RANKING COUNTIS OF KOHGILUYEH AND BOYER AHMAD PROVINCE IN TERMS OF ECONOMIC DEVELOPMENT USING FUZZY LOGIC

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Abstract. If we consider that development is a Relative issue, Trying to reach development is decisive one. Working for reaching improvement is the first popups of every system and even each family our human being. Policymakers have tow proposes from designing their plans: first, better allocation and Distribution of resources and credits and second, design a fair framework to ascertain economic and social justice and creating real economic growth. In Iran vision statement, development with social justice and protection of dignity and human rights has been emphasized. To reach this purpose, drawing the economic, social and cultural vision of each county using available data which Represents development criteria, is the most important. For this reason, for each planning, Understanding the status quo and reviewing the economic and social status and moving to Favorable situation is a critical issue. In this study, using socio-economic indicators, Development level of Kohgiluyeh and Boyer Ahmad Province countis, Due to the complexity and quality of the development indicators by the method of decision theory using fuzzy logic for year 1388 calculated. Results suggests that however Kohgiluyeh and Boyer Ahmad Province countis In terms of some of the indicators of development, they became more convergent, However, the distance between some of the cities is still high and there is no significant difference in the distance between districts.
Key words: Economic development, Fuzzy logic, Kohgiluyeh and Boyer Ahmad Province.

Introduction. Development is always one of the concerns of every society. The principle of decentralization and low to high level planning, participation and transfer of affairs to the people have always been acknowledged as a development approach.
Preservation and continuity plays a fundamental role in the survival of the natural and social life of the modern human economy and, on the other hand, development and development are issues that are always of interest to all sectors of society. So, It can be said that development as a sign of sustainable development and all aspects is always one of the main goals for the progress of each country.
It is considered as an important strategy to meet the basic needs and optimal distribution of the benefits of national development. Therefore, this paper examines the effects of factors affecting development.

Literature Review. In geographic studies at regional levels due to the variety of spatial phenomena and their various characteristics, it is not possible to study these phenomena alone, because it makes it impossible for financial, human and time constraints to make such a work impossible and, if possible, will not yield a desirable result.
The first step to study spatial phenomena with multiple characteristics is to classify them in similar groups.
The first step to study spatial phenomena with multiple characteristics is to classify them in similar groups.
Therefore, classification is a tool for organizing various information for easier understanding of the contents: a study called the leveling of the urban system and the regional development of the sample, Khorasan province was carried out through factor analysis method and then using clustering technique technique.
In this study, 47 urban areas in Khorasan province, as well as 22 indicators in the field of urban growth and size, status and quality of employment, residential services, welfare facilities and matrix development dimensions of 22 × 47 were constructed.
Using factor analysis method, indices with internal and internal correlation were reduced from 22 indicators to 4 factors and the results of using this model of grouping in Khorasan cities were classified into seven groups (rahnama, 1373).
The ranking of geographical locations and locations takes into account the concept of the relative development of the development. Although all locations in a certain limited range may not be developed in general terms, one can choose the most developed of these locations. If we consider development as an abstract and absolute phenomenon, we can never discuss the most developed or least developed ones.
By accepting the above results, leveling and measuring the extent of development in different regions of a certain range takes a more logical and scientific aspect and is justified by the reasons.
Moshrefi (1375), A study entitled "Measuring the Development of Provinces of the Country" conducted during three periods of 1371-1367-1375. In this study, factor analysis has been used and the indicators used in this study are divided into several groups.

- Demographic Indicators
- Health Indicators
- Educational Indicators
- Cultural Indicators
- Economic-Agricultural Indicators
- Economic Indicators - Industry and Mines
- Communication Index

The above indicators are divided into smaller indices (population index to four indicators, health index, index of education, 10 indicators, cultural indicators, 4 indicators, agriculture, 9 indicators, industry and mining, 8 indicators, one indicator communication). Results obtained from the factor analysis method The cluster analysis model is grouped.

The grouping of this study in 1355 is as follows:
- Group 1: Tehran and Markazi Province
- Group 2: Provinces of Khuzestan, Isfahan, Fars, Yazd, Semnan and Kerman
- Group 3: Guilan and Mazandaran provinces
- Group 4: Provinces of Khorasan, East Azarbaijan, Kermanshah and West Azarbaijan
- Group 5: Zanjan, Kordestan, Kohgiluyeh and Boyerahmad provinces, Ilam, Hamedan, Lorestan, Chaharmahal and Bakhtiari, Bushehr, Hormozgan and Sistan and Baluchestan provinces.

The grouping of the above-mentioned study in 1988 was as follows:
- Group 1: Tehran Province
- Group 2: Isfahan Province
- Group 3: Kerman province
- Group 4: Yazd and Semnan provinces
- Group 5: Gilan, Khorasan, Fars, and Mazandaran provinces
- Group 6: Kurdistan Province
- Group 7: East Azarbaijan, Central, West Azarbaijan, Khuzestan, Lorestan, Kermanshah, Zanjan, Hamedan, Sistano Baluchestan, Chaghlooyu Boyer Ahmad, Hormozgan, Chahar Mahal and Bakhtiari

The grouping of the above study in 1993 was as follows:
- Group 1: Tehran Province
- Group 2: Isfahan Province
- Group 3: Kerman province
- Group 4: Yazd and Semnan provinces
- Group 5: Zanjan, Central, Gilan, Fars, Mazandaran provinces
- Group 6: Provinces of Khorasan, Khuzestan and East Azarbaijan
- Group 7: Kagliuyeh and Boyer Ahmad, Ilam, Bushehr and Chahar Mahal and Bakhtiari provinces
- Group 8: Hormozgan provinces, Kurdistan, Sistan and Baluchestan, West Azarbaijan, Hamedan, Lorestan and Kermanshah.

One of the first studies in the field of leveling the provinces was a study that was conducted by Asghar Talaminai in 1349 as an analytical study of regional features in Iran. In this study, the factor analysis method was used and the results indicate that any decision making and investment in different regions should necessarily be done by studying the social and economic problems of the region, because if these investments are not paying attention to the active sectors in that area Not only will it not solve the problem of the (local) or national (regional) problem, it is possible to override a large number of handicrafts and agriculture in that region and cause a number of other problems in the economy.

The preliminary design of the identification of deprived areas was the title of a study that was conducted by the management and planning organization during the six stages from 1361 to 1367. This study was carried out by taxonomic method taking into account the three main indicators of education, health and rural development, which have become 11 sub-indicators, which were studied in the cities of the country.

In this study, almost contradictory results were collected. A report prepared in the Office of Social Planning and Human Resources Management and Planning Organization, using eight major indicators (on the first year of the study), identified Ilam, Kohgiloye, Boyerahmad, Zanjan, Kurdistan and Sistan and Baluchestan provinces as the most deprived provinces in the country. And Khorasan province were identified as the 11th undeveloped province in the country.

International organizations such as the World Bank rank global countries in terms of GDP per capita production. According to this ranking, the World Bank has divided the world countries into a low income group from the low income group, respectively. The study of the development of countries and the status of Iran is an article that Morteza Rasoul-e-Royaei has done in the year 1370, using the Morris index and the index of development.

The indicators used in this study were life expectancy at birth, per capita cattle per day, population per physician, per capita consumption of energy, ratio of registered students to the age group of 24-20 in the academic year (67-66), The urban population is a percentage of the total population. The results show that none of the indicators alone indicates development or underdevelopment of one. But the average of these indicators is the development gap or underdevelopment gap. Among the six indices studied, Iran has a better position in terms of the indicators of life expectancy, urban population and per capita consumption of calories in comparison with other indicators. Ranking of high-income countries in Iran is the thirteenth of the fifteen countries.

Regional planning often requires that different regions of the country - which sometimes come from administrative divisions such as provinces, counties, districts and villages, and sometimes by natural divisions such as water courses

- are grouped together. The planners try to classify the regions according to their situation, sometimes by means of poverty-poor classification, sometimes done according to class-modernist-traditionalism.

Variables such as enjoyment, modernity, etc., or because of the lack of necessary information or because of the type of variable, are not always the direct measurement. In a study conducted by Firouz Tofigh in 1993 or a factor analysis method, using four indicators of urbanization ratio, student ratio, facility ratio, non-food ratio, the provinces of the country are grouped into six groups.

after Keynes's intervention, the government was accepted in the market mechanism, however, the issue of regional equilibrium was not considered by economists as a way of achieving economic development. This goal was encouraged and recommended by the United Nations, but the performance of a significant number of countries showed that achieving this goal not only failed to provide prosperity and poverty reduction and class differences in these societies, but also in some cases retaliation. Thus, from the 1950s onwards, the issue of balanced growth was considered by economists and found an important place in the texts of economic development. A study was conducted in 1997 in the name of regional economic inconsistency in Iran by Mostafa Salimifar. This study examines the two periods of 1350 and 1370 provinces of the country. In the study, the scatter coefficients were used.

Also, for the more comprehensive study, the factor analysis method has been used, which, according to the composite 21index, allows us to use all developmental or non-developmental factors in each province. For the above indices, indicators have been selected from different sectors and the method has been applied to them. To this end, we categorized the provinces of the country according to the acquired scores. The results of both stages indicate a decrease in the heterogeneities in 1370 compared to 1350.

Due to the size of the land, climate diversity and the special situation of the topography of Iran, it is necessary to pay more attention to the role of different regions in economic aspects.

Yaghoub Hosseini and Otosa Eskandari A study titled Ranking of the provinces of the country in terms of enjoying socioeconomic indicators in 2000 by taxonomy using two major indicators of development variables and social and structural variables, each of which is 22 sub-indicators and 31 sub-indicators Are divided.

The results show that in terms of developmental variable, the provinces of Tehran, Isfahan, Kerman, Mazandaran and Central are located in the first to fifth rows, and the provinces of Kurdistan, Ilam, Bushehr, Kohgiloyeh, Boyerahmad and Sistan and Baluchestan respectively contain the last rows of the table, respectively. In terms of infrastructure facilities and ranking different from the development variable.

, a 1954Measurement of development has been the subject of controversy for nearly half a century. Long ago, in United Nations report on social policy and planning provided specific recommendations against the use of economic s, it produced an 1970indicators as the only criteria for country development. Following this report, especially in the enormous collection of different writings.

The relationship between increased production and effective policies and productivity in developing countries has led to a lot of studies. One of these studies is the study of the comparative study of the total productivity of the factors of development in large industries in the provinces of Iran. The Cobb-Douglas production function and the Diasia index were performed by Jalil Khodaparast Shirazi et al.

The results show that labor force stretching in Mazandaran province is the lowest and Kerman province has the highest and capital attraction is the lowest in Guilan province and the most is in Central province. The total productivity of production factors in Khuzestan province has the highest productivity growth rate and the lowest productivity Productivity growth rate is related to Mazandaran province.

One of the efforts was made by policy makers Farhad Nur Bakhsh, Professor of Economics and Head of the Center for Development Studies at the University of Glasgow, Scotland in 2003, entitled Human Development and Regional Inequalities in Iran. In this study, 16 indicators have been used to rank 26 provinces in Iran. In this study, the Human Development Index (MDI) has been used as the Composite and Regional Indicator of Human Development (RMHDI).

The 16 indicators used in this study are:

1- Hope for life, year
2- Adult literacy, percent
3- Real GDP per capita, 1000 Rials
4- percent of the population who have access to safe water.
5- percent of the population who have access to health facilities.
6- Real GDP per capita for 20 percent of the poorest provinces is 1000 Rials
7- Rates for enrolling girls in elementary school
8- The rate for enrolling girls in middle school and high school
9- The rate of survival of infants
10- Moms' survival rate
11- Entry fee at elementary
12- The rate of enrollment in secondary and high school
13- The number of scientists and R & D specialists per 100,000 people
14- Workforce, as a percentage of the population
15- percent of the workforce in the industry 16% of the workforce in the service sector

or as determining the degree of development 2004Reza Mousavi Mohseni and Mazda Ma'davi have done a study in and balance in the provinces of the country using fuzzy logic method, this study uses four indicators of per capita production at constant prices; unemployment rate, illiteracy rate and The ratio of population to physician and fuzzy logic method has ranked the provinces of the country.

The recognition of the economic, social and cultural status of the provinces of the provinces in order to reduce the imbalances and create more regional equilibrium is of considerable importance in the planning circles of Iran.

The study of the status of Fars province in the country in terms of economic, social and cultural indicators was evaluated by Ali Sarem in 2005 with eight indicators. Results show

Model design. There are many different ways of measuring the extent of development in different regions of the country, each with disadvantages and disadvantages. The existence of numerous and dispersed statistics and figures in many cases causes confusion and doubt in identifying areas and their extent, hence their logical combination in order to facilitate the establishment of the necessary and necessary. Of course, any merger should be done according to the scientific criteria and observance of the points that make the index sufficiently meaningful and meaningful. Some of these methods are presented below.

TOPSIS[2]

Multi-criteria decision making (MADM) finds the most effective answer among all available options according to different criteria. It is assumed that the decision maker wants to choose one of the most efficient and preferred options all n options. ($j = 1,2,..., m$) $x_j f_i (i = 1,2,..., n)$ based on criteria or to rank

The MADM model is summarized as follows:

$$\max\{f_i(x_j) \,|\, f_i \in F,\, x_j \in X_1\}$$

$$\min\{f_i(x_j) \,|\, f_i \in F,\, x_j \in X_2\}$$

3-2- Basic concepts of fuzzy numbers

Definition 1: A fuzzy number $\tilde{m}$ is a subset of the set of real numbers R that is applicable to the following conditions:

- There is at least one $x_0 \in R$ presence or $u_{\tilde{m}}(x_0) = 1$ membership degree.
- The membership function $u_{\tilde{m}}(x)$ is continuous from left to right.

Definition 2: We call a trapezoidal fuzzy number $\tilde{m} = (a,b,c,d)$ whenever the membership function $\mu_{\tilde{m}}$ from $\tilde{m}$ is defined as:

$$\mu_{\tilde{m}}(x) = \begin{cases} \dfrac{x-a}{b-a} & (a \leq x \leq b) \\ & (b \leq x \leq c) \\ \dfrac{d-x}{d-c} & (c \leq x \leq d) \end{cases}$$

3-3- Develop TOPSIS for group fuzzy decision making FMAGDM

In this research, we use group decision making in a fuzzy environment. Assuming n is the possible choice of the decision maker $F = \{f_1, f_2,..., f_n\}$, which must be chosen $p_k (k = 1,2,..., K)$ efficiently and effectively on the basis of the m criterion $X = \{x_1, x_2,..., x_m\}$. The importance of weights for different criteria and the amount of options are selected from linguistic variables. The importance of weight of each criterion, directly or indirectly (the paired comparison method) can be obtained.

Results. The results of the study show that the distance between Kohgiluyeh province and the country's average is lower. It can also be concluded that the same planning can not be effective for all regions of a country with a disparity in the economic and social indicators of development.

Using the TOPSIS method and fuzzy logic, ranking of cities in Kohgiluyeh and Boyerahmad province has been carried out with some indicators of economic and social development. In this study, three indicators of agriculture, education and agriculture have been used, the latest official and available statistics are 1393. During the study, the number of cities in Kohgiluyeh and Boyerahmad province is 8.

4-1- Heagence rating

hiegenceThe following indicators have been used to rank the health of the cities:

1- The number of medical institutions
2- Hospital bed per capita for every 1,000 people
3- Number of pharmacies per 1000 population

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[2] -Technique for Order Preference by Similarity to Ideal Solution

4- General practitioner per capita for every 10,000 people

5- per capita expert physician for every 10,000 population

6- Rural health houses for every 10,000 people

The results show that the city of Boyer Ahmad in the first row and Kohgiluyeh city is in the second row of the table. Gachsaran is ranked third after Kohgiluyeh. Bahmei and Lameh cities are ranked in terms of health indicators and their coefficient of proximity (especially Led city) is significantly lower than other cities, therefore, the authorities of the province need to be given the importance of health In the quality of life, health indicators are significantly improved in this city; other cities do not differ significantly (Table 4-1).

Table 4-1- Health Index Ranking

Proximity factor	Counties	Rating
0.66	Boyerahmad	1
0.54	Kohgiloye	2
0.39	Gachsaran	3
0.19	Dena	4
0.19	Charam	5
0.15	Basht	6
0.10	Bahmei	7
0.01	Lande	8

Education Rating

The following indexes are used to rank the education of cities:

1- The ratio of female students to total students - elementary school

2- Student-to-teacher ratio - elementary

3- Student density in elementary class

4- The ratio of female students to total students - guidance course

5- Student-teacher ratio - Guidance

6- Student density in the classroom - Guidance

7- The ratio of female students to total students - High school

8- Student-teacher ratio - High school

9- Student density in high school class

10- The ratio of female students to total students - Pre-university courses

11- Student / teacher ratio - High school

12- Student density in high school class

13- Student-teacher ratio

14- Student density in class

The results show that the city of Cheram is in the first row and Kohgiluyeh in the last row, the educational ranking shows that the city of Boyer Ahmad, ranking in the top ranking of the table, is ranked seventh in the ranking, and This reflects the fact that more attention is paid to public health in the city as well as Kohgiluyeh.

Unfortunately, educational structures are not synonymous with population growth and migration, and educational standards are low.

On the other hand, it can be said that in recent decades the government has been able to adhere to justice in the area of education. Table 3-5 shows that the coefficient of proximity of cities is not significantly different, but Boyerahmad and Kohgiluyeh have a very low coefficient of attraction compared to other cities, which requires the serious attention of the authorities to balance the training index of these two The city has more than other cities (Table 4-2).

- Educational index rankings 2Table 4-

Proximity factor	County	Rating
0.23	Charam	1
0.21	Bahmei	2
0.16	Dena	3
0.11	Lande	4
0.10	Basht	5
0.07	Gachsaran	6
0.07	Boyerahmad	7
0.05	Kohgiloye	8

4-3- Agricultural ranking

The following indices are used for ranking the agricultural area of the city:

1- City share of chicken meat production

2- City share of milk production

3- City share of egg production

4- City share of honey production

5- City share of fish production

6- City share of red meat production

7- Levels of garden products

8- County share of the cultivated area

The results show that the city of Boyer Ahmad is in the first row and is lying in the last row of the table. According to the coefficient of proximity, the distance between the first three to the third is the worst (ideally negative), and the best (ideally positive). The minimum distance is (Table 4-5)

Table 4-3- Agricultural index rankings

Proximity factor	County	Rating
0.66	Boyerahmad	1
0.54	Kohgiloye	2
0.39	Gachsaran	3
0.19	Dena	4
0.19	Charam	5
0.15	Basht	6
0.10	Bahmei	7
0.01	Lande	8

4-4- Cultural Rating

The following indicators have been used for Cultural ranking of cities

The number of members of public libraries is 10,000

1- Percentage of books for members of public libraries

2- The mosque per capita for 10,000 people

3- The number of participants organized in sports competitions per 1000 people

4- The proportion of members of the intellectual breeding center to the population of the city

The results shows that Bahmei is in the first row and Kohgiluyeh in the second row, and the Ledeh and Chram cities are in the last row. Considering the distance of these cities from the center of the province, close to the center of influence in Boyer Ahmad is ranked 3rd in the table. In this index, due to the small coefficient of close proximity to the city of chram, authorities are required to seriously promote the cultural indicators of this city (Table 4-4).

Table 4-4-Cultural index Rating

Proximity factor	County	Rating
0.42	Bahmei	1
0.31	Kohgiloye	2
0.29	Boyerahmad	3
0.27	Basht	4
0.24	Dena	5
0.23	Gachsaran	6
0.20	Lande	7
0.14	Charam	8

Economic and Economic Ranking
The following indicators are used for ranking the economic and infrastructure of the cities:

1- per-capita deposit to the banks

2- The length of the city highways

3- The length of the main roads of the city

4- The length of the rural roads of the city

The results show that the city of Boyer Ahmad in the first row and the city of Gachsaran are in the second row, and the city of Landa and Chram in the last row are according to the distance of these cities from the center of the province to the center in this indicator of influence It is a transition, even the Bahmei city is ranked the last (Table 4-5).

Table 4-5- Economic and Infrastructure Indicators Rating

Proximity factor	County	Rating
0.88	Boyerahmad	1
0.65	Gachsaran	2
0.53	Dena	3
0.39	Kohgiloye	4
0.18	Basht	5
0.18	Bahmei	6
0.14	Charam	7
0.06	Lande	8

Suggestions. In this study, the TOPSIS method and fuzzy logic ranking of the cities of Kohgiluyeh and Boyerahmad provinces were performed. In this way, the comparison of the cities with the best situation (positive ideal state) and the worst (negative ideal state) of the province itself is carried out. The proximity coefficient represents the lowest distance to the best position and the furthest to the worst position

Also, in this method, the coefficient of proximity shows a very large difference between the first city and the last three cities. This indicates a regional imbalance in this small province, although this province is less extensive in terms of size than other provinces of the country, but the current imbalance suggests the need for special attention to the three cities of Bahrain and Bahmei. In the final ranking, the results show that Boyerahmad is ranked first and Ledi is ranked the last. The near coefficient of difference is between the first rank with the second, third and fourth, and from the second to the fifth place there are not many distances. The city of Dena is located in all the indicators in the middle of the chart, which indicates the more stable of the city. According to the three health, education and agriculture ranking tables, the cities of Boyerahmad, Gachsaran and Kohgiluyeh are located above the tables and are among the more developed cities in the province. Lame, Bahmei and Chram cities are located at the bottom of the table, in other words, they are less numerous in cities. Also, these three cities are significantly more deprived of other cities. The cities of Basht and Dena have moderate status than other cities in the province.

Suggestions for future research. It is suggested that more research be done to examine the difference between the responses and the variables studied among different groups of employees with different backgrounds and different age Also, according to the results of this paper, the following studies can be proposed in this regard..groups

1- A comparative study of this research in other parts of the country.
2- It is suggested that researchers and researchers consider longer the research period for future research, and also calculate the variables of the research, if possible, on a monthly or weekly basis.

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