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Evaluation of Smart Urban Growth Pattern in Iranian Newtowns' Point on Sadra Newtown Using SLEUTH Model

Introduction

In recent years, the irregular and rapid expansion of urban areas with the congestion and excessive of people concentration in the Iranian metropolitan areas has faced the continuation of urban life healthy with the serious risks and challenges in the different aspects. By using this approach, with over of time the cities don't have ability to provide the essential services to their citizens in the spatial and geographical framework and they have to seek the optimal spatial development with an emphasis on the concepts of smart urban growth as a remedy to end the non-development planning of cities. In order to, there were taken different strategies for urban development in the around of the world from 1930- 2016. On the other hand, knowledge about land use ratios in an urban environment and how its changes overtime is one of the main considered issues in the modeling and urban planning. In the meantime, it can be made the anticipate of future changes and take suitable strategies with knowledge about the land use changes in the overtime. It can be

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concluded that the best vehicle for assessing of urban environment changes in case study region is using of satellite multiple images and Remote sensing technology for extracted of urban land uses especially in new towns. Therefore, the aim of this research is evaluation of smart urban growth pattern using SELUTH model in the Sadra new town as case study region of this research.

Material and Methods

Applied methodology is descriptive- analytical, based on literature review, documentary and model analysis. In the continual of this process, obtained historical data by helping satellite images taken in the different periods of time from Sadra new town were analyzed during three stages (first stage: analysis the historical growth of case study region; second stage: identifying the future development limits Sadra new towns and third stage: considering the favorable and unfavorable spatial distribution). Then, the spatial-physical changes of Sadra new towns was investigated using RS data (multi-temporal Landsat satellite images, TM, ETM and OLI sensors for the years 1989, 1995, 2002 and 2010). In this regard, the first satellite images for different years were obtained from the Geological Survey of America and then for reconstruction, geometric and radiometric correction was transferred to the IDRISI software. were created the False images of 2, 4 and 7 bands using the composite module. Applied variables in this research included slope, transportation system, land use, population explosion, and placement of facilities in certain urban areas such as hillsides and slopes. The value was defined as the amount of 100% for all data and it was predicted to measure the slope of domain specific algorithm. Finally, desirable physical development model was presented using the appropriate and inappropriate measured coefficients in two frameworks of special and historical approach.

Discussions and Results

In geographical studies, subjective factors of human life experiences are affecting as objective factors. Sadra new town as a settlement unit is influenced by space and behavioral schools whether consciously or unconsciously. Some factors such as land uses, satisfactory, sense of place, human expectations, comfort and security, when existing show that humans use them as premier element space. SLEUTH model is considered as other cover ing models such as (UMG) and (DLM) in urban planning. In SLEUTH model, urban growth is determined according to four performance impacts: the spontaneous development, formation of new areas in the city for new urban cores, distribution of transportation system and the distribution of accelerated communication facilities (such as bridges). used data for import into the model, grading, growth model prediction, presentation of the results stages and images which are transmitted by the Landsat satellite in all forms of MSS, TM, ETM and IRS waves. For the reconstruction and predicted growth of Sadra between the years 1991 to 2011. maps were combine on layers of urban and non-urban areas has made this ability to provide a better model of Sadra new towns movements. After successful completion of data ranking, average values were used to smart urban growth model prediction in the future. This prediction was performed by completely segregated data. The final result has been shown in Fig (1) as follows:
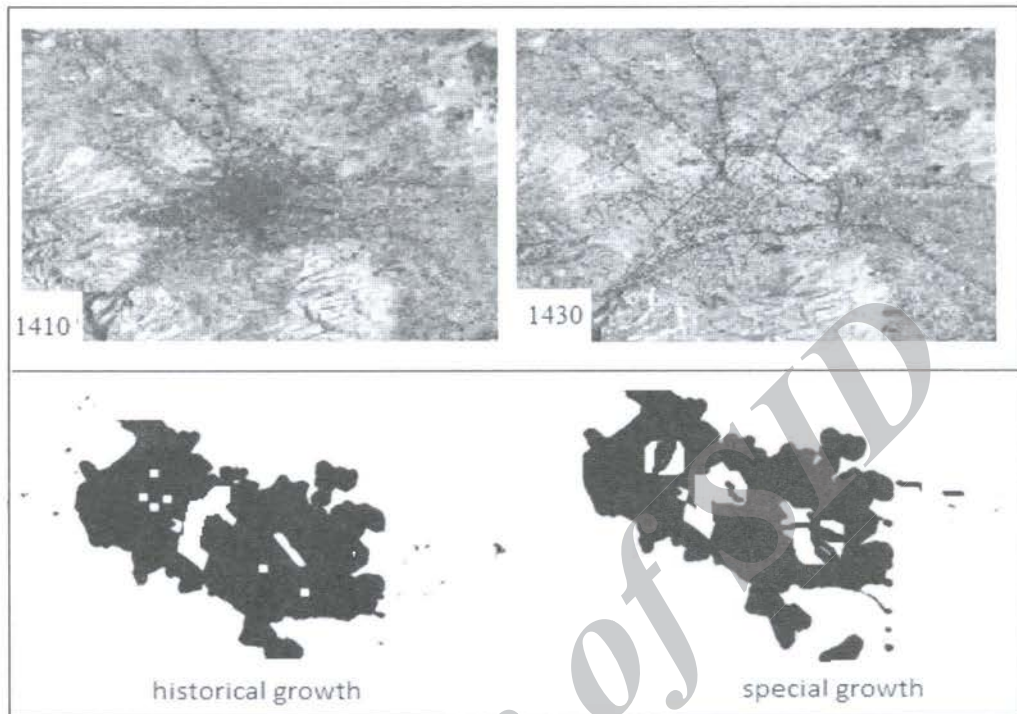
Fig.1. Sadra new town growth prediction using two factors: (1) historical growth and (2) smart urban growth. (Smith & Johnson, 2008)

It can be said that in one side, the new construction project of Sadra new town and lack of constructions in proportion of people who entered into Sadra and in recent year's and new Mehr housing project within the framework of Sadra town in other hand to divest the shared houses to deprived groups wich led to the distribution of Sadra new town growth.

Conclusion

Initially, smart urban growth in the case study region was quite deliberate and controlled. After the transfer of some of facilities to this area by people and governors, the existing lands of Sadar new town began to be occupied by citizens without any planning. Finally, we achieved the following results:

1. From the beginning of Sadra new town the growth has not had a logical planning process;

2. SLEUTH model performance is based on UNIX, DLM and UGM systems. In the framework of these systems, some issues such as urban growth centers and distribution and spatial diffusion phenomena were discussed. While, the presentation of social phenomena distribution was not very common in the context of simulation approaches;

3. SLEUTH smart urban growth model does not pay enough attention to people and social needs in urban planning process.