

Identifying and Measuring the Structural Relationship of Strategic Leadership Explanatory Factors in Urban Management: Case study: Isfahan metropolis

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Extended Abstract

Introduction

Due to the growth of urban population in recent years and the desire to live in cities (immigration), open lands inside and around the cities has been used and also changed their usage. On the other hand, the development of cities in the past and present has been carried out by people and over time; and these developments have usually been without regard to natural hazards, including floods, earthquakes, and so on. Basically, natural hazards affect the organization and foundation of urban life more intensively and more than villages and other human settlements. One of the natural hazards that we are faced with in Iran is the earthquake. The city of Neyshaboor, as one of the middle cities of Khorasan Razavi province, has been faced with increasing population and changing the use of agricultural and open lands. In addition to its population, the city also accommodates an immigrant population every year and also provides part of the need for small towns and surrounding villages. Therefore, the present study investigates the development of cities in response to the natural hazards of the earthquake with the aim of studying and forecasting land use changes in Neyshaboor city.

Materials and Methods

The present study is an applied type that was conducted through library and field studies. A major part of the research is obtained through survey work. In this study, OLI and ETM sensor images of Landsat satellite from 2000 and 2009 and 2018, were used. Initially, Landsat satellite images were geometric and radio-metric corrections. Then, the study area was separated from the images and then satellite data were classified. The method used to classify information is a supervised method. In this method, educational examples are used to classify pixels. It is also necessary to explain that the maximum similarity algorithm is used for classification of monitoring. In this method, the reflectance value of any unknown pixel are analyzed based on the variance and covariance of that particular spectral reaction class. It is assumed that the distribution of the data of each class is based on the normal distribution around the pixel of the average of that class. In fact, the variance and covariance and the average of each satellite's images in different class are calculated for the classification of phenomena, so that each pixel belongs to a class whose presence in that class is more likely to occur. Finally, based on the Markov chain model, we investigate the development of the city and investigate the active faults.

Discussion and Results

The present study consists of three parts: reviewing the changes of major city uses, evaluating the development of the city with regard to the earthquake risk and forecasting the development of Neyshaboor.

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Land use change study: At this stage, according to satellite images of 2000, 2010 and 2018, the boundaries of Neyshaboor and surrounding areas, agricultural lands, pasture lands and Wasteland were determined. In 2000 range built in Neyshaboor city and around it was 8%, it reached 10.5% over 10 years in 2010 and reached 14.3% over the next 7 years in 2008, which indicates an increase in urban use such as residential, commercial, service, transportation and so on. And most of the construction tended to the north and northeastern parts of the city and around it. And Population from 2006 to 2016 indicate that the population growth is due to the city's rate of growth and the natural growth rate of the migratory of Neyshaboor city and around it, which is important for increasing urban construction. Evaluating the development of the city with regard to the earthquake hazard: At least 4 historical earthquakes with $M > 7$ occurred in less than 200 years of 1209-1405 AD near Neyshaboor in northeastern Iran. The mechanism of known faults in the Neyshaboor range is compressive or have an important component of compression. Around the Neyshaboor city there are three active faults: Binaloud fault, North Neyshaboor fault and Neyshaboor fault. The north faults of Neyshaboor and Binaloud are in the range of the Binaloud Mountain, north of Neyshaboor.

City Development Forecast: Based on the Markov chain and CA Markov model, city development is forecasted. The future development of the Neyshaboor city tends to be closer to the north and northeast, while the mentioned range is within the average earthquake hazard range. And south of the city, which is in low hazard zone, is not the desired direction for future development. By the year 1409 (2030) the best direction for the development of the city is the south and southwest of the city.

Conclusions

What can be emphasized as the results of this research can be presented in the following cases?

- The Markov chain and the CA Markov model have great potential for forecasting urban development.
- With regard to the earthquakes occurring throughout history of Neyshaboor and its surrounding area, the earthquake for this city, like other cities in Iran, is the most important natural hazard.
- The development direction of the city is the northern and northeastern regions where the low depth of the earthquake is also in these areas. And earthquakes with more than 4.7 magnets have also occurred in these areas, while both of these factors increase the risks.
- The study area is located 170 to 340 meters from the faults, which requires safety and rehabilitation considerations.
- The future development of the city of Neyshaboor tends to be closer to the north and northeast, while the mentioned range is within the average earthquake hazard range. And south of the city, which is in low hazard zone, is not the desired direction for future development. By the year 1409 (2030) the best direction for the development of the city is the south and southwest of the city.
- In general, the northern part of the city, which is the main urban area and the main direction of city development, is more at risk, because it is located in the zone of earthquakes with a low depth and is located in the earthquake zone of more than 7.4 magnets and have a fewer distances with active faults.
- One of the best solutions to reduce earthquake effects is to observe the standard distance from earthquake and fault zones.
- The revision of Neyshaboor Urban Development Plan will protect urban management from future risks.
- The results of the research findings show the geography position in urban development projects more than before.

Keywords: Forecast, Urban Development, Markov Chain, Modeling, Neyshaboor.

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