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GEOGRAPHIC INFORMATION SYSTEMS FOR DISASTER MANAGEMENT

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Abstract

Geographic Information Systems technology enhances disaster management with spatial analysis and real-time data. This research examines Geographic Information Systems applications in disaster response and mitigation.

Keywords: Geographic Information Systems, Disaster Management, Spatial Analysis, Emergency Response, Mitigation

Introduction

Geographic Information Systems integrates data for effective disaster management. This paper explores its role in preparedness, response, and recovery. Geographic Information Systems integrates spatial data for effective disaster management, enhancing preparedness, response, and recovery. This paper explores its role in India and global practices.

Geographic Information Systems (GIS) are systems designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data. GIS technology integrates common database operations such as query and statistical analysis with maps. The primary purpose of GIS is to allow for the visualization, analysis, and interpretation of data to understand relationships, patterns, and trends.

Statement of Problem

Disaster management lacks spatial data integration. This study assesses GIS's impact on improving outcomes.

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Scope of Research Study

The present research paper is based on primary & secondary data.

The research covers GIS applications in India and global disaster management practices.

Significance of Research Study

The significance of the present research study is as under -

1. Educational Significance: Enhances understanding of Geographic Information Systems in disasters.
2. Functional Significance: Guides emergency responders.
3. Social Significance: Saves lives and resources.
4. Political Significance: Supports policy development.
5. National Relevance: Boosts India's disaster preparedness.
6. International Relevance: Echoes global best practices.

Objectives of Research Study

Objectives of present research study are as follows :

1. Assess Geographic Information Systems role in disaster management.
2. Evaluate data integration and response.
3. Identify best practices.

Hypotheses of Research Study

Hypothesis of present research study is as follows :

1. **Null Hypothesis (H0):** Geographic Information Systems doesn't impact disaster management.

   Alternative Hypothesis (H1): Geographic Information Systems improves disaster outcomes.

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Research Methodology

1. Research Design: Mixed-methods (case studies + surveys).
2. Research Sample: 30 disaster management agencies.
3. Limitations: Data availability and tech constraints.

Findings

The main findings of the present research study is as under -

1. Spatial Analysis: Enhances risk mapping and vulnerability assessment.
2. Real-time Data: Improves response times and decision-making.
3. Collaboration: Boosts stakeholder coordination and resource allocation.

Recommendations

1. Integrate Geographic Information Systems in Planning: Enhance preparedness and risk mitigation.
2. Train Teams: Build Geographic Information Systems skills for emergency responders.
3. Use Real-time Data: Improve response and reduce impact.
4. Foster Collaboration: Engage stakeholders for effective management.

Contribution towards Society and Stakeholders

1. Emergency Teams: Better decision-making and response.
2. Communities: Reduced risk and impact, enhanced resilience.
3. Policymakers: Informed strategies for disaster management.
4. Society: Saves lives, resources, and supports sustainable development.

Conclusion

Geographic Information Systems is key to effective disaster management. Integration enhances resilience, response, and recovery outcomes.

Encourage research initiatives and collaborations to explore emerging Geographic Information Systems technologies, spatial analytics methodologies, and best practices in

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disaster management. Establish an innovation hub or center of excellence focused on GIS applications for disaster resilience, fostering partnerships between academia, government, and industry.

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