

***Spatial Analysis of Smart Growth Indicators
(The Case Study: Regions of Isfahan)***

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Extended Abstract

Introduction

Nowadays the subject of “Sustainable Urban Form” is considerable challenge for urban planners. In American countries, during last two decades, some novel approaches, namely “New Urbanism” and “Smart Growth”, have been considered for making urban environments more sustainable. However, sustaining the urban environments in the smart growth theories and compact cities’ frameworks confronts with some criticism. In urban planning, the fair distribution of land uses and the availability of local and regional services with the priority of side walk and compact form have been notified. The main pivotal consideration about this view is the fair distribution of land uses and “compact form” with the maintenance of environment which lead to limited use of vehicles for transportation.

Methodology

The research methodology is of descriptive-analytical and correlational. For analyzing data different quantitative planning models like Topsis multi-criteria decision making, Entropy, dispersion coefficient, cluster analysis and regression analysis are used. The research population includes 14 regions of Isfahan which is based on political divisions in 1388. The research indicators can be divided into four groups of social-economic (17 indicators) , physical and land using (34), environmental (7) and access and communication (13) indicators. The accumulation

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of aforementioned indicators makes a smart growth composite index.

Results and Discussion

Based on the carried out investigation, among the 14 region of Isfahan, district 8 in social-economic index, district 5 in physical and land using index, district 2 in environmental index and district 3 in access and communication index are standing at the top of the score. In composite index, the city smart growth of district 5 has had the highest score.

For accessing to a definitive ranking by considering smart growth index, all the 75 indicators are used with the application of Topsis model and the results came out with a slight difference. Considering the composite indicators, district 5 with the Topsis score of 0.6337 takes the first grade, this district has dedicated the first grade in physical and land using index as well. The last grade, with the Topsis score of 0.0528, refers to district 14. It owns the last grade in access and communication index as well. The average score of composite indicators equals 0.2047 and its standard deviation is 0.1404. Region 5, 6, 3, 8 and 5 own the scores upper than average score and the other region have the scores lower than average. The results based on ranking show that 14 region of Isfahan all have various scores and outcomes in socio-economic, physical and land using, environmental, access and communication indicators. This indicates the inequality and profound difference in some of indicators. The most inequality is visible between access and communication indicators and the least one is between socio-economic indicators. The investigation on the relationship between the score of population density and composite smart growth indicators reveals that there is no intimate relationship between population density and the smart growth indicators. Its reason goes back to the city span and the low building density of Isfahan. But among the physical and land using indicators and the grade of composite smart growth indicators there is a meaningful relationship of 0.93. To predict the indicators effective on smart growth, the regression analysis is used. The results obtained from the conducted study on regression analysis shows that among socio-economic, land using and physical, transportation, communication and environmental indicators, there is no fitted meaningful final regression model in socio-economic and environmental indicators and the land using, physical, access and communication indicators are meaningful. According to inequity in smart growth indicators, the region with "underdevelopment" like the region 14 and 10 are the prior in planning and mid-development region are at the second phase of urban planning.

Conclusion

Accessing to Sustainable Urban form requires putting the smart growth strategy in disciplining the sustainable form of the city as a dominant strategy. This matter not only leads to environmental protection but also frustrates the city expansion and makes the rate of trips weaker in local and regional region. To obtain such sustainability, we require designing and land using planning based on side walk and open access of distribution services in the whole city. The optimal use of arid lands, fast completion of Isfahan metro, increasing of building density around the city, designing the pedestrian and bicycle paths, all as pivotal approaches are considered to access the smart growth algorithm in different region of city.

Keywords: *Smart Growth, TOPSIS, Ranking, Regions, Isfahan City.*