Journal of New Ideas in The Geographical Sciences
Sanad.iau.ir/journal/ntigs
ISSN: 2981-1473
Volume 7, Issue 3, Nov 2024
IAU Mahshahr Branch
Doi : https://doi.org/10.71787/1071787/ntigs.2025.1130066
Received: 25/08/2024 Accepted: 05/11/2024

Pathological Sprawl and Horizontal Expansion of Ahvaz Metropolis Based on COCOSO Model

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Abstract
The rapid growth of urban populations worldwide, especially in developing countries, poses a significant challenge for governments and planning organizations. In recent decades, among various urban growth patterns, the pattern of sprawling growth has become the dominant spatial development trend in many countries. This study aims to diagnose the pathological sprawl and horizontal expansion of the Ahvaz metropolis. This research is applied and uses an analytical-descriptive method. The data collection method in this research is library-documentary and survey-based. The COCOSO multi-criteria decision-making technique was used to analyze the data. The results obtained from the COCOSO method showed that districts 1 and 8 of Ahvaz city, with the abbreviation B and a final weight of 0.942 in the COCOSO test, have the most favorable conditions. Districts 2 and 6 of Ahvaz city, with the abbreviation D and a final weight of 0.491, have the least favorable conditions and the least impact among other areas compared to the study components. In conclusion, considering the negative consequences of sprawl and to achieve sustainable development and a sustainable urban form, a compact growth pattern is proposed as the future development pattern of the city.
Key words: **Sprawl, Urban Neighborhood Livability, Ahvaz Metropolis**

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Extended Abstract

Introduction

The rapid growth of urban populations worldwide, particularly in developing countries, poses significant challenges for governments and planning organizations. Currently, 54% of the global population resides in urban areas, and this figure is projected to rise to nearly 68% by 2050. Undoubtedly, the inevitable outcome of this trend is the spatial expansion of cities beyond their borders into surrounding areas to accommodate the growing urban population. In Iran, following the increase in oil revenues in the 1960s and 1970s, rapid urbanization began, leading to an increase in rural-to-urban migration rates. In modern urban management systems, various models have been proposed to address these challenges. It is essential to note that the rapid population increase, coupled with swift urbanization, has created numerous problems for policymakers and urban managers, particularly in cities like Ahvaz. As a newly emerging metropolis due to the establishment of oil industries, Ahvaz currently spans approximately 22,000 hectares, experiencing uncontrolled growth that far exceeds its infrastructural capacity. Factors such as population growth, the development of oil industries, the provincial center's status, urban service establishment, and the attraction of populations from cities and villages in the province have led to unbalanced expansion and the creation of 5,773 hectares of barren land within the city limits due to urban planning regulations and comprehensive urban plans.

Data and Methodology

This research is applied in nature and employs an analytical-descriptive method. The statistical population consists of individuals aged 20 and older in Ahvaz, totaling 804,461, with a sample size of 383 determined using Cochran's formula. Reliability testing was conducted using SPSS software, yielding a Cronbach's alpha of over 0.7 for all variables, indicating good reliability of the instruments. For data analysis, after collecting the necessary data and information, the results and findings were analyzed using the COCOSO multi-criteria decision-making technique.

Results and Discussion

Ahvaz, as a newly emerging metropolis due to the establishment of oil industries, currently covers approximately 22,000 hectares. Its uncontrolled growth has led to a significant population influx, far exceeding its infrastructural capacity. One of the issues contributing to the environmental crisis in Ahvaz is the general public's lack of awareness regarding environmental value and the failure to adopt appropriate policies for utilizing community capabilities and participation. Additionally, the absence of suitable programs and policies for leveraging and directing social capital towards environmental management and planning is identified as a primary cause of environmental degradation and pollution in Ahvaz. This study evaluates the pathology of urban sprawl and horizontal expansion of Ahvaz metropolis concerning the quality of services and livability of urban neighborhoods.

Conclusion

According to the results obtained from the COCOSO method, regions 1 and 8 of Ahvaz have been designated with the letter B, achieving a final weight of 2.94, indicating the most favorable

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conditions. In contrast, regions 2 and 6 received the letter D, with a final weight of 1.49, representing the least favorable conditions and minimal impact among other areas concerning the studied components. Migration and informal settlement, the integration of villages within urban boundaries, and the connectivity of road networks are among the factors exacerbating urban sprawl. Therefore, managing the physical growth of the city to reduce urban sprawl and prevent land cover changes in the peri-urban area should be prioritized in urban planning and management. By enhancing participation and utilizing individual capabilities, the technical, social, political, and environmental knowledge of the citizens of Ahvaz can be improved. This sense of involvement in their living environment fosters emotional connections with their surroundings, reducing behavioral indifference and increasing environmental oversight, which in turn strengthens individual and social security, preserves and revitalizes cultural and ideological identity, promotes altruism and cooperation, protects the environment, and establishes spatial order and balance, encouraging individuals to strive for desirable personal and collective goals, ultimately motivating marginalized groups to work towards creating a suitable living environment for themselves and future generations.

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