

A STUDY ON THE SOCIAL SUSTAINABILITY USING FACTOR ANALYSIS CASE STUDY: TEHRAN PROVINCE

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Abstract

Sustainability is a concept which focuses on preserving resources (human, natural, social and economic) along-with intergeneration justices. Different dimensions of sustainable development (ecological, social, and economic preserving these dimensions in a way to provide the needs of current generation and to eliminate the damage threatening the capabilities of future generation. Influenced by the different policies and processes during recent decades, our rural-urban community has extremely changed. But evidences show that the rural-urban community moves toward in sustainability. This hasn't had positive impact on the changes of current society and can negatively influence different social orders at present and future time. Descriptive-analyze methodology was used and the indicators were classified on the basic social aspect of sustainable development. The rate of sustainability were evaluated using statistical models (Factor Analysis), the result of which show in sustainability of the rural-urban in many of sustainable indicators.

Keywords: sustainable development, social sustainable development, factor analysis System, clusters techniques, Tehran Township.

1-Introduction

Sustainability is the interaction between ecological, economic and social set of dimensions. In this context, based on a systematic view, the role of each of the dimensions can ultimately cause Sustainability. However, due to the influence of social sustainability can be considered as one of the dimensions of Sustainability that can have widespread impact on the economic and ecological sustainability. To reach optimal conditions, understanding the current situation and explaining the problems is the first step. In this regard sustainability for rural and urban community is a special place. In the late 1980s, the concept of sustainable development was introduced in development literature. And it took a huge effort to define and design sustainability indicators and the final measurement it by national and international organizations and institutions at all levels. There are many indicators for assessment social sustainability. The purpose of this paper is to explaining situation in the townships of Tehran province in social Sustainability using the technique of factor analysis.

2- Theoretical Foundations

In the second half of the last century and the development of approaches such as the development concept and its practical implications are undergoing major changes and developments. The most traditional approach to the development process of the late 1940 and early 1960 meaning only in the context of economic development and GDP growth is concerned. Nations in the years 1970-1961 to achieve a growth of 5 per cent of GNP growth is defined as the second decade of 6 percent of GNP in 1971 to expand the definition. In 1949, Truman spoke of the underdeveloped areas of the Nordic countries have not achieved yet in terms of economic development. Especially the United States, the idea (to achieve development), which was introduced a long time, and it was emphasized that societies move in the same direction, so the things that lead to the development of (North) already does have achieved. (Burger, 1997).

The first is a change in the traditional approach to 1960 Special reasons, such as the International counter the growing trend of intellectual and geographic scope of socialist ideas (growth with redistribution) was dominant in the attitude and approach to development. The second change is the direct result of a logical continuation of the first transition (income redistribution) is, according to the basic needs of the population; inspired by Western models of government is the welfare. The purpose of this approach was introduced in the early 1970 revision of development plans on giving priority to the basic needs of the population, especially the poor The third change in the approach to development that actually spin the situation is more serious than 3 According to the concept of sustainability is affected by the disturbing effects of poverty, environmental degradation and increasing pressure groups called green.

The term sustainable development goals for the organization and order of social, economic and environmental development in ways that meet the needs of the present generation and future generations the opportunity to choose their own life style not disposed to be. (Jischa, 1998). Indeed, sustainable development is a global concept, and that covers a lot of issues that require broad public involvement. Such a concept takes many or even all social problems, including mass poverty, climate change, environmental degradation, population movements, and the spread of infectious diseases and control of nuclear power, inrush fundamentalism, ethnic fragmentation, trade International and international crises... In the covers. The effects of each of these issues (global problems) on the development of communities that are linked to have an impact. The geographical concept, developed to serve the current and future global security, human. In other words, sustainable development and the sustainable development of environmental, economic and social life that it should not necessarily be considered as a whole, the social crisis of irresponsible use of natural resources, coupled with the narrow view of economic growth occurs. Sustainable development must surround (covers) environmental health, harmony economic processes in the transmission capacity of environmental systems as well as social compensate for the weak economy always lags are not. Thus, as Figure 2 shows, in a coordinated and systematic research 17 criteria for the evaluation of sustainable communities.

Figure 1: Stability Criteria

1- Gini index of income inequality	9 - Forest
2- Unemployment	10- Water Quality
3- Life Expectancy	11 - Income
4- Education	12- Consumption of raw materials
5- The number of crimes recorded	13- Energy
6- Population changes	14- Supply of renewable energy sources
7- Life satisfaction	15- Waste
8- CO2 emissions	16- R & D costs
	17- The appropriation of NPP

Consistent with this concept of development, sustainable rural development in rural areas can be managed in such a way as to satisfy the needs of the present generation Without the ability of future generations to meet their needs and risk defined three objectives for rural sustainability assessment.

A sustainable development of developing a relationship between the environment and the society in which they were kept Economic, social and environmental factors associated with specific contemplations lead to systematic behavioral pattern So that the needs of the present generation without harming the natural resources of the village courtyard of future generations depends on it, and posterity will also be considered provided (Mardech, 1993. P .239 Farahani was quoted in 1385). In the process of achieving the goals of sustainable development and social stability of rural development is very important. The strategic objectives of sustainable development themes such as empowerment, increased choice, development and cooperation, improve quality of life, institutional capacity building, social security, responsibility and social welfare has been widely emphasized. Based on the insights of sociologists humans are the main actors in the development process the patterns of social organization in order to determine appropriate solutions and strategies for achieving sustainable development plays a major role. In fact, experience shows that the neglect of social factors during the development process, the effectiveness of programs And various development projects with the serious risks (kohan, 1376: p 10).

"John Overton and colleagues" believe in the concept of social sustainability, environmental issues and economic ascendancy of the literature on sustainable development and the sustainable

development including social issues is a third dimension as well. The social approach to sustainable development status of poor people and their basic needs are a priority. In this approach, focusing on three elements: balance, social justice and freedom. Thus, the material needs of the priority-of sustainable development. In communities where there is no justice, there is no sustainable exploitation because these communities provide the group from other groups. Therefore, the topic of sustainable development emphasis on eliminating social injustice and imbalance in the population of interest. There are two concepts of sustainable development and social approach:

- A) Participation, which is considered as the development of the lower based on the assumption that poor people should be considered as the main groups. The poor people are the first participants in the development process.
- B) Empowerment, as providing tools and infrastructure needed to change the lives of the poor and the marginalized remove them to a better life defined (Overton, 1999: 7-8).

3- Materials and Methods

The research method is descriptive - analytical. In order to collect information and data from the research method used in library Data from the 1385 Census of Population and Housing in Tehran is extracted. The main variables in this study included 24 core indicators (statistical indicators and data processing utilizing the principle of ultimate index of 22, was derived composition) of 52 indicators of social sustainability are for social stability analysis to determine the level of city of Tehran and is evaluated in terms of indicators. For data analysis, factor analysis and cluster software SPSS and Excel were used. Using factor analysis, the most important factors in determining the status of social stability.

3-1- Techniques and Methods

3-1-1- Factor analysis

Factor analysis is a multivariate analysis of issues related to the relationship between a specific set of variables appearing establishes a theoretical model (Kline, 2001). This method can identify the hierarchy in the development of rural areas to benefit And with that, the pattern of correlations between a set of observed random variables in terms of the smaller number of unobservable random variables called factors explain (Klinner, 2000).

Factor analysis involves five steps are:

1. The data matrix;
2. Calculate the correlation matrix
3. Factor
4. Age Factor
5. Naming Factor

3-1-2- Cluster Analysis

Cluster analysis is a statistical method to identify homogeneous groups or clusters (asayesh, 1382, 117). In this study, after factor analysis to identify homogeneous regions and districts of Tehran classification indices of development, the model of cluster analysis is used.

4- The study area

Tehran, with a population of 12147543 people, the largest province in the country in terms of consumer market the province is home to 20 percent of the population. Tehran province with an area of 18,909 square kilometers, the spatial equivalent of 2/1 percent of the country's total land area is devoted to. Besides being the political center of Tehran Province, Iran's Islamic Republic, which is one of its distinguishing features, with 13 city named Shahriar, Robat Karim, Tehran, Savojbolagh, Nazarabad, Varamin Branch, Shemiranat, Ray, Damavand, Firoozkooh, House of

Tehran, 27 districts, 43 towns, 71 villages, 1358 villages and 2578 villages, the important provinces of the country.



5- Indicators

In his research, rural development programs and projects in numerous and diverse indicators for measuring social sustainability has been introduced. Levels to the city, such as dealing with any scientific research requires a broad set of indicators (Taghvai & et al, 97 1389). Set of sustainability indicators can be divided into several categories according to various aspects of the including the social, cultural, health and ... But what is important is that this indicator can show a good quality of life in a region and, if necessary, to determine differences (Bayat, 117: 1388). According to the principles and objectives of this study is to find a new level of rural settlements in Tehran, the indicators were divided into groups as follows.

Table 1: Indicators of Social Sustainability

Standard	sustainability indicators
Health	Daily calorie intake
	The mortality rate of children under 5 years
	Percentage of households having hygienic disposal of human waste
	Percentage of households having access to safe drinking water
	The number of patients with specific diseases
	Percentage of people who feel their lives
Social Security	The number of security centers
	Households backed insurance
	Households covered by state institutions
	Percentage incidences of social phobia
	Percent level of social trust
	Percentage of social solidarity
	Percentage of life expectancy
Quality of employment	Percentage of job satisfaction
	The number of people who have no savings account
	The number of people who have requested loan
	Percentage of deprivation
	Percentage of income satisfaction
Quality Services	Percentage of satisfaction with access to services

and Housing	Percentage of satisfaction with the quality of service
	Proportion of households living in dwellings
	Level of Satisfaction with housing
Participation	Percentage of social participation
	Percentage of extraversion and social interaction
	Percentage of social participation
	Percentage of women members of councils
	Percent of participants in the last local elections
	Percent of participants in last national election
	Level of satisfaction with the performance of institutions
	Percentage of people with mobile phones
	Percentage of households with landline

Before determining the location, it is essential that the converted variables, the variables in the models are based on the model structure, the level specified. Hence, using 71 variables related to the settlement in order Accommodations graded using factor analysis has been attempted. At the beginning of this scale in order to resolve differences between the indices and indicators are turned into the same unit, we have to allow all of them to be there. For the purpose of standardizing the way data is used.

6- Results and Discussion

In this section, the indicators Tehran rural areas are assessed by factor analysis.

7- The data matrix

Mentioned variables, including variables such as health, security, services, housing and participation in the columns of the matrix and the city are placed in rows.

8- Managing

Because the indicators and variables that are inter-relate, prefer to be aggregated together around an axis or agent, therefore, positive and negative factors of the assembly and of association are made. Varimax method in which the factor structure by maximizing the variance of a column, simple patterns give. The survey was the result of using varimax rotation, reduced variables (indicators) are also operating in four factors with eigenvalues less than one, because they will not determine the variances, are excluded from the analysis.

9- Calculate the correlation matrix

Between the calculated and the efficiency of the test and other tests in the same group can be described as a rectangular array (matrix) or the correlation matrix R arranged Matrix is the starting point for a variety of statistical procedures, one of which is to analyze and identify factors influencing factors on the various functions smoothly.

10- Factors Extraction

In this section, the correlation between the variables (factors) and the factors examined using correlation matrices, the main factors extracted. The correlation matrix is calculated and compared to factor extraction is presented. To create a logical relationship between the parameters (variables) and the variables, parameters used in the correlation coefficient is above

5%. Accordingly, in this study, 24 of which 76.24% of the variance is reduced to four factors explain satisfactorily represented the factor analysis and the indicators.

Table 2: Data mining final factor

List of Agents	Eigenvalue	Percentage of variance	Percentage of cumulative variance.
1	24.58	58.27	53.03
2	4.692	10.872	62.864
3	3.458	6.987	71.124
4	2.986	5.467	75.643

Source: Findings

11- Rotation or the matrix Rotation

Interpretation of variable loadings It is not easy, so be rotated without rotating agents to increase their ability to interpret In the matrix, the factor (factors) are frequently rotated around the fixed point index (variables) in the matrix of the findings are that the method is called. The simple structure is obtained on an aggregation of several indicators are found According to Table 3, the extracted factors accounted for 76.24% of the variation of the previous variables As seen in Table 3, the first factor is more significant contribution to the total variance (variance) is.

List of Agents	Eigenvalue	Percentage of variance	Percentage of cumulative variance.
1	20.34	41.821	41.352
2	6.11	21.001	61.271
3	2.98	8.354	69.432
4	3.37	6.750	75.986

Source: Findings

12- Naming Factor

With regard to the content and nature of the indicators in each factor, the factors named in this study as these factors were named.

• Managing health and safety

The value of this factor alone is capable 41.352 20.34% of the variance explained and the most effective among the four factors. In the 13 indicators, including health indicators 6 and 7 are security measures with regard to the nature and content of the above criteria, this factor can be named as health and social security.

Table (3): The first item

Row	Stability indices	Correlation
1	Daily calorie intake	79.2
2	The mortality rate of children under 5 years	86.2
3	Percentage of households having hygienic sanitation system Anshan	74.2
4	Percentage Of households having access to safe drinking water	69.6
5	The number of patients with specific diseases	78.5
6	Percentage of people who feel their lives	81.2
7	The number of security centers	91.2
8	Households backed insurance	66.5
9	Households covered by state institutions	75.8
10	Percentage incidences of social phobia in many options	76.1
11	Percent level of social trust in large option	90.1
12	Percentage of social solidarity in many options	81.1

13	Percentage of life expectancy in excess options	78.2
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Source: Findings

• Quality of employment

Row	Index	Solidarity
1	Percentage of job satisfaction	65.5
2	The number of people who have no savings account	59.5
3	The number of people who have requested loan	70.2
4	Percent of high deprivation in options	69.1
5	Percentage of satisfaction with income in excess options	85.2

• Quality of services and housing

Row	Index	Solidarity
1	Percentage of satisfaction with access to services in most options	84.5
2	Percentage of satisfaction with the quality of service in many fields	86.277.4
3	Proportion of households living in dwellings	68.8
4	High level of satisfaction with housing options	55.2

• Operating Partnership

Row	Index	Solidarity
1	Percentage of social participation in many options	75.3
2	Percentage of extraversion and social interaction in many fields	90.2
3	Percentage of social participation in many options	79.8
4	Percentage of women members of councils	63.1
5	Percent of participants in the last local elections	53.3
6	Percent of participants in last national election	85.2
7	Level of satisfaction with the performance of institutions	64.7
8	Percentage of people with mobile phones	52.7
9	Percentage of households with landline	53.2

After a summary of the indicators on the four factors, using hierarchical cluster analysis to classify settlements in homogeneous groups have the clusters of high internal similarity the lowest similarity and homogeneity with other clusters as well. With regard to statistical data, the combination of clustering and minimizing the average distance between all pairs of observations that are in different clusters, we use, the result of these categories can be seen in the table below.

Level of development of the rural settlements of the city of Tehran in 1385

Highest level of development	The average development	The lowest level of development
Tehran, Rey, Tajrish, Damavand	Pakdasht, Qods, Shahriyar, Varamin	Rabat Karim, Firoozkooh, Qarchak, Mallard

Since the map as the best tool for the spatial phenomena of geographic information system (GIS) was used And level of rural settlements with regard to the degree of homogeneity obtained from the cluster analysis And the weight of each factor in the various settlements in the GIS

environment at the highest level of development, the development of medium and lowest categories is developed.

13- Conclusions

The present investigation suggests important to note that significant differences in natural conditions and geographical areas of Tehran province, There are many differences between regions in terms of development indicators and the development of the province's. The city of Tehran's classification showed that the indices of development, the city of Tehran, Rey, Shemiranat and enjoy the city of Damavand as the Pakdasht, Qods, Shahriyar, Varamin a developing country with average Robatkarim, Firoozkooh, Qarchak, Mallard considered the most disadvantaged areas of the province. To reduce the gap between the areas of Tehran, planners' attention to the overall planning of deprived areas. Comparing the results with other studies, it is inferred that a different type of variation and inconsistency indices between developing and developed areas of the province, is seen. Investigate these differences and identify areas of developed, developing and underdeveloped involves the study variables and data on the level of development of the index. The factor analysis to reduce the variables and converts them into an index and Stratification of the city and developed areas of the country.

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