Analysis of Intraregional Disparities of Development in Mazandaran Ostan

F. Mozaffar
Assistant Professor of Architecture and Urban Studies, Iran University of Science and Technology, Tehran, Iran.
Y. Aghaei
M. A. School of Architecture and Urban Studies, Iran University of Science and Technology, Tehran, Iran.
M. Taghvaei
Associate Professor of Geography and Urban Planning, University of Isfahan, Iran.
R. Shaykh Baygloo*
Ph.D. Student in Geography and Urban Planning, University of Isfahan, Iran.

Abstract

Integrated regional development is an important issue in regional planning. The Ostans of Iran are in different levels of development in which interregional and intraregional inequality is obvious, and Mazandaran Ostan is a salient example for intraregional inequality. In spite of Iran's regional policy based on reducing the development gap between different regions and creating a relative balance in regional development, yet some regions suffer from lack of basic services and facilities. To adopt appropriate development actions for a region, planners should first evaluate sub-regions as regards existent level of development. The aim of this study is to analyze the Shahrestans of Mazandaran Ostan with respect to indicators of development. For this purpose, fifty indicators were chosen, submitted to factor analysis, of which five factors were extracted related to 33 indicators: infrastructural factor, industrial-agricultural factor, health factor, educational factor and communicative factor- which account for nearly 76% of the variance. Results showed that there are obvious differentiations among Shahrestans in development level; so, it is urgent to improve some indicators -especially in which inequity is critical- in low-level Shahrestans which are the Shahrestans of Galoogah and Jooybar in this study.
Key words: Integrated regional development, Regional planning, Iran, Mazandaran Ostan, Factor analysis.

Introduction

Development is strongly shaped by processes that occur on the ground, in specific regions (Scott and Storper, 2003). Regional development can be defined as the dynamic aspect of a regional system, or more precisely, as the changes that take place in the states of the regional system as time progresses (Folmer et al., 1977). National governments have exhibited an increasing concern for problems of regional development. Governments are recognizing the place-specific nature of economic and environmental issues and outcomes. They are also aware that environmental cause and effect cannot be artificially limited by the political or geographic boundaries of cities (Parham, 1996). Integrated planning, answers the needs of a sustainable development program by being dedicated to local identity recovery. It is substantially the search for the maximum equilibrium for the territory and its human communities

(Alexander, 2006). The goal of sustainable human development is to create an enabling environment where all people can act to improve the quality of their lives, generation after generation (United Nations Centre for Regional Development, 2001). It may be argued that the policy of regional development will never be effective, unless the following is provided:

• Clear delimitation of powers and responsibilities between regions and the capital, as well as among intra-regional levels of power;

• Financial independence, or sufficiency of local budgets for local self-government bodies to discharge their powers;

• Promotion of development of backward regions and regions by fiscal and investment support (Fedyuk and Bychenko, 2009).

Regional planning in Iran during the first decade following the Revolution (the 1980s) was based on reducing the development gap between different regions and creating a relative balance in regional development, special attention to the backward areas, control of urban and rural system, preparing the foundation for hierarchical distribution of services and infrastructure in the entire territory. (Sheikhi, 1998) In the second decade after the Revolution (beginning in 1991), a new direction appeared in the regional planning. The main differences include:

• Change of the direction of regional planning from national and interregional levels to intra-regional, regional and sub-regional levels.

• Increased attention to organizing plans for rural areas.

• Attention to identifying potential and capacities of regions for development (Sheikhi, 2001).

Some studies which have focused on intraregional disparities and regional development are as follows:

Reuter analyzed the development and effects of intra-provincial regional disparities in China between 1989 and 2001. In his paper, the impact of the observed intra-provincial disparities on regional development has been addressed. A decomposition analysis showed that intra-provincial disparities contribute significantly to total regional inequality (Reuter, 2004, 1). Also, in similar studies by Khan et al. (1993), Khan and Riskin (2001), Tsui (1993, 1998a, 1998b), Hermann-Pillath, Kirchner and Pan (2002), Gustafsson and Li (2002), Akita (2000, 2001, 2003) and Song, Chu and Chao (2000), the common understanding is that intraregional disparities make a large proportion of total regional disparities. Khan et al. (1993: 66), for example, argue that "a careful analysis of regional differences in sources of inequality could be of much help in devising policies for improving income distribution."

There are not enough voluminous studies about interregional inequalities in Mazandaran Ostan, and analyses of the pattern of intraregional disparities are in short supply. The main reason for this could be the high level of aggregation used in most studies about the subject, which focus on disparities between macro-regions using Ostan level data. Therefore, this paper is to provide a measurement of the regional component of intraregional disparities in Mazandaran Ostan over geographic space which focuses on disparities between Shahrestans.

An Overview of Mazandaran Ostan

Mazandaran is a Caspian Ostan in the north and covers an area of 23,756 sq. km.

It is located on the Southern coast of the Caspian Sea, and is bordered clockwise by Golestan, Semnan and Tehran Ostans. The Ostan also lays Qazvin and Gilan to the west. It is one of the most populous Ostans by population density and one of the wealthiest regarding diverse Natural Resources (Bookrags Staff, 2006).

Mazandaran is divided into 16 Shahrestans which are as follows: Amol, Babol, Babolsar, Behshahr, Tonekabon, Jooybar, Chaloos, Ramsar, Sari, Savadkooh, Qaem Shahr, Galoogah, Mahmood Abad, Neka, Noor and Noshahr.

The city of Sari is the capital of Mazandaran Ostan. The Ostan's four largest Shahrestans are Sari, Babol, Amol and Qaem Shahr. (table 1) The population of the Ostan has been steadily growing during the last years. The proportion of urban population to the total population of the Ostan in 1996 reached to 45.90%, while in 2006 increased to 53.18%, while proportion of rural population decreased from 54.10% in 1996 to 46.82 in 2006 (Management and Planning Organization of Mazandaran, 2006; Statistical Centre of Iran, 2006).

Table 1: Area and Population of Shahrestans of Mazandaran Ostan

Shahrestan	Area (Km^2)	population
Amol	3074.40	346775
Babol	1578.10	469591
Babolsar	345.70	175302
Behshahr	1416.27	156195
Tonekabon	2043.20	194719
Jooybar	285.50	70419
Chaloos	1597.30	122863
Ramsar	729.80	68163
Sari	3685.30	495360
Savadkooh	2078.00	67920
Qaem Shahr	458.50	295135
Galoogah	451.23	39461
Mahmood Abad	262.80	90502
Neka	1358.80	105652
Noor	2675.00	105894
Noshahr	1716.50	118481

Source: Management and Planning Organization of Mazandaran, 2006

Spatial Distribution of cities of Mazandaran Ostan during 1986 and 1996 exhibits concentration of urban population in central parts of Ostan. Although distribution of population and urban settlements of Mazandaran Ostan is more suitable in comparison to arid and semiarid areas of Iran, but [in recent decades] there have been great economical and social changes in four large cities in central parts of the Ostan; So that, Sari, Babol, Amol and Qaemshahr are generating a regional megalopolis (Lottfi, 2008, 61-63). From the viewpoint of position and distribution of main economic activities, it appears that there is forming a tangible kind of local specialization among mentioned micro-megalopolises of the region. So that, administrative centers have been concentrated in Sari and Amol with its industrial park is a rival for Qaemshahr which is the center of weaving industries of Mazandaran Ostan (Ibid, 70).

In some cases, economical-developmental plans for mazandaran Ostan have impelled local and regional development toward unsustainable condition in the region (Bararpoor, 2008, 17)

Objectives

The principal aim of this research is to analyze the various aspects of developmental inequities and to determine development level of Shahrestans within Mazandaran Ostan.

More specifically, the objectives are:

• To rank the Shahrestans with respect to each of the various developmental indicators;

• To understand which Shahrestans have the highest and lowest development level with respect to composite index of development?

• To determine priorities for future development actions.

Methodology

In order to reduce the dimensionality of the data sets and thus to explain the relations among the 50 indicators of development, the multivariate statistical method of factor analysis was used.

Factor analysis is an extremely flexible tool for finding order in large geographical data matrices, either inductively or as tests of hypotheses (Johnston, 1986). Factor analysis is a statistical procedure for transforming (observations by variables) a data matrix so that the variables in the new matrix are uncorrelated. Factor analysis does not identify as many new variables (termed factors) as there are in the original matrix because it ignores that portion of the variance in each of the original variables which is unique to it –i.e. is uncorrelated with any other variable (Johnston, 1978; Johnston et al., 2000).

The main object of factor analysis is to describe the initial variables X1, X2, … , Xp in terms of m linearly independent indices (m < p), the so called factors, measuring different "dimensions" of the initial data set. In this study, the "varimax" or "orthogonal factor rotation" is applied, which keeps the factors uncorrelated.

The aim was to rank and classify the Shahrestans based on their level of development indicators. At first stage 50 indicators were chosen, and submitted to factor analysis; then, 5 factors were extracted related to 33 indicators (Table 2). The data used in this article has been mainly taken from "Mazandaran Statistical Yearbook" published by Management and

Planning Organization of Mazandaran (2006), and "Population's Censuses of 2006" published by Statistical Centre of Iran.

We estimated the factor scores for Shahrestans of Mazandaran Ostan using the formula (1):

$$S_{ik} = \sum_{j=1}^{n} D_{ij} L_{jk}$$

where Dij is the standardized value for observation i on indicator j;

- Ljk is the loading of variable j on factor k;

- Sik is the score of observation i on factor k;

- and summation is over all n indicators.

Table 2: Extracted factors from analysis

Indicator	Factor 1: Infrastructural	correlation
X1	Length of piping gas channel per 100 km2 area	0.712
X2	Length of rural asphalted roads per 100 km2 area	0.889
X4	Number of banks per 100000 persons	-0.619
X6	Number of centers of Internet services per 100000 persons	-0.838
X8	Number of drinking water system subscribers per 100 persons	0.671
X9	Number of electricity subscribers per 100 persons	0.802
X24	Percentage of rural electrification	0.868
X25	Percentage of rural piping gas	0.771
X26	Percentage of villages which have telephone communications	0.693
X28	Rural communication offices per 10000 rural populations	-0.516
X33	Total asphalted roads per 100km2 area	0.922
	Factor 2: Industrial-Agricultural	
X3	Number of agricultural cooperative companies per 1000 farmers	-0.591
X10	Number of industrial factories with 10-49 workers per 100000 persons	-0.591
X11	Number of industrial factories with 50-99 workers per 100000 persons	0.835
X12	Number of industrial factories with over 100 workers per 100000 persons	0.924
X13	Number of industrial workers per 1000 persons	0.873
X27	Portion of Shahrestan in the industrial added value of Ostan	0.917
X30	The yield of barleycorn cultivation per hectare	0.545
X31	The yield of rice cultivation per hectare	0.784

Table 2 continued

X32	The yield of wheat cultivation per hectare	0.728
	Factor 3: health	
X7	Number of doctors per 10000 persons	0.938
X21	Number of rural health care offices per 10000 rural populations	0.671
X17	Number of pharmacies per 10000 persons	0.763
X15	Number of medical laboratories per 10000 persons	0.828
	Factor 4: Cultural-Educational	
X5	Number of books in public libraries per 100000 persons	0.782
X23	Percentage of literacy	0.658
X19	Number of public libraries per 100000 persons	0.846
X29	Teacher/pupil ratio in schools	0.533
	Factor 5: Communicative	
X14	Number of mail boxes per 10000 persons	-0.622
X16	Number of mobile phones per 100 persons	0.813
X18	Number of post offices per 10000 persons	0.621
X20	Number of public telephones per 10000 persons	-0.550
X22	Number of telephones per 100 persons	0.858

Results

In table 3 are the results of analysis, for the set of 16 Shahrestans, of various aspects of development. In this case, five extracted factors account for nearly 76% of the variance, and each factor has a clear interpretation. The first, with high positive loadings on indicators X1, X2, X8, X9, X24, X25, X26, X33, and negative loadings on indicators X4, X6, X28, indicates that the average pattern relates to the infrastructure provision and accounts for nearly 30% of the common variance; so, we named it "Infrastructural Factor". The second, with high positive loadings

for X11, X12, X13, X27, X31, X32 and to a lesser extent X30, and negative loadings for X3, X10, suggests two dimensions of development: industry and agriculture which accounts for nearly 27% of the common variance; so, we named it "Industrial-Agricultural Factor". The third, with high positive loadings on indicators X7, X15, X17, X21, related with hygienic and curative provision accounts for over 16% of the common variance; so, we named it "Health Factor". The forth, with high positive loadings on indicators X5, X19, X23 and to a lesser extent X29, indicates the educational aspect of

development which accounts for nearly 14% of the common variance; so, we named it "Educational Factor". The fifth, with high positive loadings on indicators X16, X18, X22, and negative loadings on indicators X14, X20, indicates that the average pattern relates to the communicative provision and accounts for over 13% of the common variance; so, we named it "Communicative Factor".

Table 3: Aspects of development indicators in Mazandaran: factor analysis, with Varimax rotations

Indicator	Unrotated Factor loadings					Rotated Factor loadings				
	I	II	III	IV	V	I	II	III	IV	V
X1	.779	-.470	.065	-.206	.214	.712	-.464	-.233	-.315	.027
X2	.826	-.063	-.095	.241	-.138	.889	.077	.141	-.019	.139
X3	.121	-.698	.361	.258	-.023	.278	-.591	.170	.488	.263
X4	-.491	-.315	.222	-.458	.446	-.619	-.371	-.381	-.022	-.134
X5	-.447	.056	.632	.052	-.522	-.362	-.259	-.170	.782	.015
X6	-.789	.289	-.040	.088	.310	-.838	.264	.071	.025	.105
X7	-.439	-.359	-.559	.575	-.071	-.293	-.070	.938	-.009	.051
X8	.769	-.212	-.206	.054	.205	.671	-.151	.014	-.480	.132
X9	.788	.337	-.236	.185	-.269	.802	.383	.073	-.197	.043
X10	.322	-.619	.117	-.340	.272	.321	-.591	-.199	-.083	-.144
X11	.081	.845	-.051	-.143	.061	.044	.835	-.300	.045	-.090
X12	.061	.918	-.165	-.052	.157	-.019	.924	-.229	-.114	.002
X13	.172	.907	-.011	.059	.019	.106	.873	-.264	-.105	.127
X14	-.518	-.151	.122	-.467	-.527	-.393	-.279	-.093	.388	-.622
X15	-.047	-.299	-.687	.497	.084	.005	-.008	.828	-.341	.081
X16	-.325	-.055	.453	.756	.237	-.323	-.119	.218	.320	.813
X17	-.190	-.480	-.213	.685	-.057	-.078	-.326	.763	.058	.311
X18	.091	.548	.609	.175	.359	-.056	.351	-.554	.143	.621
X19	-.337	.168	.573	.103	-.481	-.184	-.005	-.124	.846	.023
X20	-.575	-.298	-.513	-.195	-.172	-.492	-.209	.442	-.130	-.550
X21	-.104	-.533	-.546	.043	-.231	.095	-.223	.671	.044	-.429

Table 3 continued

X22	.391	.029	.506	.673	.112	.343	-.128	-.017	.115	.858
X23	-.193	-.161	.304	.210	-.060	-.016	.002	.109	.658	.152
X24	.913	.026	.007	-.141	-.051	.868	.018	-.250	-.195	-.030
X25	.778	-.183	.153	-.116	-.016	.771	-.186	-.226	-.042	.021
X26	.647	-.655	.059	-.108	.070	.693	-.572	-.031	-.098	-.014
X27	.218	.913	-.057	.091	-.034	.190	.917	-.192	-.038	.091
X28	-.342	-.011	-.460	-.089	.681	-.516	.327	.166	-.421	-.032
X29	-.483	-.237	.451	-.108	.081	-.405	-.245	-.171	.533	.029
X30	-.369	.283	-.412	.120	-.511	-.118	.545	.489	.430	-.397
X31	-.174	.786	-.261	.274	.311	-.309	.784	.081	-.303	.271
X32	.150	.668	-.434	-.286	-.168	.170	.728	-.043	-.143	-.487
X33	.863	.171	-.043	.162	-.350	.922	.177	.007	-.038	.059
eigenvalue	8.178	7.781	4.405	3.253	2.651	7.861	7.080	4.343	3.686	3.539
% trace	23.367	22.231	12.584	9.294	7.574	22.460	20.228	12.410	10.532	10.110
% common variance	31.14	29.62	16.77	12.38	10.10	29.65	26.71	16.39	13.91	13.35

According to formula (1), factor scores are weighted summed values for the observations over the indicators, the weights being the factor loading. The larger the value an observation has on the variables which have high loadings on a factor, the larger the score.

The full set of scores for each observation on each factor (Table 4) indicates the value for every Shahrestan on all of the extracted factors.

Table 4: Aspects of development in Mazandaran: factor scores

Shahrestan	Scores on Factor					Composite Index
	I	II	III	IV	V	
Sari	5.300	13.285	0.202	-7.008	2.334	14.113
Babol	3.517	13.360	-2.301	-4.341	-1.613	8.622
Amol	-3.025	1.919	-1.049	5.476	2.305	5.625
Qaem Shahr	9.177	-6.257	2.286	0.726	-0.531	5.401
Tonekabon	-0.115	5.913	1.421	-2.864	0.836	5.191
Behshahr	18.374	-7.165	-7.092	-2.870	2.144	3.390

Table 4 continued

Ramsar	2.921	1.388	-1.527	-3.009	2.643	2.416
Chaloos	-4.944	6.624	-3.275	6.762	-2.799	2.368
Noshahr	-4.641	-6.570	2.177	7.362	3.046	1.375
Noor	-0.531	-3.620	3.467	-1.255	1.277	-0.663
Babolsar	5.537	-2.792	-3.379	-1.369	0.429	-1.573
Mahmood Abad	-5.178	-3.790	6.191	-1.668	1.196	-3.248
Neka	-6.695	-6.131	3.830	3.745	-0.502	-5.753
Savadkooh	-9.300	4.144	-0.929	-3.065	2.627	-6.522
Jooybar	-3.989	-4.790	-1.326	3.860	-6.955	-13.200
Galoogah	-6.394	-5.474	1.336	-0.531	-6.420	-17.482
$\overline{X}$	0.000	0.000	0.000	0.000	0.000	0.000
S	7.173	6.909	3.293	3.233	3.088	7.979

The observations in the data matrix are places, and so it is maps which are being correlated with each other. The factor scores are then an important part of the output of the analysis, since they provide data for a new set of maps, representing the combinations of indicators, which :

make up the factors. In (Figures 1-5) are maps of the standardized scores on the five factors for our analysis of development indicators in Mazandaran Ostan (Table 5); the scores have been arbitrarily divided into four categories by their means and standard deviations

Z-score	Level of development
$1 \leq Z$	high
$0 \leq Z < 1$	medium
$-1 \leq Z < 0$	low-medium
$Z < -1$	low

Table 5: Aspects of development in Mazandaran: standardized factor scores

Shahrestan	Scores on Factor					Composite Index
	I	II	III	IV	V	
Sari	0.739	1.922	0.061	-1.655	0.756	1.768
Babol	0.490	1.933	-0.699	-1.025	-0.523	1.080

Table 5 continued

Amol	-0.422	0.277	-0.319	1.295	0.746	0.704
Qaem Shahr	1.279	-0.906	0.694	0.172	-0.172	0.676
Tonekabon	-0.016	0.855	0.431	-0.676	0.270	0.650
Behshahr	2.561	-1.037	-2.155	-0.677	0.694	0.424
Ramsar	0.407	0.200	-0.464	-0.710	0.856	0.302
Chaloos	-0.689	0.958	-0.995	1.598	-0.907	0.296
Noshahr	-0.647	-0.951	0.661	1.740	0.986	0.172
Noor	-0.074	-0.524	1.052	-0.296	0.413	-0.084
Babolsar	0.772	-0.405	-1.027	-0.323	0.139	-0.198
Mahmood Abad	-0.722	-0.549	1.880	-0.393	0.387	-0.408
Neka	-0.933	-0.888	1.163	0.886	-0.163	-0.721
Savadkooh	-1.297	0.599	-0.283	-0.723	0.850	-0.818
Jooybar	-0.556	-0.694	-0.403	0.913	-2.253	-1.655
Galoogah	-0.891	-0.793	0.405	-0.125	-2.079	-2.191
$\overline{X}$	0.000	0.000	0.000	0.000	0.000	0.000
S	1.000	1.000	1.000	1.000	1.000	1.000

Factor 1: Infrastructural

Based on the results of this study for Mazandaran Ostan, as regards factor 1 (factor of Infrastructural), the Shahrestans of Qaem Shahr and Behshahr are at high level; Sari, Babol, Ramsar and Babolsar are in medium status; Amol, Tonekabon, Chaloos, Noshahr, Noor, Mahmood Abad, Galoogah, Jooybar and Neka are at medium-low level; Savadkooh is at low level of development and it is in urgent need of appropriate actions about infrastructures. Figure 1 shows the status of Shahrestans as regards factor 1.
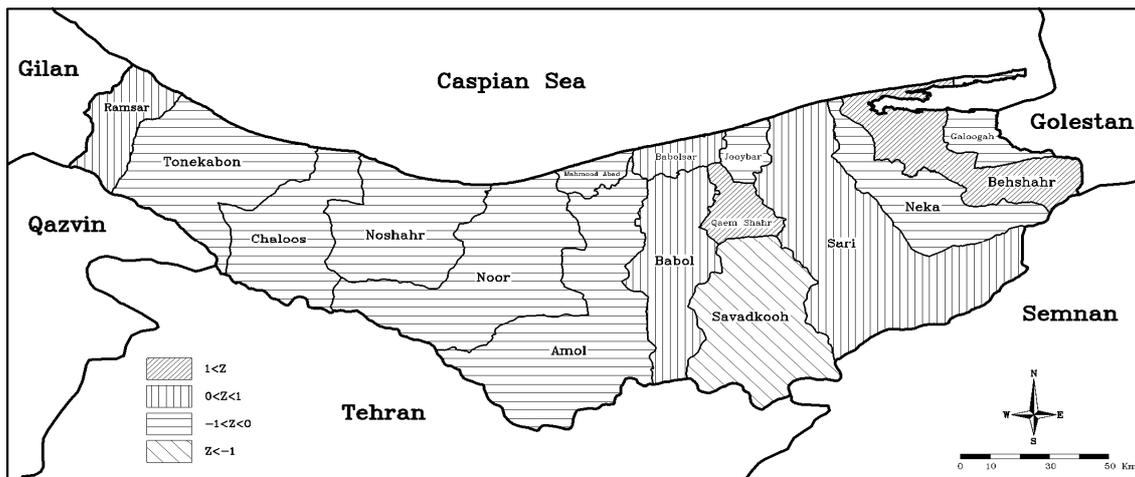
Figure 1: Categories of Shahrestans on factor 1
Source: authors, fieldwork

Factor 2: Industrial-Agricultural

With respect to factor 2 (factor of Industrial-Agricultural) development levels of Shahrestans are as follows: High level: Shahrestans of Sari and Babol; Medium level: Shahrestans of Amol, Tonekabon, Chaloos, Ramsar and Savadkooh; Medium-low level: Shahrestans of Noshahr, Noor, Mahmood Abad, Babolsar, Qaem Shahr, Neka, Jooybar and Galoogah; Low level: Behshahr. (Figure 2)
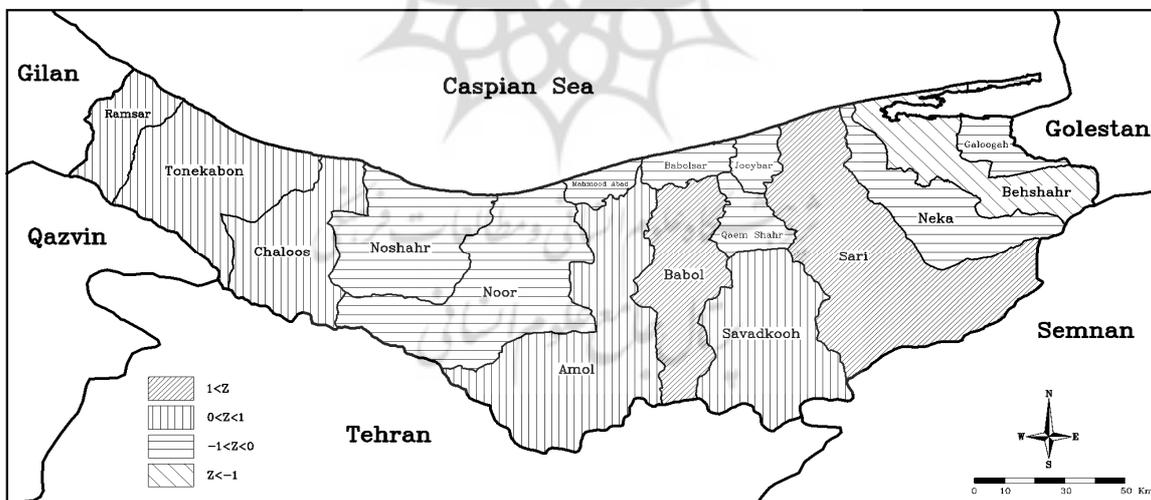

Figure 2: Categories of Shahrestans on factor 2
Source: authors, fieldwork

Factor 3: Health

With respect to factor 3 (factor of Health) development levels of Shahrestans are as follows:

- High level: Shahrestans of Noor, Neka and Mahmood Abad;

- Medium level: Shahrestans of Sari, Qaem Shahr, Noshahr, Tonekabon and Galoogah;

- Medium-low level: Shahrestans of Amol, Babol, Ramsar, Savadkooh, Chaloos and Jooybar;
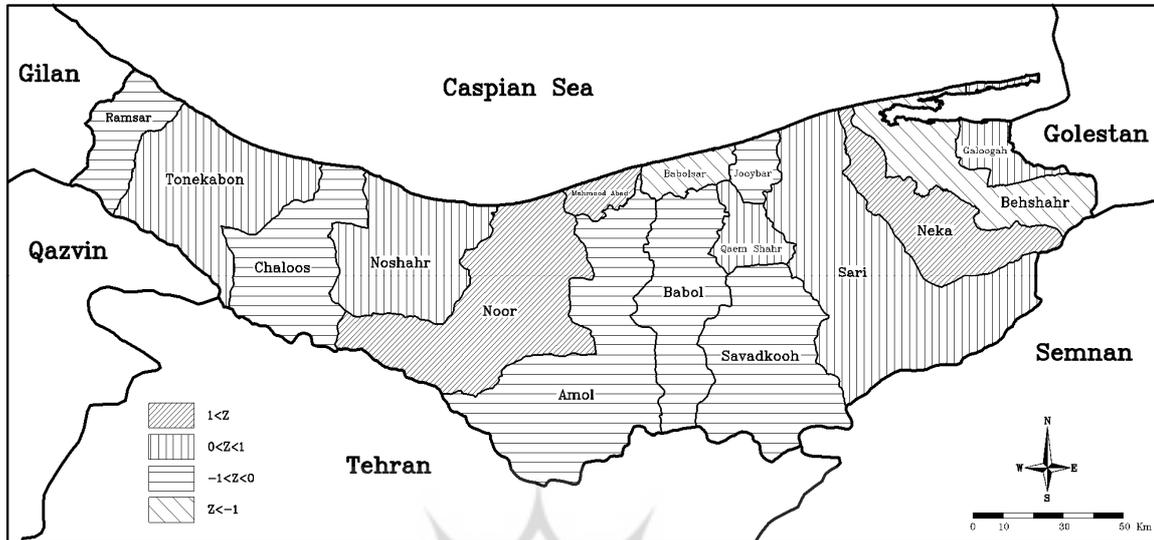
- Low level: Behshahr and Babolsar. (Figure 3)

Figure 3: Categories of Shahrestans on factor 3
Source: authors, fieldwork

Factor 4: Cultural-Educational

As regards factor 4 (factor of Cultural-Educational) development levels of Shahrestans are as follows:

- High level: Shahrestans of Amol, Noshahr and Chaloos;

- Medium level: Shahrestans of Neka, Jooybar and Qaem Shahr;

- Medium-low level: Shahrestans of Ramsar, Tonekabon, Noor, Mahmood Abad, Babolsar, Savadkooh, Behshahr and Galoogah;

- Low level: Sari and Babol. (Figure 4)

Figure 4: Categories of Shahrestans on factor 4
Source: authors, fieldwork

Factor 5: Communicative

About factor 5 (factor of Communicative), analyses showed that Shahrestans of Sari, Amol, Savadkooh, Babolsar, Behshahr, Noshahr, Noor, Mahmood Abad, Tonekabon and Ramsar have better status than other Shahrestans in Mazandaran Ostan. Babol, Chaloos, Neka and Qaem Shahr are at medium-low level, and low level Shahrestans are Galoogah and Jooybar. (Figure 5)
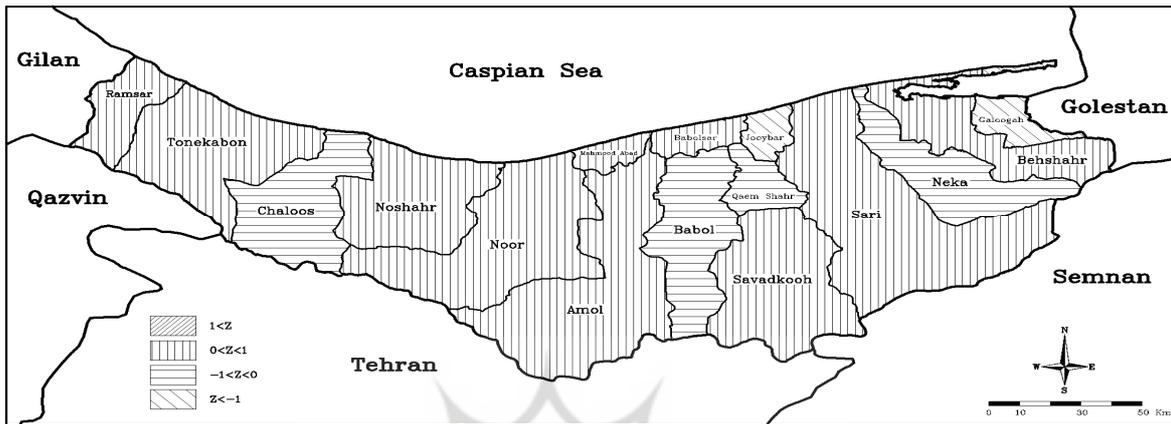

Figure5: Categories of Shahrestans on factor 5
Source: authors, fieldwork

As regards composite index of development, the Shahrestans of Sari and Babol are at high level; Amol, Qaem Shahr, Tonekabon, Behshahr, Ramsar, Chaloos and Noshahr are in medium status; Noor, Babolsar, Mahmood Abad, Neka and Savadkooh are at medium-low level; Jooybar and Galoogah are at low level of development. Figure 6 shows the status of all Shahrestans of Mazandaran Ostan as regards composite index of development.
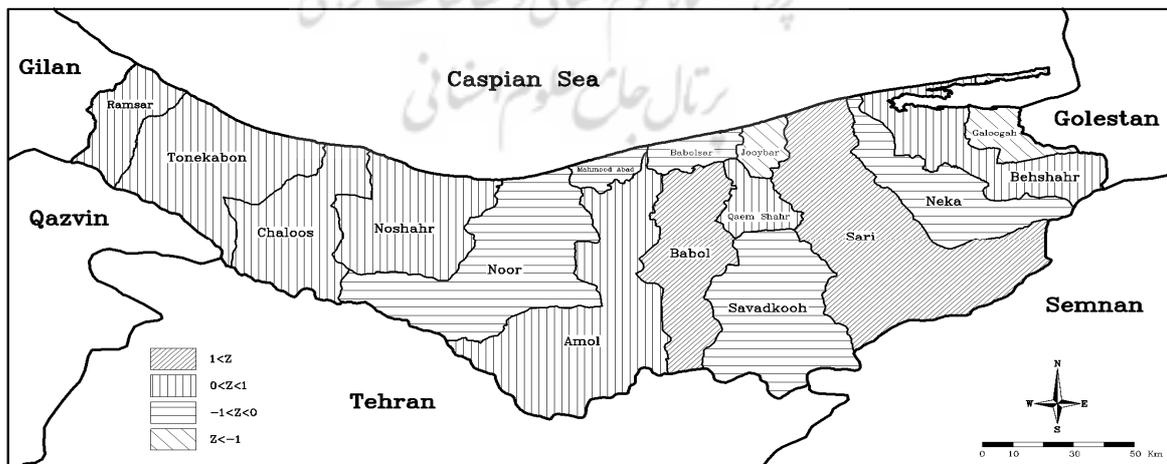

Figure 6: Categories of Shahrestans on factor 6
Source: authors, fieldwork

Conclusions

Integrated regional development is an important issue in regional planning. It is prerequisite for sustainable human development, and focuses on equilibrium of living conditions and various aspects of development for all people throughout the region. Sustainable development needs to reduce regional disparities and to create equitable growth in regions by providing public and social services and facilities to all people. In this respect, priority must be put on improvement of development indicators especially in low-level areas.

For determining development level of Shahrestans of Mazandaran Ostan, fifty indicators were chosen, submitted to factor analysis, of which five factors were extracted: infrastructural factor, industrial-agricultural factor, health factor, educational factor and communicative factor- which account for nearly 76% of the variance. Results showed that there are obvious differentiations among Shahrestans in development level. This study showed that some Shahrestans in Mazandaran Ostan suffer from malaise. The problem of depressed Shahrestans has resulted in an aspect of regional planning that is primarily concentration of various services and facilities in a few numbers of Shahrestans. On the other hand, there is an inequality in intraregional allocation of resources. Some Large Shahrestans such as Sari and Babol have been given more attention in isolation from other Shahrestans in Mazandaran Ostan; While, to decrease inequalities and then to achieve united development, All Shahrestans must be seen and planned together in the regional context.

Based on the results of this study for Mazandaran Ostan, as regards composite index of development, the Shahrestans of Sari and Babol are at high level; Amol, Qaem Shahr, Tonekabon, Behshahr, Ramsar, Chaloos and Noshahr are in medium status; Noor, Babolsar, Mahmood Abad, Neka and Savadkooh are at medium-low level; so, It is necessary to improve the condition of these Shahrestans especially about factors which are critical. Jooybar and Galoogah are at low level of development and they are in urgent need of appropriate development actions.

We suggest the priorities of Shahrestans to adopt appropriate actions of development, as regards each factor, in following order:

Infrastructural Factor: Savadkooh, Neka, Galoogah, Mahmood Abad, Chaloos, Noshahr, Jooybar, Amol, Noor, Tonekabon, Ramsar, Babol, Sari, Babolsar, Qaem Shahr and Behshahr.

Industrial-Agricultural Factor: Behshahr, Noshahr, Qaem Shahr, Neka, Galoogah, Jooybar, Mahmood Abad, Noor, Babolsar, Ramsar, Amol, Savadkooh, Tonekabon, Chaloos, Sari and Babol.

health Factor: Behshahr, Babolsar, Chaloos, Babol, Ramsar, Jooybar, Amol, Savadkooh, Sari, Galoogah, Tonekabon, Noshahr, Qaem Shahr, Noor, Neka and Mahmood Abad.

Educational Factor: Sari, Babol, Savadkooh, Ramsar, Behshahr, Tonekabon, Mahmood Abad, Babolsar, Noor, Galoogah, Qaem Shahr, Neka, Jooybar, Amol, Chaloos and Noshahr.

Communicative Factor: Jooybar, Galoogah, Chaloos, Babol, Qaem Shahr, Neka, Babolsar, Tonekabon, Mahmood Abad, Noor, Behshahr, Amol, Sari, Savadkooh, Ramsar and Noshahr.

Table 6: Proposed planning priorities to decrease intraregional inequalities in Mazandaran Ostan

Shahrestan	Priorities to development actions in respect of each factor				
	Infrastructural	Industrial-Agricultural	health	Educational	Communicative
Amol	8	11	7	14	12
Babol	12	16	4	2	4
Babolsar	14	9	2	8	7
Behshahr	16	1	1	5	11
Chaloos	5	14	3	15	3
Galoogah	3	5	10	10	2
Jooybar	7	6	6	13	1
Mahmood Abad	4	7	16	7	9
Neka	2	4	15	12	6
Noor	9	8	14	9	10
Noshahr	6	2	12	16	16
Qaem Shahr	15	3	13	11	5
Ramsar	11	10	5	4	15
Sari	13	15	9	1	13
Savadkooh	1	12	8	3	14
Tonekabon	10	13	11	6	8

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