providing timely assistance of information is a big challenge for Geoinformatics.

Though the scope of Geoinformatics is very high which can be a great resource for cultivators, marketers and buyers, the level of technology used for Geoinformatics and geoinformation system consists of remote sensors, smart phone technology, image viewers, computers, high resolution printers, support of internet technology, support of hardware and software equipments, storage devices. All these potential sources result in costly in applying Geoinformatics. Hence, there is a desperate need for support from government, experts of GIS and the assistance of experts for especially to the rural markets where the beneficiaries are not capable to bear the expenses.

Recommendations for Advancement of Geoinformatics

It is being recognized that, the ability of Geoinformatics has extreme role to play in especially for agricultural related rural marketing. Complexity in rural marketing always provide the development of new avenues, Geo informatics has been recognized as one of those sources where the generation of integrate maps and databases, using the geography as the common feature among the various requirements have been extremely effective if it is supported by the government, scientists, researchers and the end users. Hence, there is a need for Ministry of Information Technology, research institutes, researchers, NGOs, media and the public to promote and propagate the awareness as well as implementation assistance in order to make the beneficiaries to understand the usage and applications of Geoinformatics. Creating the synergy of companies, marketers, beneficiaries under common platform will help each among them to understand the benefits that can be achieved through implementation of Geoinformatics. From the results on opportunistic scenario of Geoinformatics, it is observed that, it is a specialized essential technology and with training to the beneficiaries and section of beneficiaries, it can create capacity of local marketers and communities to generate ample spatial database and can act as an interface between the marketers and the buyers ensuring that rural marketing remain highly successful in India. An open platform approach in geo-informatics may enhance deeper understanding and involvement of community and decision makers in utilizing technology

for sustainable developmental planning at the grass root level. Thus study shows how application has radically improved the process of the analysis and creation of route plan for rural marketing.

R**eferences**

1. Singh A.K. and Chopra U.K.(2007), "Geoinformatics applications in India-retrospect and prospects experience of National Remote Sensing Agency(NRSA)", New India Publishing Agency, New Delhi.
2. Samo Drobne, Anka Lisec and Marija Bogataj(2008), "GIS analysis of Rural Land Market in Slovenia", paper presented in 11th AGILE International conference on Geographic Information Science 2008, University of Girona, Spain.
3. Constructing Group for International Agricultural Research report on Geoinformatics.
4. Chander Mohan et al.(2012), "Role of GIS in Micro level planning watershed management for Rural development", International journal on Research analysis and evaluation, vol.4, issue 39, December, 2012.
5. Reports generated by mapmy India.
6. NIRD's reports on Geoinformatics.
7. Kolagani, N., Ramu, P. & Varghese, K. (2012). Participatory GIS in Empowering Rural Communities: A Framework for Iterative Development and Evaluation, 6th International Congress on Environmental Modelling and Software, Leipzig, Germany, July 1-5, 2012.
8. Venkatachalam, P., Krishna Mohan, B. & J K Suri, (2001), An Educational and Training Tool for GIS and Remote Sensing: 22nd Asian Conference on Remote Sensing, Singapore.