

**Using Aeromagnetic Data and Geomorphic Evidence to Study  
the Hidden Fault Path in Khorram Abad Plain (West Iran)**

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**Introduction**

Study of tectonic and seismic movements of hidden faults is difficult because there are no geomorphic effects on earth surface or that have been buried by alluvial deposits; but the use of Aeromagnetic Data and geomorphic evidence can be of great help in identifying and studying the hidden faults in each region. Khorram abad plain is located in the folded Zagros region and has secondary and main faults. Khorram abad fault, the main and the nearest active fault to Khorramabad city, with northwest-southeast direction has been emerged at the southeast slope of khorram abad anticline. It has been referred to as a hidden fault, which is at a distance of 12 kilometers from Khorram abad's southwest. Surface outcrops of this fault in the south of Yafteh and Sefid Koh Mountains are observable in the west of Khorram abad. The continuation of Khorram abad fault is disappeared in surveying to southwest in Khorram abad plain. General investigation of geological maps and satellite images show that the surface of this plain is covered by  $Qt_1$ ,  $Qt_2$  and recent sediments. This sediment can result in hiding geological structures in the area and making it impossible to study such structures through observations based on the surface outcrops. Hence, investigating the probability of the existence of the continuation of Khorram abad fault under quaternary sediments in Khorram abad plain using aeromagnetics data in addition to the seismic data and field observations are main goals of this study.

**Methods and Material**

In this study, aeromagnetic data and geomorphic evidence were used to study the probability of passing Khorramabad hidden fault in Khorram abad plain. In order to achieving these goals, aeromagnetic data taken from 1975 to 1977 for Khorram abad area were gotten from geology organization. After correcting, aligning micro aligning and exerting the common corrective filters on these data in the Oasis montaj 6.4.2 software and creating database for them in the software, seismology data, geomorphology evidence and elevation changes were also used to prove the existence of a hidden fault in Khorram abad plain.

## Results and Discussion

Based on the results from the interpretation of magnetic maps in Khorram abad region, a magnetic lineament has been identified and studied. It has a northwest-southeast direction and has been studied in the center of the area. It's about 38 km long and passes an area in the distance of about 3 km to Khorram abad city's south. Integrating data from device recorded earthquakes in Khorram abad area into geomagnetic information elucidates close correspondence between magnetic lineament of Khorram abad specially hidden parts of it and the center of occurred earthquakes in the area. Of total 31 device recorded earthquakes in Khorram abad area, from 1976 to 2016, ten occurrences can be linked to this fault, because of short distance to Khorram abad fault. Generally earthquakes occurred at the area have more focus in the northwest-southeast direction and are in line with Khorram abad fault, specially hidden part of it. This overlap between earthquakes and the fault represents the relationship between this earthquakes and hidden fault of Khorram abad. Accordingly, the role of subsurface deformations in the occurrence of earthquakes in the area is clearly inferable.

Field observations show the existence of a gentle topographic mound in the  $Qt_2$  sediments around Choghaherooshi village located at southwest of Khorram abad. This mound with a height of more than 2 meters and length of about 130 meters has been extended to the northwest-southwest direction. In fact, it's a kind of mound related to its fault and it strengthen the probability of existence of a hidden fault at this area. In order to exactly determine the streak of the hidden part of Khorram abad fault, Longitudinal and transverse topographic sections due to possible faulting were drawn around the Choghaharooshi village and on this topographic mound. These sections, drawn within Khorram abad plain and passing the fault direction, directly measure topographic changes. These changes around the fault are evident in the topographic section by creating disorder and elevation changes and drawing them, exact location of the fault effect is identifiable. In this sections, rising of the hanging wall of the fault is evident and indicates activity of Khorram abad fault in the area and continuation of this fault with respect to its aligning with the overt part of Khorram abad fault. Presence of high alluvial fans relative to the surrounding environment, High depth of rivers bed, cut off of sedimentary layers on the river bank, Changes in the longitudinal profile of Khorram abad River and the river terrace are among the other proofs that affected the Khoram Abad plain hidden fault.

## Conclusion

One of the most commonly used methods to identify hidden faults is aerial magnetism, which its interpretation and modeling helps in identifying underlying and possible buried faults. The results of this study indicate that Khorram abad fault after crossing the mountain Yafteh and the Sefid koh, inter Khorram abad plain and under the quaternary sediments extends along that line. There are several indications that Khorram Abad hidden fault is located below the sediments of the plain. The presence of linear magnetic anomalies in the next section of the obvious Khorram abad fault, geomorphic evidence such as mounds, alluvial fans, river terraces and altitude variation in survey sections, prove that this fault is hidden. This line with the trend of northwest - southeast in the central part of the study area, It passes about 38 km from the distance of about 3 km from the south of

Khorram abad city. The results of this study show that analyzing aerial magnetic maps and geomorphic evidence of active faults can be effective in identifying hidden faults and areas susceptible to large earthquakes.

**Keywords:** Khorram abad plain, Hidden fault, Geomorphic evidence, Aeromagnetic data.

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**Monitoring of Vegetation Changes (Pistachio Gardens) Using Processing of Multi-Spectral Satellite Images, Case study: Anar City (Kerman Province)**

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**Introduction**

In recent decade, the use of remote sensing technology has been considered in order to changes monitoring and several studies have been carried out in this field in Iran and in the world. Today, the role of remote sensing techniques and different ways of detecting changes is evident for experts. Knowledge of agricultural land cover and monitoring of its changes is considered as one of the most important issues in economic and social planning, over time. Different methods have been used to classify satellite imagery such as, the maximum probability, object-oriented classification, the NDVI index and the decision tree method, each of which has its own characteristics. However, the comparisons that made by the researchers, between different methods confirm to the accuracy of the decision tree method is better than the other categorization methods of satellite image. The NDVI index, always is one of the best methods to investigate the vegetation cover. Accordingly, in this research, considering the single production of Anar, and its strong economic dependence on pistachio production, we tried to use NDVI index and decision tree methods, to evaluate the level of pistachio changes in Anar city for the first time in a period of 40 years.

**Methods and Material**

The satellite images that used in this research are belong to Landsat Satellite No. 39 and Passage 161, include two images of the MSS sensor belonging to 1354 and 1366, three images of the TM sensor from 1996, 1380, and 1389, and an image of The OLI sensor is for 1396. In order to investigate the topography of the area, a 30-meter (DEM) of the SRTM satellite was used. All processes and analyzes were performed in ENVI 5.1 and ArcGIS 10.3 software. Prior to data analysis, initial processing on the raw data is usually carried out to correct for any distortion due to the characteristics of the imaging system and imaging conditions. NDVI is calculated on a per-pixel basis as the normalized difference between the red and near infrared bands from an image. NDVI value ranges from +1 to -1. Close to +1 means denser and greener vegetation

## Results and Discussion

By applying the NDVI index to the study area images, the range of data is located between 1 and -1. Usually, the negative values of the NDVI index (numbers close to -1) indicate the water zones, the values close to zero (between -0.1 and 0.1) indicate the bare land, the positive values (between 0.2 Up to 0.5) indicates vegetation covers and high values of the NDVI index (numbers close to 1) represent the rainforests of the warm and tropical regions. In general, the study area was categorized to two classes of agricultural land and natural lands in terms of vegetation. As shown in Fig. 2, the classification of NDVI images is done according to the decision tree method. In this research, values of less than 0.2 are allocated to uncultivated vegetation classes and more than are belong to vegetation class. Finally, the vegetation map of 1354, 1366, 1375, 1380, 1389 and 1396 was prepared. The vegetation cover of the studied area is presented in Table 1. In order to ensure the results of the classification, we conducted an evaluation of the accuracy. The most commonly used factors for estimating accuracy include: overall accuracy, manufacturer accuracy, user precision and kappa coefficient.

## Conclusions

In this research, in order to monitor the pistachio orchards changes detection in the last 40 years, several time satellite images were used. For this purpose, changes detection of pistachio trees were investigated in the study area using the vegetation index and decision tree methods for the first time. The results showed that vegetation changes over 40 years have been high for the studied area, so that the highest growth rate of pistachio gardens occurred during the years 1987 to 1996. And has only reached 15548.8 hectares over the course of 9 years from 7058.25 hectares. Also, during the years 2001 to 2010, the greatest reduction and destruction of pistachio gardens occurred at 2902.05 hectares. The evidence suggests that the process of reducing and destroying pistachio gardens is continuing intensively due to the unplanned withdrawal of groundwater resources in the central and southern parts of Anar plain. In relation to the method, according to the coefficients obtained in the accuracy assessment, it can be concluded that among the methods of classification, decision tree method, is the one of the most accurate methods for classification of vegetation.

**Keywords:** Remote Sensing, Decision Tree Classification, NDVI, Pistachio Gardens, Anar City.

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## **Identification of Factors Influencing Wheat Growers' Adaptation Behaviors Under Climate Change Conditions (Case Study: Kermanshah County)**

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### **Introduction**

Climate change is one of the most important environmental threats facing humanity (*Azadi et al., 2017: 95; Yazdanpanah and Zobeidi, 2017: 124; Zobeidi et al. 2016: 377; Clayton et al., 2015: 640*) and one of the most important topics in the scientific community of the world (*Aksit et al., 2018:550; Chen et al., 2014: 294*). The literature abounds with evidences that global climate change is expected to have negative impacts on socio-economical sectors, particularly in agriculture sector (*Waongo et al., 2015: 23*).

Mitigation and adaptation are essential and complementary policy responses to meet the challenges presented by climate change (*Lemmen et al., 2008: 22*). The climate change adaptation strategy seeks to reduce the vulnerability of human and natural systems to climate change effects and adaptation in agriculture refers to the adjustments of agricultural practices and activities that reduce the potential damage caused by climate change (*Zamasiya et al., 2017: 233*).

Iran is considered as the world's climatic zoning in arid and semi-arid regions (*Hoseini et al., 2013: 2*). However, the negative the impacts of climate change will be so severe in this areas such as Iran (*Karimi et al., 2018: 2*). According to available evidence, farmers in Kermanshah are one of the most vulnerable communities against this phenomenon. Therefore, this research is done with the purpose of identification of factors influencing wheat growers' adaptation behaviors under climate change conditions at Kermanshah County.

### **Methods and Material**

In this study a survey research method was used and the main tool for data collection was a questionnaire. Study population was all wheat growers' of Kermanshah county (N=30000). Statistical sample was 380 Wheat growers' that determined by Krejcie and Morgan table and a Multi-Stage Cluster Sampling was used to collect data from grower using questionnaire. A panel of experts confirmed the face validity of the questionnaire. Moreover, Cronbach's alpha reliability coefficients for the pilot study assessment were employed to refine the questions to be prepared for the final questionnaire (0.546 to 0.889). To analyze the information, structural equation modeling and statistical analysis methods were used. They were calculated by SPSS<sub>version24</sub> and AMOS<sub>version20</sub> software. To get the required map, ArcGIS<sub>10.6.1</sub> software was applied.

### **Results and Discussion**

Regarding demographic variables, the age of the participants ranged from 25 to 84 with a mean value of 48.67 years (S.D. = 12.47). The sample consisted of 13 female farmers (3.7%) and 337 male farmers (96.3%). A Pearson correlation test was used to investigate the relationship between all variables. The results revealed a significant relationship between farm production practices and other variables, including farm financial management ( $r= 0.254$ ), government programs and insurance ( $r= 0.318$ ), belief ( $r= 0.390$ ), Risk perception ( $r= 0.398$ ), concern ( $r= 0.345$ ), knowledge ( $r= 0.824$ ), profit-orientation ( $r= 0.366$ ) and self-efficacy ( $r= -0.340$ ).

We analyzed empirical data from the survey with the help of structural equation modeling. Farm production practices, farm financial management and government programs and insurance was selected as the dependent variable and belief, profit-orientation, risk perception, concern knowledge, self-efficacy as independent variables and entered into the SEM. Path relationships revealed that the variables of profit-orientation, concern, self-efficacy, and risk perception has direct effects on the farm production practices. Collectively, these variables are capable, 38 percent of the variability farm production practices. Also, the variable of concern has direct effects and the variables of belief and knowledge has indirect effects on the farm financial management. Collectively, these variables are capable, 22 percent of the variability farm financial management. As well as, the variable of concern has direct effects and the variables of belief and knowledge has indirect effects on the government programs and insurance. Collectively, these variables are capable, 25 percent of the variability government programs and insurance.

### **Conclusion**

In order to reduce the effects and consequences of climate change, it is necessary to adapt farmers to climate change. This means that farmers with appropriate adaptation measures can protect their livelihoods against the effects of climate change. This study was conducted to identification of factors influencing wheat growers' adaptation behaviors under climate change conditions at Kermanshah County. In this study, the relationship and effect of six variables (belief, profit-orientation, risk perception, concern knowledge and self-efficacy) on the three categories of

adaptation behavior (Farm production practices, farm financial management and government programs and insurance) of wheat farmers under climate change conditions were investigated. To better participate and more farmers in climate change adaptation strategies to increase risk perception and farmers' belief climate change that increases the adoption of adaptive behaviors, it is suggested that examples of climate change effects be shown to farmers. In this way, farmers' perception of the risk and beliefs about the consequences of climate change will be improved.

**Keywords:** Climate Change, Adaptation Behavior, Risk Perception, Belief, Growers, Kermanshah

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## **Integrating Smart Growth Principles and in Fill Development Strategy in Identifying Physical Capacities of Inner City Development (Case Study: Tabriz Region 3)**

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### **Introduction**

In Third World countries, physical growth and the pattern of physical development, which has occurred in most cases with a low density and sporadic nature, has become the hallmark of many cities in the developing world (*UN-Habitat 2012: 29*). In other words, the rapid growth of cities around the world, especially in developing countries, occurs when cities do not have the ability to provide services for the population that has been added, and this has led to the dispersal and destruction of land around towns. Yet, each year, cities attract new immigrants, resulting in an increase in illegal settlements and marginal settlements (*Choen, 2006: 64*). The share of Tabriz from the area of urban wastewater of the province is 2522 hectares, among which the area of worn out texture of area 3 is 233.63 hectares and with 8.4 percent of the worn out texture in comparison with the area of the region. (*Housing and Urbanization of East Azarbaijan province, 2012*), using this The approach can identify internal development capacities in both empty and physical areas, so the common means of smart growth and intermediate development can be described as both developmental. Here, the question arises whether the potential of Tabriz 3 region for the development of intermediate growth by combining the principles of smart growth offers better capability to improve the spatial region of the region?

### **Methods and Material**

The present study is descriptive-analytic and has a developmental-applied nature. According to the research objective and purpose, the unit of analysis, households in the neighborhood have been selected. We have interpolated maps using LISREL and GIS software, And then Region Three based on social indicators. We prioritized physical and environmental, respectively.

### **Results and Discussion**

The physical expansion of cities is a dynamic and continuous process in which the physical limits of the city and its physical spaces increase in terms of both vertical and horizontal directions in

quantitative and qualitative terms. Each of these two methods creates an individual body different from one another. Physical growth appears in the form of an increase in the city's scope, or so-called horizontal expansion, and vertical growth appears as an intrusion of the urban population and the growth pattern of the urbanized city. Today, most developing countries are dissatisfied with the spatial expansion of their settlements. In fact, the disproportionate growth and development of cities and congestions outside of their size, including the problems and problems of today's cities, have led to phenomena such as marginalization, unpredictable expansion, and so on. Intelligent growth contrary to the widespread growth of the city, aimed at reducing the consequences and problems of urban sprawl in urban areas, on the creation of viable communities, proximity to nature and the protection of open spaces and valuable land, revitalization and Revitalizing the central part of the city, limiting the peripheral growth of the city, reducing the reliance on personal cars and...

### **Conclusion**

In this regard, and in line with the research question, the level of utilization of the neighborhoods of the three metropolitan areas of Tabriz in terms of social, physical and environmental indicators has been studied. The results of the study show that the t value obtained from the regression output for intelligence indicators is greater than 1.96 and the significance level of the test (0.000) is less than the value of the error coefficient of the research (0.05) Therefore, there is a significant difference between the different districts of area three in terms of physical, social and environmental indicators of smart growth. In connection with the question, in most components of the three indicators of intelligent growth (social, physical, environmental), it turned out that the southern part of the three regions, including neighborhoods (Maralan and Taleghani, Imamiyeh), are in an unfavorable situation, The central and northern areas of the three areas, including the neighborhoods (street, garden hamal, Chernandb, lilabad).

- Raising the per capita level of green space in the studied area is highly felt in the neighborhoods and areas of the city due to their lack of and unequal distribution.
- Increasing population density in Tabriz 3 district through high-rise building in areas and areas with capacity in Tabriz 3.
- Aid to local communities to improve the streets and pedestrians available to build pedestrian communities.
- Preparation of a program for the identification and reconstruction of abandoned and abandoned buildings in neighborhoods of Tabriz 3.
- Education and awareness among citizens in order to increase participation in upgrading and modernization projects in general, intermediate expansion plans.
- Focus on local activities in neighborhoods in District 3, and as a result of increasing the quality of life, more security and more environmentally-friendly, as well as supporting businesses and services that are meant to create environments for boosting business and economic activity.

**Keywords:** Smart growth, Infill development, Gis.

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## **Study the Development Indices Status in Counties of Kermanshah Province Using Integration Technique**

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### **Introduction**

Development in its general concept means improving the material and spiritual level of the human society and creation of the right environment for a healthy life for all people. The main goal of the development is the elimination of inequalities and improving current conditions for improving the existing and moving toward desired direction for welfare. In fact, this concept is attempt to create an unrealized balance or a solution to elimination of the pressures and problems that constantly exist between different sections of social life.

In the thoughts of development experts, there are various interpretations for the term of 'development', such as increasing production, increasing productivity, improving the level of quality and quantity of life, improving the level of health and medical services, teaching culture and active participation in various fields. Using their developmental indices and combination them, will help planners to design a better understanding of the situation in the regions and help them in decision making, so that help their next steps in the direction of regional equilibrium and social justice among regions.

### **Theoretical framework**

Literally, development means "progress, promotion, improvement," and it can be called "change along with progress." The concept of development and being developed has become commonplace in the world since the second half of the twentieth century. It was originally meant to be the rate of economic growth, but later meant in the sense of reducing or eliminating poverty, unemployment, social inequality and fundamental changes in the social structure. Development is a qualitative concept that grows up and can be considered in equivalent with increasing the quality of life. Development is multidimensional flows, which involves reorganization and different orientation of

the whole economic-social system in itself. From another perspective, development is a qualitative concept and refers to a situation in which at least three goals or conditions are met: first, greater access to goods and services of the sustained survival of human beings; secondly, increasing the standard of life and human gaining to material benefits; and thirdly, the extension of the range of choice, the freedom of thought and the equality of society individuals against the law.

Since that time, given the variety of concepts and views on development context, several theories and patterns about development and being developed have been proposed and one or several patterns have acted as a dominant model in each period. If we look at the issue of development, especially rural development, in a more comprehensive view, we can say that in the 1950s the growth pattern, in the 1960s, the structural-oriented or re-distribution pattern of sources, in the 1970s, the pattern of supplying basic needs and from the 1980s onward The pattern of sustainable development was considered as a dominant model in the development literature during the last half-century. The modernization, affiliation and neoclassical theories are among the most well-known theories that develop at macro (global) and national levels. The aim of the development theories is to analysis and clarify the existing inequalities between countries and regions and zones in the field of development. New approaches recently have been introduced to development context. Some of these include local movements, the role of nongovernmental organizations, gender issues, justice and democracy, citizen participation and most importantly, the environment and local relationships. Some researchers of development approach from the bottom have emphasized on the basic needs approach. There has also been the theory of new growth that emphasizes on inborn growth more than exogenous growth.

### **Methodology**

The method of this research is applied in the term of goal and descriptive-analytical nature in the term of nature. The aim of this study is to investigate the status of development indices in the counties of Kermanshah province. The geographic territory of this research is 14 counties of Kermanshah province. In order to achieve the research goals, firstly, developmental indicators were classified in 4 sections of economic, educational-cultural, health-medical and sub-infrastructural with 40 variables and related data has been collected from the Kermanshah Provincial Government Statistical Yearbook of 1395 (2016) and additional information was collected from the Development and Planning Department of the province. These data were used for data analysis after weighing by entropy method, and multi-criteria decision-making methods of Vickour, Topsis, Saw and Copeland for analysis. Geographical Information System (GIS) has been used to draw needed maps.

### **Results and Discussion**

In this study, using the models of Vicoore, Tapis, Saw and Copland, the status of development and being developed indicators in the counties of Kermanshah province has been studied in four levels (developed, relatively developed, developing and deprived of development). The results indicate that in the Vicour model, Pave city with a development coefficient of 0.1979, have the rank one of the 14 cities of the province and the city of Kermanshah with 0.9836, although is the center of province is ranked 14th, the last rank. In this model 7.14% of counties are developed, 7.14% relatively

developed, 14.29% developing and 71.43% are deprived of development. In the Tapis model, the Qasr-Shirin county with 0.5516 is ranked one and relatively developed and thirteen other cities are developing, ie, 7.14% are relatively developed cities and 86.92% are developing. In the saw model, Qasr-e Shirin, with 0.7135 is ranked one and relatively developed, and Salas Babajani county have 0.4106 and is in the last rank and is developing. 42.86% of the cities are relatively developed and 57.14% of the cities are developing. In Copeland technique, according to the results, Qasr-e-Shirin with (13) is ranked one and Pave with (11) in the second rank and is developed cities and counties of Javanrud with (11-) ranked 13th and Kermanshah with (13-) is the last rank and deprived of development. According to the results, it can be said that Qasr Shirin county has the highest level of development in terms of the studied indexes. This city has 2 borderline markets, as well as the Khosravi and Parviz Khan borders, connecting Iran to Iraq and the frequent presence of travelers, pilgrims and businessmen, somehow lead to improve in welfare, cultural and...in this city.

### **Conclusion**

According to the obtained results of this study, 14.29% of counties are developed, 35.17% are relatively developed cities, 35.71% are developing and 14.29 are deprived of development. So, the dominant development area in Kermanshah province is relatively developing and developed. Salas Babajani is in western part has become a county during the last decade and has little access to urbanization and related infrastructures. The county of Javanrood also has a borderline market for several years, gradually moving towards development, but the lack of infrastructure has made the city at a low level of development. In general, the lack of study and planning and unbalanced investments at the provincial level have led to the different and heterogeneity of the province's counties in terms of development, which by precise planning, growth of province and the balanced and coordinated development of the provincial counties can be provided. for regional planning from down-top and top-down planning, as well as paying attention to the population component in the distribution of services is needed. In order to realize development in the province of Kermanshah, it is essential that, first, any development program be based on the mutual understanding of the needs and resources of the counties. Secondly, any development activity should be a combination of planning from the down-up and the up-down, thirdly, sustainability will be possible at the provincial level, which relies on the participation of the all people.

**Keywords:** Development, Being developed, Vicoore, Copland, Kermanshah Province.

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**Identify the Uncertainties, Drivers, and Sustainability Strategies  
for Pasture-Dependent Livelihoods in Rural Communities  
(Case Study: Irano-Touranian Rangelands of Sistan and Baluchistan)**

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**Introduction**

According to the Forests, Rangelands and Watershed Management Organization of Iran, livelihoods of 960,000 rural households are made directly through pasture. Rangelands play a vital role in various aspects of human life and provide a conducive environment for human life through the conservation of water, soil and air and play a vital role in meeting the needs of society in the field of pharmaceutical and protein products. meeting the needs of society in the field of pharmaceutical and protein products. Rangeland sustainability seems to be important in the national dimension and consequently important in achieving the indicators of this assessment, but the expansion of productive activities including agriculture, natural resources and other economic sectors, and the growing population and demand on the one hand and the disruption of traditional community management systems. It has been exploited within the framework of the traditional system from the past to the present day and, on the other hand, its inappropriate substitution has created an inadequate situation in these areas. In order to make the desired changes and achieve the desired future in development, and in particular in the discussion of ranch livelihoods, it requires predicting the future in terms of identifying the factors affecting change in this area. Identifying the uncertainties, proponents, and sustainability strategies of pasture-dependent livelihoods in rural communities is only part of the future knowledge requirements. Therefore, this study seeks to identify the uncertainties, proponents, and sustainability strategies of pastoral livelihoods in the villages of Sistan and Baluchistan province.

### **Methodology and Methods**

In order to accomplish the purpose of the research, in-depth interviews were conducted with experts (including faculty members, agricultural and natural resources research and education experts, management experts and executives from the Rangeland Forests and Watershed Management and Tribal Affairs). Purposeful sampling and snowball sampling were used in this study for qualitative research. The validity of the interviews was confirmed and a test-retest method was used to confirm the reliability of the interviews. Large or metallic propellants were identified and uncertainties were classified into five general categories by the steppe approach. Propulsion forces corresponding to uncertainties were identified and extracted with Delphi steps and obtaining a 75% agreement level as efficient propellants.

### **Discussion and Results**

Rangeland plans as a scenario were reviewed by experts and asked to identify and index relevant uncertainties according to indicators, status, and expert opinion. Initially, probable future events were identified as the basis of uncertainties arising from the review of rangeland planning services, existing plans as forward-looking scenarios and indicators explained in earlier stages, with a 75% agreement level in the panel of experts. By controlling these uncertainties and eliminating duplicates, a preliminary list was prepared and submitted to the panel for review, and the uncertainties that confirmed the 75% agreement were finally extracted as uncertainties for pasture plans. In order to organize the uncertainties, the panel was asked to first categorize these uncertainties according to the steppe model in terms of universal components. Findings showed that there was uncertainty in all groups and planning had to be done accordingly. In the next step, according to the identified probabilities and uncertainties and the general titles of uncertainties, clustering was performed. At this stage, in each uncertainty, the forming elements and the uncertainty factors were identified and presented. Uncertainty clustering was performed in accordance with the steppe model, which showed that the highest number of uncertainty clusters was related to support services, participation, hope and satisfaction and interaction; This means that the experts do not consider the existing social capacity sufficient and state support and assistance to the users in the interactive environment and in the hope of a better future, consider the need to reduce volatility and uncertainties. The findings also showed that most of the uncertainties are in the management of rangeland plan and from the experts' point of view, the governing management of the projects ie management by the government and the operational management have sufficient uncertainty and stability and will be an important factor in the situation. Clustering of economic uncertainties also showed that economic stability is an important factor from the experts' point of view and most of the fluctuations and uncertainty of the future are explained in this area.

Employment as a component dependent on economic stability also has the highest share of uncertainty. In the environmental field, "vegetation" as the main pillar of rangeland ecosystem and livestock livelihood as well as "water resources" as the main pillar of rural and agricultural livelihood allocated the most clusters. According to the experts, the volatility in these two clusters has more scope than other parts of the environment, and both are in varying degrees of uncertainty.

### Conclusion

The results of the present study showed that there was uncertainty in all groups and planning should be done accordingly. Most uncertainty clusters were identified in areas such as support services, rangeland management, rangeland and vegetation capability, and water resources. In the field of propellants, the management factor (political-managerial-legal) was introduced as the most important proponents of rural livelihood sustainability. At the end, the strategies were determined by the elite and Delphi process, and among the axial strategies, 30 strategies with an approximate 80% impact weight were selected and introduced according to Pareto's theory as the axial scenario. The results also showed that in sustainable livelihood planning, rangelands are the most important pillars of management and regulation, natural resource economy and rangeland production capability. Alongside these, human, social, cultural, and infrastructural elements have their own share, and ranch livelihoods are achieved when programs are built on dynamic and inclusive scenarios, and in addition to building key strategies in the social, economic, science and technology, environment And policy and legislation, executive strategies are considered and created with the basic needs of dynamism and sustainability.

**Keywords:** Rangeland, Uncertainties, Propellants, Sustainability Strategies, Sustainable Livelihood.

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## **Saffron Cultivation Agro Climate Zoning in North Khorasan Province: An Approach to Change the Pattern of Cultivation**

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### **Introduction**

Due to the geographical location of Iran and the study area which is located in the northeast of the country, this region is located in the subtropical high pressure area. This issue has led to a shortage of atmospheric rainfall and high evapotranspiration potential, rising temperatures and sunshine, with water and soils exposed to salinity. It is necessary due to the location in arid and semi-arid regions as well as the need to change the cropping pattern and the possibility of some adaptable crops by considering the changes in temperature and soil regime, in the agricultural sector of North Khorasan province. One way to change the crop pattern is to replace high-yield crops with low-yield crops that require low water and heat-resistant varieties. Saffron is one of the most important Low expectations and heat-resistant crops that Iran has ranked first in the world with production of 261 tons. Due to the importance role of this crop in the Iranian economy, considerable studies have been done in this field which can be referred to Jafar Bigloo (2008) In Qazvin province, Rashid Sorkh Abadi (2015 in Torbat Heydariyeh, Salari (2016) in Khorasan Razavi province, Sobhani (2016) and Kamamiabi (2014) in Rashtkhar city. No significant study has been conducted in this plain, despite the expansion of cultivation of this crop in Safiabad plain. In this study, is attempted to the ecological needs of this crop are compared with the climate conditions of Khorasan-e-Shomali province and the agro-climatic location of susceptible soils.

### **Methods and Material**

In this research were used the ground and climatic data with a 30 year statistical period of 1 synoptic and 2 climatology stations of Bojnourd, Shirvan, Esfarain and Jajarm. To determine the suitable location of saffron cultivation in the study area, 9 criteria are considered which are including elevation, slope, slope directions, soil type, soil texture, sunshine, minimum air temperature during vegetative period, maximum air temperature during stagnation and average air temperature during

reproductive period. In order to combine criteria and zoning of saffron cultivation, AHP model was used in ArcGIS software. According to the AHP weighting model about ground conditions and requirements, soil and climatic conditions of saffron cultivation, the weight allocation of each data layer was compared by using of a paired comparison matrix drawing diagram in Expert Choise software also by considering the importance of each layer by using scientific experts. In order to weigh, by this method, is firstly analyzed the decision problem, which was to find saffron-prone areas for cultivation, in consider to the most hierarchy important decision elements. Comparison and Calculation of Weights were using by the Expert Choise Model (AHP), the final maps which were based on the weighted-overlay model overlapped the weighted layers to identify exactly suitable, suitable, critical and unsuitable sites for saffron cultivation at the regional level.

### **Results and Discussion**

According to the studies about the affecting factors on saffron cultivation, were classified as elevation criteria 89,000 hectares of land as perfectly suitable, 123,000 hectares relatively suitable, 55,000 hectares critical and 13,000 hectares in unsuitable class. In terms of slope, more than 71,000 hectares were perfectly suitable, 66,000 hectares relatively suitable, 42,000 hectares critical proportion, 101,000 hectares inappropriate (unsuitable). In terms of slope direction 110,000 hectares perfectly (quit) suitable, 65,000 hectares relatively suitable, 26,000 hectares Critical proportion and 79 hectares are located in a suitable area. In terms of land using, 141,000 hectares were classified as perfectly suitable, 84,000 hectares relatively suitable, 49,000 hectares critical and 6,000 hectares inappropriate. In terms of soil texture, 196,000 hectares are located in a perfectly suitable class, 35,000 hectares relatively suitable, 57,000 hectares of critical suitability and 167,000 hectares in inappropriate class. In terms of minimum air temperature during the vegetative period 352,000 hectares are classified in critical proportion class and 91,000 hectares are zoned inappropriate class. In terms of average air temperature during reproductive period, 217,000 hectares are perfectly suitable class, 200,000 hectares relatively suitable, and 25,000 hectares in critical proportion class. In terms of maximum air temperature during the stagnation period, 199,000 hectares are in relatively suitable class and 243,000 hectares in critical proportion class. In terms of sunshine, 75,000 hectares are in the appropriate (suitable) class, 109,000 hectares are relatively suitable, 203,000 hectares are in critical proportion class, and 55,000 hectares are in unsuitable class. In this study, it was found that the sum of the above 9 criteria is equivalent to 1 (number 1), and this is indicating the relative importance of these criteria's. The calculated weights were applied in 9 layers to determine the suitability of utility of earth, soil and climatic variables of different saffron cultivation zones and its output showed that temperature layer had the highest percentage with 43% and slope direction with 6% the lowest.

### Conclusion

The results of this study showed that about 498,000 hectares of North Khorasan province including Jajarm, Garmeh, Esfarayen, Safiabad and parts of Shirvan and Faroj cities due to a combination of climatic and land characteristics, are absolutely suitable for saffron cultivation. 811,000 hectares, including parts of the lowlands (plains) of Jajarm, Esfarayen, Safiabad, and Faroj, are in relatively suitable class with little restriction. 1,434 hectares of provincial level including foothills and mountainous plains and ground waters of Safi Abad, Faroj, Shirvan, Bojnourd, Mane and Semelghan and Esfarayen due to growth limiting factors such as altitude (elevation), slope, soil, and climatic factors are in critical proportion for saffron cultivation. About 469,000 hectares, including Bojnourd, Mane, and Semelghan areas and parts of Raz Jargalan, are classified as inappropriate due to a combination of features such as maximum temperature, sunshine, altitude, slope, soil texture. According to the final map it can be said that from south to north of the province are decreased the amount of saffron cultivation areas.

**Keywords:** Zoning, Saffron cultivation, AHP, North Khorasan Province, Climate change.

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**The Selection of Tourism Area in South Khorasan Province  
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**Introduction**

Tourism is one of the most dynamic economic activities in the present era, which plays an important role in the local sustainable development, and its development priority requires the recognition of affecting and limiting factors of natural, economic, social and cultural each region. Moreover, these areas reveal a special importance for tourists due to having a set of natural and historical attractions. Accordingly, the main objective of the present study is the selection and prioritization of tourism areas among the three areas "Banddareh-e-Birjand, Baghestan Abgarm Ferdows and Ghaen tourism area" in South Khorasan province by using the ANP method.

**Methods and Material**

To obtain the appropriate results in the tourism areas, prioritization in South Khorasan province a high level of ANP structure including subnet benefit, opportunity, cost and risk was used. In this study, four strategic criteria of attraction and environmental constraints, tourism potentials, infrastructure and economic potential of the region and social issues and the role and impact of management were selected to determine the tourism area. Each of the strategic criteria includes a set of sub-criteria that play an important role in weighting the subnet benefits, opportunity, cost and danger.

### Results and Discussion

The results of the ANP analysis demonstrated that Baghestan Abgarm Ferdows, Banddareh-e-Birjand and the Ghaen tourism area with having 0/59, 0/28, and 0/29 weights placed in the first to third priority, respectively. Among the subnets, the benefit subnet with a weight of 0/33 possesses more important as compared to the others. Furthermore, the strategic criterion of tourism potentials with an equivalent weight of 0/51 manifests a higher priority in comparison with the other ones.

### Conclusion

In recent years, the government has implemented a variety of programs for the economic development of deprived areas, including the development of the tourism industry, which has played an important role in promoting these areas. The selection of exemplary tourism areas and consequently the focus of the tourism industry in these areas is important not only for tourism but also for the environment. The present study, due to the inclusion of various historical and natural criteria and sub-criteria, can pave the way for development of tourism industry and consequently the economic dynamics of local communities in South Khorasan province.

**Keywords:** Decision Support System, Multiple Criteria Decision Making, South Khorasan, Tourism industry, Tourism area.

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## **Explaining the Geographical-Political Role of Migration in Iran**

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### **Introduction**

Migration is deemed to be one of the most important dimensions of socio-economic development. Nowadays, however, it has turned into a complex issue for both the origin and destination communities of migrants. The issue rises due to the high level of migration and population movements between different geographic, economic, cultural and social areas. Consequently, spatial anomalies – especially of socio-cultural nature – are formed, and the conditions for the emergence of various types of political, cultural-social and economic crises, among others, have started to prevail. Given the specific territorial and demographic combination of Iran in terms of cultural, ethnic, political and economic, the Iranian society is a prominent case for studying this issue. In other words, from a geo-political point of view, the population factor, despite its number and biological and demographic characteristics, as a dynamic and dialectical element can easily be influenced by migration, especially with regard to its distribution or homogeneity, It plays the empowerment geo-political roles in the political geography structure of states, especially the states have heterogeneous populations, which is sometimes positive and sometimes not in the interests of national security; and now, we can say that there is a similar situation in Iran. Of course, the geo-political role of this phenomenon in Iran is still in its embryonic period and if there is no proper solution, it can cause serious problems in the political geography of Iran.

### **Methodology**

In general, this study has tried to analyze the potentials of geographical and political role of migration, especially by discussing the issues of geographic distribution of population in Iran, the homogeneity - heterogeneity of population in Iran and the centralized political, economic and cultural structure of Iran. This study also employs a descriptive-analytical method and with the help of library information, Statistical data, descriptive maps and author theoretical and case analysis of the Author.

## **Result and Discussion**

The findings of this study are discussed under the following themes:

### **- Migration and geographical distribution of population in Iran**

From a geo-political point of view, in the debate of migration, one of the most important variables that can extremely affect the origins and destinations of migration is the geographical distribution of the population across the country. Because any kind of population displacement may causes territorial anomalies in population distribution and consequently different kinds of territorial and spatial actions and reactions. For example, territorial distribution of population is closely linked to political and social stability in the country. In terms of population distribution across the country can be discussed about 3 models: equal, nuclear and uneven distribution of population that apparently, among them, equal distribution is the best model of population distribution in terms of widespread development, survival of the country, and preservation of national and domestic security. In this respect, again, the geographical realities of Iran's population, especially its spatial distribution (The spatial distribution of the population of Iran is relatively adapting to the ethnic spaces) as well as the trend of Inter-provincial population movement in the country act in the opposite direction that is the nuclear and uneven distribution of population in the country.

### **- Migration and the Homogeneity-Heterogeneity of Population in Iran**

In this context, it can be said that Iran is one of the few countries suffering from severe population heterogeneity. In other words, the territory of Iran, in terms of linguistic and ethnic diversity, exhibits the complex and unique cultural-identity topography.

In this regard, although some experts refer to the center-direction population movements in Iran as the most effective factor and a geographical-political approach to effectively links between distinct peripheral-ethnic identities and center, as well as between peripheral-ethnic identities themselves, However, the current political-social-economic-environmental trends of Iran provide different geographical-political interpretations of the current trend. In fact, in today's world, especially the vast possibilities that information technology has made available to human societies, in a country with today's situation in Iran, cannot be considered the phenomenon of migration as a positive approach to consolidating national unity, Conversely, continuity in the current movements of population in Iran, in addition to providing the basis for many complex political-economic-social crises, can be the major cause of the rise and awareness of peripheral-ethnic identities in the country's center and population center.

### **- Migration and the centralized political, economic and cultural structure of Iran**

One of the debates on the pattern of population displacement within countries also addresses the question of adapting population displacements to the pattern of accumulation of money, facilities, and geography of power. In other words, in Iran, it is easy to see the geography of power in the

central areas of Iran or destinations of migration, and the geography of poverty and territorial-country marginalization in the periphery areas of Iran or origins of migrants that In fact, this unpleasant topography of population and power in Iran has a direct relationship with the centralized political-economic-cultural structure of Iran. For this reason, the peripheral geo-cultural areas in Iran are completely at the bottom of the Radius line of development, and in fact the populations of these areas are trying to compete within geography of power, by moving and migrating from these areas to central areas and centers of power, and thereby to be at an important outline of the geography of power and development. However, this usually does not occur ideally and lead to a variety of political-economic-cultural problems and challenges in origins and destinations of migration.

### **Conclusion**

The findings show that from the geographical and political point of view, migration plays a significant role in the political, cultural, social and economic organization of Iran's space, particularly in the origin and destination of migration. Given the creation of new cultural and economic landscapes, Iran is prone to the emergence of various security issues and crises in the country including (in terms of geographical distribution of the population), the development of an uneven distribution pattern of the population in the country, weakening of human capital in the regions considered to be the origin of migration, turning these regions into empty human, economic, cultural and social—and generally, security—spaces; (In terms of the homogeneity or heterogeneity of the population), the intensification of spatial anomalies in the mosaic of linguistic and ethnic diversity in Iran, the creation of abnormal cultural-identity topography, the weakening and exacerbation of spatial sense of belonging among different demographic groups of immigrants, the creation of explosive spaces bereft of cultural-identity unity in the origin of migration, etc.; (In terms of the centralized political-economic-cultural structure in Iran), the intensification of population displacement in Iran in accordance with the pattern of formation of the geography of power, the intensification of the center-periphery relationship between the geography of power (destinations of migration) and the geography of poverty and marginalization in Iran (origins of migration), the creation and intensification of various spatial (political-economic-cultural) gaps between the ethnic-territorial center and the periphery of country, etc.

**Keywords:** Migration, Iran, Geographic Distribution of Population, The Homogeneity-Heterogeneity of Population, The Centralized Political Structure of Iran.

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**Assessment of Intensity and Risk of Desertification and Proposition  
of a Management Program for a Case study area: Segzi Plain of Isfahan**

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**Introduction**

Desertification is defined as the land degradation in arid, semi-arid and dry sub humid areas which originates from various factors such as climate change and human activities. Several studies have been carried out in different countries to prepare and evaluate the desertification maps, leading to development of regional models. The most important models are the FAO- UNEP (1984) method, the method of the Turkmen Academy of Sciences (Babayef 1985), the ICD method (1995), the MEDALUS method, and the MICD method with an emphasis on the wind erosion process. Models facilitate the development of potential hazard maps and desertification risk maps as strategic tools for planning and management of risk reduction. In fact, the goal of risk management is to make the best decision for reducing damage with respect to location, time and the possible solutions to the problem. In Iran, there have been only few previous studies in the field of desertification risk assessment. In this regard, the studies by Akbari et al. (2016) in semi-desert areas of west of Golestan province, and Silakhori et al. (2013) in Sabzevar plain can be mentioned. In this research, the MEDALUS model was used to assess the desertification risk in Segzi plain of Isfahan. Danger and risk have been assessed, and a management plan presented.

**Materials and Methods**

Based on the evaluation of resources and field observations, a total of six factors including climate, soil, vegetation, groundwater, erosion and management, and policy were selected for the assessment of desertification in the MEDALUS model. Based on quality, a score of 100 to 200 was assigned to each criterion, index, class and the class weight. Then, the score of each criterion was determined by the geometric mean of the related indices. After evaluating the selected criteria and indices, the raster map of all indices and criteria was prepared in GIS. In order to investigate the current state of desertification, the score of each criterion in each unit was calculated by using the geometric mean (as the following equation) and the score for the current state of desertification was determined.

Equation 1: 
$$DS = (W_C \times W_S \times W_V \times W_G \times W_{Er} \times W_M)^{1/6}$$

where  $DS$ ,  $W_C$ ,  $W_S$ ,  $W_V$ ,  $W_G$ ,  $W_{Er}$ , and  $W_M$  are desertification severity, climate quality, soil condition quality, vegetation quality, groundwater index, wind erosion rate, and management and policy quality, respectively. After determining the hazard classes of desertification and identifying elements of risk classes, the vulnerability classes of elements were determined according to their class, field surveys and by using the expert evaluation method.

The maps of roads, buildings and facilities were collected from the corresponding organizations. Such maps along with the maps of wells, gullies and springs, organize the map of at-risk elements in the region. To evaluate the vulnerability of the elements, it is important to assess the hazard class of each element, as well as its economic and ecological status. Based on this, a vulnerability map of hazardous elements was prepared in the study area. At the end, the risk classes ( $R$ ) were calculated by multiplying the classes of prioritizing the desertification management plans.

## Results

After evaluating and scoring the indices of the six criteria and calculating the geometric mean of scores in 20 units of work, the scores of the indicators were calculated and the indicators with the highest scores were determined. The MEDALUS approach showed that the most important factors of desertification in the study area are climate factors (193 points), erosion (176 points) and management and policy (172 points). This model showed that 27.73 percent of the study area is located in the very severe desertification class, the majority of which visible on plaster and abandoned lands.

The results of the mapping of at-risk elements showed that 21 percent of the area was in the high class, 16 percent in the middle class, 15 percent in the low class and 48 percent in the very low class. The vulnerability number of each element was obtained with respect to its position in the hazard class and its degree of sensitivity. Vulnerability class of the units very low, low, moderate, high, and very high respectively and also the percentage area were obtained 33%, 4%, 13%, 13%, and 37%, respectively. Finally, the risk number was calculated and partitioned into five classes. in which the high and very high classes cover 40% of the region and 39% of the study area falls within the very low class.

For the desertification hazard management plans, land units were prioritized based on the risk class, regional conditions, and important indicators of desertification. Five priorities and 12 desertification management plans were provided for the sustainable development and improvement of environmental conditions. The desertification management map was accordingly prepared.

## Discussion and Conclusion

In this study, the MEDALUS model was used to assess the severity of desertification in Segzi plain. The results showed that the most important desertification factors in the study area are climatic factors, wind erosion, management and policies, respectively. All annual rainfalls in the study area occur on the cold seasons. erosive and severe winds also begin to blow up in the warm seasons of the year when the ground is dry and uncovered, which is one of the most important factors of wind erosion in the study area. The most important problem causing inappropriate human activities in Segzi plain is the uncontrolled use of plaster and soil in the region, and the presence of non-modern brick and plaster manufacturing sites. Therefore, for reducing the rate of desertification, it is necessary to prevent the activities of these sites and mines and to move them to a location other than the erosion crisis centers. The desertification risk assessment map showed that 40% of the study area has a high risk of desertification, which is due to the presence of important biological and economic centers such as human settlements, farming and gardening lands and water wells. To reduce the risk of desertification, seven management plans and five priorities were presented based on risk values, strategies and control measures in critical and non-critical situations. In areas with high risk of desertification, management plans including the modification of the irregular agricultural practices, construction of wind breakers, and management of urban wastewater (for seedlings) were proposed.

**Keywords:** Desertification, Medalus Model, Risk, Management, Isfahan.

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## **Ranking of Agricultural Development in Fars Province by Combination of ANN and GIS**

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### **Introduction**

The development of the agricultural sector is a prerequisite for the economic development of the country, and other sectors will not be able to flourish as long as the development inhibitors of agricultural sector are not overcome. This sector has been able to obtain a more favorable position than other economic sectors in terms of employment, generating income and its contribution to GDP, supplying the population's consumption needs, and providing foreign exchange. In general, agricultural development is the result of planned and coordinated efforts to apply the desired transformation in order to extend the background, expand the range of activities, and increase the scope of activities and provide the background of increasing performance in the form of a comprehensive rural development program. The lack of knowledge about the status and bottlenecks of agriculture, especially in rural areas, centered on agriculture-oriented economy, are serious obstacles to the balanced distribution of resources and the principled planning in order to solve problems in less developed regions. Recognizing these issues and providing appropriate programs to eliminate or lessen them include the following effects: booming agriculture, the optimal using of agricultural potentials, increasing production, enhancing farmers' incomes, consolidating rural population and agricultural development. Achieving development at any level and for any purpose requires a systematic, efficient, and accurate implementation of the plan. This depends on a comprehensive understanding and precise awareness of the facilities, opportunities, capabilities and limitations facing in order to achieve the desired level. Therefore, the present study initially aimed at explaining the inequalities between counties regarding the main indicators of agricultural sector in Fars Province and leveling each of them. Then, identifying the deprived areas in terms of agricultural development, it aimed at providing an appropriate basis for planning agricultural development in the region.

### **Research Method**

The present study is an applied research in terms of purpose, and quantitative one in terms of data analysis. The analysis unit is 29 counties of Fars Province. In this research, secondary data extracted from the Statistical Yearbook of Fars Province in 2014 (the latest data published on the agricultural issues of the province) was used. Determining development indicators is the most important step in regional development studies. Development indicators are in fact statistical representations of existing phenomena in the region which make it possible to compare and evaluate the phenomena at different times and locations, and provide the possibility of predicting, policy making, decision making and planning in various scopes for organizations and individuals. In this regard, in order to determine the level of development in the studied areas, appropriate indicators were selected to achieve the desired goal. In the present study, considering that the data and the collected information had different scales, first, these indicators were changed to scale free ones (the method divided by the mean score), and then the combined index was calculated which was used in the final evaluation. Then, clustering of the counties was carried out and then the artificial neural network (ANN) method was applied to weigh agricultural development indicators. Then, by multiplying the standard values of the indicators to the weights obtained from the artificial neural network, the counties were ranked. Finally, the studied areas were graded using the GIS software (GIS).

### **Discussion and Results**

In this research, using the 5 main indicators and 98 sub-indicators, the development level of the counties in Fars province was estimated with the help of artificial neural network method. The results of this study showed that in terms of exploitation indicator, Arsanjan County has the highest development rate with the mean score of 1.646 and Farashband County has the lowest development rate with the mean score of 0.595. Also, according to the performance indicator, the results show that Shiraz County has the highest level with the mean score of 2.186 and Zarin Dasht County has the lowest level with the mean score of 0.288. Counties including Marvdasht and Lamerd with the mean scores of 2.750 and 0.280 have the highest and lowest level of development in terms of the mechanization indicator, respectively. In addition, the studied counties were also investigated in terms of the animal husbandry indicator. Results indicate that Abadeh County with the mean score of 2.310 places the first rank and Lamerd County with the mean score of 0.385 places the last one. Finally, the situation of the counties in terms of infrastructure services and other services showed that Abadeh County allocates the highest level of development with the mean score of 2.329 and Kavar County allocates the lowest level of development with the mean score of 0.348. Furthermore, the results showed that among the counties of Fars Province, Shiraz (1.518) and Marvdasht (1.473) acquire the highest rank while counties including Lamerd (0.495) and Zarrin Dasht (0.590) gain the lowest rank in terms of the level of agricultural development. In addition, the calculated scatter coefficient indicates the existence of low inequality (0.164) and the low gap of the level of agricultural development in the studied areas.

## Conclusion

According to the results of the research, indicating the relative inequality of agricultural development among the studied counties, attention to deprived areas and their priority in agricultural development programs can lead to agricultural dynamics in these regions and, ultimately, providing growth along with equality, stability and the continuation of national development. Regarding the difference between the counties in terms of agricultural indicators, in cases which are not due to natural conditions, the authorities of each county could attempt more on management and resource allocation, and decrease the deprivation. It is important for the government to deal with less-developed areas in line with its justice policies and the elimination of deprivation in less-developed areas, and expand specialization in the production of various agricultural products, including crops, livestock by discovering the inherent and hidden potentials of each region and pay more attention to these areas when allocating credit and distributing facilities. Therefore, all the regions will be in a homogeneous and balanced situation in the agricultural sector.

**Keywords:** Leveling, Agricultural Development, Perceptron Neural Network, Fars Province, GIS.

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**Social Impact Assessment of Development Plans on the Local Communities  
Case Study: Chamkhaleh Port Construction Project**

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**Introduction**

Development projects are notably important in the growth of countries, especially for the local industry in developing countries. These projects are also a challenge for the local community and the government to achieve sustainable development. Each development plan, apart from its positive impacts, also has negative consequences, and the lack of attention to them leads to problems such as the resistance of the people and their lack of participation in the advancement of the plan. Development plans have a negative effects on the environment, communities, the economy and development environment. In contrast, They can also provide opportunities through converting natural resources into financial resources, developing skills and social capacities, developing infrastructure and business, and investing them resources for environmental and social programs. Therefore, in order to identify the negative and positive consequences of projects, it is necessary to identify the project effects and take measures to reduce or eliminate negative effects as well as measures to strengthen the positive impacts of the project. The port construction is one of the economic projects that have important impacts and consequences for the region. According to the complexity of port systems and the various ways in which the stakeholders are dependent on the operation of the port, the specimen demonstrates stakeholders' concerns to create a complete picture of the actors and stressors that can affect the performance of the port beyond the concerns that are commonly caused by port operators and harbors To be affected.

**Methods and Material**

In this research, which is a type of applied research, field observations, individual and group interviews, and also a questionnaire tool for collecting information have been used. Validity of the questionnaire was assessed by professors and experts and its reliability was estimated to be 0.75 using Cronbach's alpha coefficient. The statistical population of the study was 8840 people in the city of Chaf and Chamkhaleh in 2016 which was obtained using Cochran formula = 400 n. The questionnaires were filled out by stratified random sampling and the data were analyzed by SPSS 20 and LISREL 8.80.

### **Results and Discussion**

In this study, in order to assess the social impacts of Chamkhaleh port construction, a total of 24 items were studied to examine seven variables of quality of life, growth opportunities, social cohesion, social participation, economics, biological environment and physical environment. For this purpose, these variables were considered as a hidden variable, and the items were considered as observable variable and the effect of explicit variables on them was investigated using confirmatory factor analysis. Based on the results of the study, the impacts of project on quality of life, opportunity for growth and development, social participation and economy have been positive but the project will have negative effects on the indicators of social cohesion, biological environment and physical environment. Accordingly, the most important positive impacts of Chamkhaleh Port construction on the local community, the increase in the prices of agricultural and residential property, the creation of new construction in the region and the creation of new jobs in the region, ranked first to third and the most important negative effects of the project include reducing social justice, eliminating the habitat of animal species and affecting the life of the aquatic environment due to the change in water quality.

### **Conclusion**

In order to realize the goals of development plans, performing social impact assessments along with economic and environmental assessments before and after the project implementation and during its implementation can, in addition to increasing the participation of local communities in development plans, lead to social welfare and economic savings, and the sustainability of the plan and to achieve its goals. Based on the findings of the research, Chamkhaleh port construction project will have positive effects on the region in terms of economic indicators, quality of the overall living space and the opportunity for growth and development, among which the most important are increasing the prices of agricultural real estate, creating conditions for new investments and create new job opportunities in the region. But the effects of the project will be negative in terms of indicators of social cohesion and biological environment and physical environment. The most important of these effects include the reduction of social justice, the destruction of animal habitats and the pollution of the seawater. Accordingly, the Chamkhaleh port construction project, in addition to the significant positive impacts on the region, will have significant negative effects that can be reduced by providing solutions that can negatively effect the project.

**Keywords:** Social Impact Assessment, Development Plan, Sustainable Development, Local Community, Chamkhaleh.

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