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Components of Geographic Research: An Overview

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Abstract

Research is a quest for truth. So, the discovery of truth would automatically be impactful. Every land is described by its Geographic features. The rivers, lakes, mountains, deserts, and every natural feature, are part of its Geographic makeup. Volcanoes, hot springs, sea coasts and currents, the roads and infastructure, are all included in Geography and require research for their understanding.

Geography includes physical geography that examines the physical features of the earth like mountains and oceans as well as human geography like ethnic and political distributions. So geography has a very wide scope. Nature of Geography lies in that it deals with man environment interrelationships and their mutual coexistence and scope is to observe these changes in their time and space specific ways.

Geographic research is a specific type of research that is conducted in order to study the relationship of humans with the physical world or environment. It requires sense of objectivity on the part of the researcher.

Prepared on the available secondary data in the form of the research studies, the paper is a theoretical study on the geographic research which plays a vital role in the understanding of the relationship between man and environment. The findings reveal and produce an overview of the geographic research including all the major aspects of the geographic research.

Keywords: Geographic, Research, Data, Null and Alternative Hypothesis, Field Survey, GIS, Field Observation

Introduction

Geo-means earth and Graphy means translation into pattern or map. Hence, geography is study of earth in maps or contours. Geography is a complex and sprawling subject. As 'a world discipline' and 'the bridge between the human and the physical sciences', Geography has always been helpful in the understanding of the natural phenomenon and the various geographical conditions that allow the humans to survive accordingly. Geography is highly inter-disciplinary in Nature . It derives its study matter from other sciences and social sciences and does its synthesis.

Since it is highly inter-disciplinary in nature so it shares close links with other sister disciplines, namely, human geography and physical geography and likewise its scope expands. Human geography studies the relationship between humans and environment, while physical geography studies the entire physical phenomena.

The basic scope of geography as the word states is geo: the Earth. Geography should not be taken merely as a memory test or simply memorizing physical locations or even mapping places like capitals, countries, rivers or mountain ranges on the surface of the earth, rather it involves the understanding of the spatial relationships between things, including physical things, and social or cultural and conceptual things. It is about why things such as oil, cities, languages and religions are; where they are and how they got there. It's about space and how things are related to each other in space, and why patterns matter.

There are the four historical traditions in geographic research each of which is significant in itself. They are- spatial analyses of natural and the human phenomena, area studies of places and regions, studies of human-land relationships, and the Earth sciences. Geography offers several career options with numerous specializations.

Cartography

Geographers who specialize in this sub-category of geography make maps, charts, globes, and models

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Survey

Geographers can specialize in surveying, either by joining the Survey of India or state survey departments or private organizations. Surveyors map the surface of the earth through mathematical observations and field work.

Urban and Regional Planning

The specialization is concerned with planning, housing, and development projects with respect to their location and utilization of available land-space.

Town Planning

Town planning relates to and is helpful in urban planning and design.

Remote Sensing

Studies of quickly changing phenomena such as floods, draught and forest fires, etc. Remote sensing satellites provide a variety of information about the earth's surface

Climate Change Analysis

Geographers are required to analyze scientific data and conduct research concerning climate and climate change and make prediction regarding the future of Earth's climate and weather.

Research plays a dominant role in the understanding of phenomena as a whole. Researchers consider multiple theories for the understanding and study of any set of phenomena.

Traditional research methods consist of implementing quantitative and qualitative research. Quantitative research utilizes statistical analysis by breaking down components of observation that are compared to other elements (Bergman, M. M., 2008). Qualitative research focuses on investigating the participant's range of behavior, usually with small groups, which results in descriptive analysis (Bergman M. M., 2008).

In all the researches the study of 'why', 'what' and 'how' is made under a determined research design. The scientific spirit is instilled in the research work through the rigid adoption of the prescribed steps of the research process.

Geographic research is multifaceted in its methodological approach. It embraces study of human geography and physical geography. In other words, it includes geomorphology and biogeography, historical cartography, political and cultural geography, and regional geography. Observation, local fieldwork, remote sensing, display and analysis of data and generalization etc. are some of the components of geographic research. In geographic research, techniques of research are developed in order to address specific problems and to reflect the focus of discipline at particular times, decisions of the researcher, the spatial scales to be set for the collection, compilation, analysis and display of information, sampling of data, research and experimental design, representation of data and various methods analysis of data.

Objectives of the Study

1. To study and interpret Geography as a discipline
2. To reflect the nature and scope of Geography
3. To discuss the significance of research in the understanding of phenomena
4. To explain the traditional approach to research
5. To discuss research methodologies adopted under different disciplines
6. To reveal and explain geographic research
7. To elaborate the significance of geographic research
8. To concentrate and discuss the importance of geographic research in India
9. To interpret the various components of geographic research
10. To predict the future of geographic research in India

Review of Literature

Matthew A Zook & Mark Graham (2007) survey the role of the web-based services that combine spatial coordinates and indexes of online material in the conduction of geographically referenced Internet searches. The study characterizes the resulting hybrid space as DigiPlace—that is, the use of information ranked and mapped in cyberspace to navigate and understand physical places.

Bryant (2010) studied the use of Collaborative Inquiry Model (CIM) during professional development on the rate of effective GIS implementation in K-12 classrooms. The study finds that lack of curriculum, support, and access to local data are the major barriers to the implementation of GIS in the geography classroom. The Geography teachers exercise GIS in the classroom often use the program as a digital atlas instead of as a tool for geographic inquiry.

S. Kanakachary (2010) discusses the regional disparities and their increasing trend in his research by dividing the districts into 6 sub regions in A.P. The findings of the study state that 10 districts in the state are developed in agriculture of which 6 are in Telangana, 3 in Andhra and only one in Rayalaseema. North Telangana is at the top while North Coastal Andhra is at thebottom. Telangana is in Ist place in agriculture followed by Coastal Andhra and Rayalaseema.

Chang-fan, et.al (2011) study the significance of remote sensing technology in geographical research, saying that it is widely used in urban land use monitoring and high-resolution mapping. The researchers change current use of high-resolution remote sensing technology to monitor urban land use change research status and analysis.

Shaughnessy, J., Zechmeister, E.& Jeanne, Z. (2011) observe that questionnaires are the most commonly used tool in geographical survey research. The findings of the study reveal that the results of a particular survey are worthless if the questionnaire is written inadequately. The authors suggest that the questionnaires should produce valid and reliable demographic variable measures and should yield valid and reliable individual disparities that self-report scales generate in order to supply and provide required legitimate data.

Verma Ravindra K., Kumari Sangeeta and Tiwary R. K.(2011) discuss in detail how the Remote sensing and GIS technique for efficient urban planning in India are to be used and exercised successfully and effectively. It is their idea that the

Indian cities will have to compete with others to attract investments and, therefore, issues like quality of infrastructure, energy efficient services provision and environmental conditions in a city besides economic stability would play a significant part in such competition. Urban planning profession in general will have to address these issues and respond rapidly. The study suggests that the urban planning authorities and agencies in the country should adopt new technologies like remote sensing and GIS.

Hasan Al-Hilani (2012) studies the issue of the measurement of human development. The author considers Human Deveopment Index (HDI) to be the most effective index that gives us information about country's education, health and longevity variables in addition to income. The study finds that HDI has been able to present us with a different perspective to view and analyze development.

Rajasthan Report. indd - UNDP in India (2012) says that framework reflects the interplay among three *dimensions* – the three levels at which Organizing training need *analysis* (TNA) and training impact assessment. The governments in the state have become *tools* for *poverty* reduction and form, while the middle level comprises of Panchayat Samitis (PS) at the *block* level.

Romanee Thongdara & Others (2012) raise and discuss at length the issue of the potential of descriptive statistics, the geographic information system (GIS), and spatial autocorrelation in recognizing poverty association of a site. Findings reveal that 70% of the total households were poor, and farming was the only source of income of about half of them. Findings also reveal that GIS is a useful tool to identify environmental factors that influence poverty and spatial autocorrelation.

T. Cheng (2012) discusses the issue of health services research and development. Mapping and spatial analysis of indicators of locality health profiles and healthcare needs assessment were observed for the study. The study finds that the geographical perspectives play a vital role in PHC delivery, and for those engaged in informatics, understanding key GIS methods and terminologies are important.

Tiwari and Tewari (2012) study the GIS and all its aspects and advantages. The authors emphasize the need of the use of GIS at the school level. They are sorry to comment that the role of GIS is still limited to its use as a pedagogical tool among private schools. The study explores the challenges that are faced in adopting GIS and its associated technologies as part of the core curriculums.

Komlenovic, Manic and Malinic (2013) found that the majority of students are familiar with the GIS, but only one third of them have theoretical knowledge and practical skills for its effective implementation. The study found that GIS is a useful and effective tool to the development of cartographic skills. Through the study it is suggested that the GIS and other ICTs are still not fully used.

Ashish Dhar Mishra & Rahul Chaudhary (2014) analyze the health, education and income index and conclude that in health index, Kerala has taken higher rank than Punjab, Maharashtra, Madhya Pradesh, Andhra Pradesh, Assam and Bihar have taken a consistency lowest rank. In education index, Himachal Pradesh has taken highest rank. Rajasthan, Bihar, Jharkhand, Assam and Bihar have taken a consistency lowest rank. In income index, Goa has taken higher rank than Haryana, Maharashtra and Gujarat. Madhya Jharkhand, Assam and Bihar have taken a consistency lowest rank. Karnataka, Tamil Nadu, Andhra Pradesh have taken moderate rank.

Tania Rossetto (2014) studies the significance of cartography, and comments that it has led to a need for a 'recartographization' of the field. The study and its findings suggest that literary criticism, with its creative use of mapping words, and, above all, literary texts, with their involvement of practising maps, should be reconsidered as relevant sources for cartographic theorization and mapping research.

Tomaszewski, Vodacek, Parody and Holt (2015) studied the thinking ability of the rural and urban male and female secondary school students and concluded that the urban school students have a better thinking ability, and that the male students have a better thinking ability than the female students.

Hypothesis

1. Geography is a specific discipline which studies the earth and the occurrences on the earth
2. Unlike common research, the geographic research is confined to the study of the geographical aspects only
3. Geographic research has its own methodology and research techniques that enable the geographer to collect, classify, analyze and display the information
4. Geographic research is helpful in understanding the relationship of humans with the geographical environment and earth
5. Geographic research is getting more and more popularity day-by-day
6. Geographic research is based on observation and experiments

Methods

For the study, secondary data available in the various research papers published in the reputed national and international journals were used. The studies were selected for the purpose include both the ones that were conducted in India and those that were conducted abroad. The scientific spirit of the study was maintained through the adoption and exercise of all the steps required for the research.

After the selection of the title, a thorough study of the related literature was made through books and journals in order to be familiar with the problem to be studied. Secondly, objectives were specified for the sake of line of action. Thirdly, hypothesis was formulated on the basis of the previous knowledge and personal experience. Fourthly, Research design was prepared to smoothen the work.

Next, the selected studies were classified in accordance with their nature and theme; contents were analyzed; explanation and interpretation of the

important aspects of the problem was made and discussed. Throughout, the focus was made on the geographic research and its various techniques and methods with a view to develop an understanding of the geographic research.

Findings

1. Geographic research relates to both the physical geography and the human geography
2. It is helpful in understanding the relationship between man and environment and earth
3. The web-based services are very helpful in the conduction of the geographic research these days
4. GIS and Remote Sensing are effective and appropriate techniques in geographic research, but the implementation of GIS is not made properly
5. GIS and Remote Sensing should be included in the curriculum at the school level in order to prepare the future-geographers
6. Remote sensing and GIS technique can make the urban planning in India quite successful, therefore, they should be used for this specific purpose
7. Descriptive statistics, GIS and spatial features are auto-correlated and capable of finding the poverty
8. Mapping and spatial analysis are capable of reflective of indicators of locality health profiles and healthcare
9. Regional disparities in terms of physical environment lead to geographic research
10. Remote sensing technology is helpful in urban land use monitoring and high-resolution mapping
11. Questionnaire is the most popular tool in geographical survey research
12. HDI is the most effective index to supply information about education, health, longevity variables and income.
13. Knowledge and understanding of cartography and its latest trends is essential for the geographers, as it enables them to display the information through maps.

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