

Preserving built heritage, and heritage areas using advanced geographic information systems (GIS) technologies

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Abstract:

Built heritage represents as a tangible reflection of a nation's history and civilization, serving as an integral part of its cultural identity, this heritage is increasingly under threat due to rapid urban expansion, driven by various socioeconomic factors, posing a significant risk of losing cities' unique identities and cultural heritage. This study aims to explore the role of Geographic Information Systems (GIS) in preserving this built heritage, its types, and patterns of urban growth, while exploring the role of Geographic Information Systems (GIS) in preserving this built heritage. The research focuses on the utilization of advanced GIS technologies at various stages of preservation, including the identifying and documenting heritage sites, analyzing spatial data, studying the drivers of urban growth, and modeling and predicting future urban growth patterns, and assessing the impacts and risks faced by heritage sites, the study seeks to develop heritage management plans. The study presents several prominent examples of the application of advanced GIS technologies in this field. Through this research, we aim to contribute to the development of effective strategies for preserving built heritage and promoting sustainable urban development, thereby achieving a balance between urban development and the protection of heritage areas. The concept of preservation has expanded beyond mere restoration and improvement of landmarks. It now encompasses safeguarding heritage within the framework of sustainable urban development plans, striking a delicate balance between preservation and the various aspects of sustainable development that respect its cultural value and richness. This requires concerted efforts from governments, local communities, and civil society organizations to safeguard this national treasure, as it contributes to supporting the local economy through sustainable tourism and job creation. Rapid urban growth places considerable strain on all areas of a city, influenced by a variety of factors including population growth and economic progress. This expansion poses a risk of diminishing the city's unique identity and its distinctive urban characteristics. Maintaining the unique character of cities, especially regarding heritage sites, presents a challenge. On one side, rapid growth can exert significant pressure on these areas, threatening their cultural and historical significance. Conversely, it can provide opportunities to make them more appealing to both tourists and local inhabitants. . by finding a balance between preserving cultural heritage value and catering to the needs of sustainable urban development . Given the increasing pressure of rapid urban growth in cities, it has become imperative to employ the latest technologies during planning processes to manage urban growth and make informed decisions. Consequently, institutions and organizations involved in planning and decision-making have sought to utilize Geographic Information Systems (GIS) to support planners and decision-makers in making critical decisions that require speed and accuracy based on reliable information. This contributes to the preparation of accurate planning studies and enhances the efficiency of planners, thereby supporting sound urban planning and development decisions. This research explores the strengthening of the interconnected relationship between heritage preservation and sustainable urban growth planning through the application of Geographic Information Systems (GIS), examining how these two disciplines can

work together.

Statement of the Problem: Rapid urbanization poses a threat to heritage areas, eroding their unique identity and character. This research investigates the potential of Geographic Information Systems (GIS) to aid in the conservation of these valuable urban assets and contribute to sustainable urban development.

Objectives Research: The primary objective of this research is to investigate the role of Geographic Information Systems (GIS) in the study, monitoring, and preservation of heritage areas. The study will begin by defining heritage and heritage areas, examining relevant policies and strategies, and identifying the major challenges faced by heritage areas. Subsequently, the study will explore urban growth patterns and their impact on heritage sites. Finally, the research will delve into the application of GIS technologies in urban planning and heritage conservation

Research Methodology: A descriptive-analytical approach will be utilized in this study. The descriptive component will provide a comprehensive overview of heritage, heritage sites, urban growth, and GIS. The analytical component will involve a systematic review of existing literature and case studies to identify the various ways in which GIS has been applied in heritage site studies. By comparing and contrasting these case studies, the research will identify best practices and potential challenges in the application of GIS for heritage conservation.

Results: This study highlights the potential of Geographic Information Systems (GIS) in preserving heritage areas and integrating them into sustainable urban development plans. include: 1- The establishment of a clear definition for heritage areas based on local and international standards. 2- An analysis of the impacts of rapid urbanization on heritage areas and the identification of strategies to mitigate these impacts. 3-The demonstration of GIS as a powerful tool for various applications in heritage conservation, including documentation, impact assessment, and planning. By leveraging GIS, urban planners can make more informed decisions to protect and enhance heritage areas

Conclusion: Heritage areas face numerous challenges due to rapid urbanization, Geographic Information Systems (GIS) offer a powerful tool to address these challenges and support sustainable urban development.

Recommendations: 1) Develop and implement comprehensive GIS-based planning frameworks. 2) Strengthen the technical capacity of urban planners. 3) Foster collaboration among stakeholders and promoting community participation in planning and conservation efforts 4) Promote research and education in GIS and heritage conservation, by addressing these key areas, to ensure the long-term preservation of heritage areas. □

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