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Analysis of the Services Spatial Distribution in the Urban Areas (Piranshahr City as a Case Study)

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Abstract

With regard to the complex spatial and physical structure of situations, social-economic activities, development of social and economic job division, and increasingly cultural and recreational and social needs of citizens, city life needs services. With regard to the important role of services in the urban system, it is important to consider services efforts in the urban planning process. Also distribution of services centers and how to access them is very important. This is why that the present study was aimed to study the spatial distribution of urban services at urban neighborhood level in the city of Piranshahr in order to actualize the social justice. This study is a descriptive-analytical research. In order to collect the research data, library, field study, statistical yearbook, and city comprehensive plan have been used. Also analytical hierarchy process (AHP) has been used for scoring the research criteria and the TOPSIS has been used for ranking the urban neighborhoods. On the other hand, Geographic Information System (GIS) has been used for drawing maps and analyzing the spatial distribution of urban services. The results of this study revealed that a large part of the urban services are located in the central and northeast area and the some of them is located in the west and southwest area of Piranshahr city.

Keywords: spatial distribution, urban services, geographic information system, Piranshahr neighborhood areas.

Introduction

Achieving the spatial justice in the urban services distribution is one of the main purposes in urban affairs planning. This is done for allocating social costs fairly and respecting equity in the use of neighborhood areas. This also attempts to define who should analyze this process? What and how should be analyzed? And where this process should be done? (Dadashpor and Rostami, 2011: 172). Social justice is a multidimensional concept. There are two main areas including examining life quality and opportunities allocation. This refers to the social, physical, and virtual infrastructures access and is a main research field (Matrin, 2009: 390). Polarization of the urban spatial structure is the main outcome of managerial policies in valuating some areas in receiving facilities and services and others' privation (Skoyt, 2004: 28). The increasingly growth of urbanism in Iran is so much in the recent years that its necessary infrastructures and facilities have not been secured. The urban services centers are one of the main factors that examining the urban welfare level. Timely access to the urban services centers is a very important factor in this area. The urban services and its distribution are so important and critical that can be effective on the citizens' welfare level and their health. In order to achieve social justice in spatial distribution of urban services, it is should be remembered that the transmittal urban services are a necessary effort that should be attended by regional and urban planners (Nastaran, 2001: 146). Piranshahr is the main case that has been studied in our study. This city has been selected for study because it has different problems in the urban services area. Indeed, there is not any coordination and balance between the city's population size and its urban services centers. In addition, the spatial distribution of services centers is not justly in this city.

Problem statement

The urbanization and its own problems necessitate the policies and strategies for optimizing urban life (Zarabi and Ghanbari, 2010: 1). With respect to the increasingly important role of services activities in the urbanism system, a new necessary change has been emerged in the trend of urban planning. On the other hand, distribution of urban services centers and how to access them is very important (Jamshidzade, 2008: 24). The social justice is one of the most important concepts that have different applications and benefits during history. This concept is so important that has been discussed and considered by scientists and theorists. The reason is that everybody has different perception of justice. So it can be said that justice depends on different factors such as time, place, type of system relations, and social structures (Hataminejhad, 2008: 39). Allocating the resources based on the social justice can help citizens in accessing urban services and increasing its efficiency (Behravan, 2007: 4). Piranshahr is one of the cities that have several problems and weaknesses in terms of coordination between increase in the population size and physical development of the city from different urban services. These problems derive from inappropriate location of urban services. On the other hand, it is should be remembered that it results in more problems and difficulties for citizens such as shortage of public services, inappropriate distribution of urban

services, inaccessibility of urban services, congestion of different services centers in some areas, and citizens' dissatisfaction of urban services location. These require developing appropriate solutions for exploiting urban services center at different levels of planning, managing, and administrating. The authors of present study attempted to use the GIS in developing solutions for appropriate urban services location.

The necessity and importance of the study

The rapid development of urbanization, emigration of rural population toward urban areas, lack of a sound and accurate urbanism system in many cities leads that many urban areas are created in an uncontrolled and unplanned manner (Hatami, 1993: 23). It also has increased the need to planning of appropriate physical and spatial location. In this regard, distribution of space and determination of appropriate location for physical elements is one of the most important functions of urban planning (Pormohamadi, 2003: 45). Indeed, spatial organizing, optimum and fairly distribution of spaces are important because citizens' health and welfare depends on it. So this issue is an important research area that should be attended by authors and researchers.

The purposes of study

- Examining the spatial distribution of urban services at regional level in the city of Piranshahr
- Examining opportunities and limitations of urban services in the city of Piranshahr
- Analyzing weaknesses and strengths of urban services in the city of Piranshahr
- Developing and presenting solutions for urban services problems and difficulties from urban services access perspective based on the results of two previous stages.

Previous studies

Akbari (2006) examines the current problems of urban services distribution in the city of Yasoj and concluded that the urban services location in this city is not optimum and it has several weaknesses. He also developed and presented different solutions for this purpose through using GIS. Indeed, he used GIS for finding the best location of services centers.

Soleymani Farsani (2009) studies the current status of urban services in the city of Shahrekord and found that the status of urban services in the city is not optimum. He also used GIS for developing an appropriate model of future urban services location.

Varesi and Ghanbari (2012) used a descriptive-analytical method of study for examining and analyzing the urban services belonging in the new cities of Iran (such as Binalod). He used a questionnaire for collecting the research data and then analyzed it through SPSS software. The results of their study revealed that the citizens had not any satisfaction from urban services status.

Bezi and Abdollahpor Haghighi (2011) analyzed the spatial distribution of urban services based on the citizens' requests in the city of Estahban. Indeed, they attempted to analyze the spatial distribution of urban services. He used different methods of data collection such as library, observation, and survey and then analyzed the data through SPSS. The results of their study revealed that the citizens' requests and interest have not been considered in spatial

distribution of urban services centers.

Research hypotheses development

- The current status of urban services centers distribution in the city of Piranshahr is not optimum and has different weaknesses.
- Geographic Information System (GIS) is an appropriate system for urban services centers location in the city of Piranshahr.

Research methodology

This study is a descriptive-analytical research. The research data has been collected through several methods such as library, field study, statistical yearbooks, and city comprehensive plan methods. This data has been collected in 2009 and then has been analyzed through SPSS and GIS. This software has been used for finding the best location of urban services centers in the city of Piranshahr.

TOPSIS: how to access public urban services centers is the most important criterion in analyzing the spatial justice status. The TOPSIS is one of the main techniques that can be used in explaining distribution of urban services centers. Indeed, this method attempts to reveal injustice in the distribution of urban services centers in different urban neighborhoods. In other words, TOPSIS is one of the multi-criteria decision making (MCDM) techniques that is considered as one of the most important compensatory and compromise models (Asgharpor, 2008: 213-270).

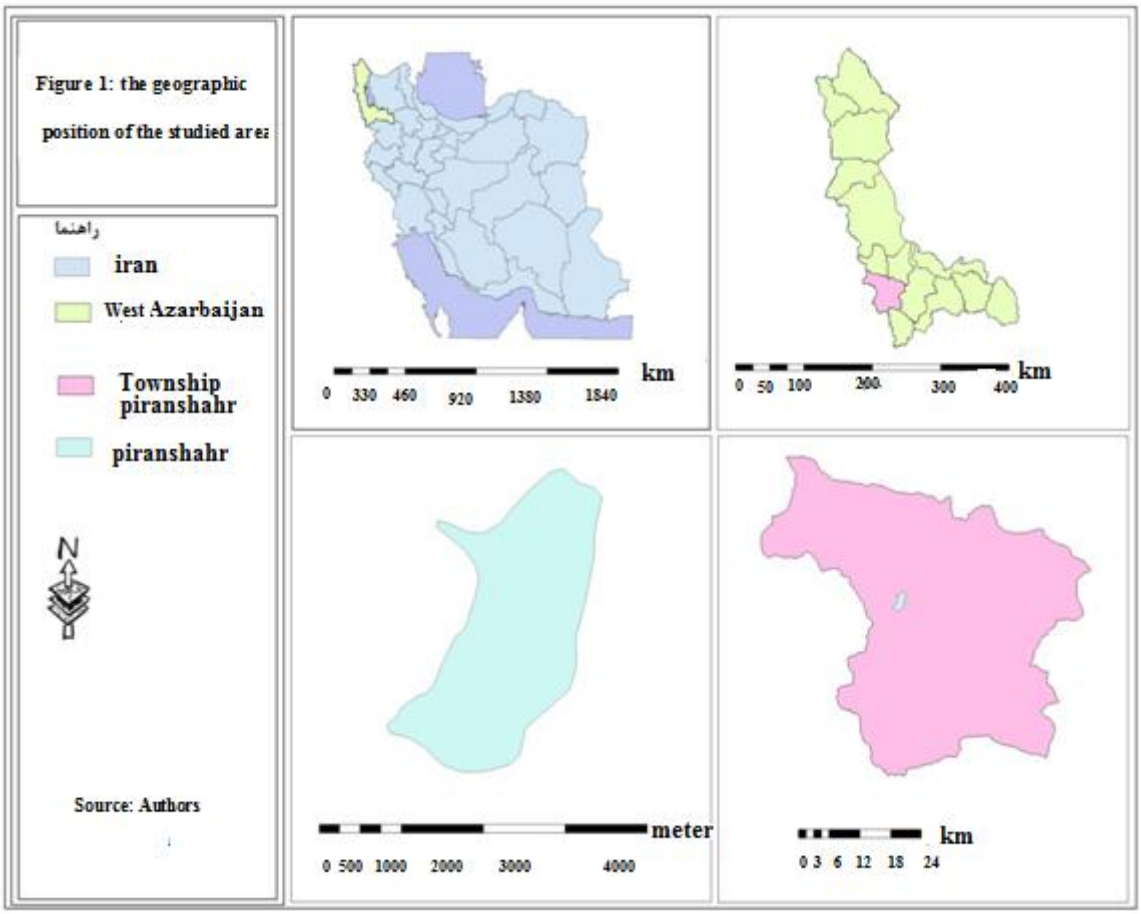

Figure 1: the geographic position of the studied area

Table 1: the population and the distributed questionnaire in different places on Piranshahr

Places	Population	Number of questionnaires	Area	Places	Population	Number of questionnaires	Area
Shahrak	4225	18	3082	**Kohne Khane**	6341	24	5017
Padash	4675	17	5038	**Oraz**	3697	17	5892
Isargaran	4921	19	6201	**Seyed Abad**	1241	15	4754
Ghods	5618	15	4025	**24 Metri**	2672	18	1581
Parke Shahr	2341	17	4868	**Beheshti street**	2314	15	1908
Haj Shafie Mosque	4790	16	3278	**Piran**	2764	18	1851
Doli Gerave	3650	18	3604	**Hajhar**	2314	15	1908
Poshte Farmandari	3764	17	2586	**Shinabad**	7892	26	5794
Emam street	3150	18	4105	**Ghizghapan**	2800	17	3266
Khayyam	3540	21	2833	**Poshte Ashiane**	2785	19	2586
Sum	-	-	-	**Sum**	76579	362	83894

Source: Authors

The findings

The research variables and criteria

In order to evaluate the spatial distribution of urban services in the city of Piranshahr, four main criteria have been used. These include educational, hygiene, physical and financial services criteria in 20 places of the city.

Table 2: the criteria and sub-criteria of the study

Criteria	Sub-criteria
Educational	kindergarten, elementary school, secondary school, and high schools
Hygiene	Health centers, physicians, dentists, drugstores, laboratories, and bathrooms
Physical	Library, cafe net, services accessibility (such as water), green spaces, sports facilities, residential units, bakery
Financial services	Banking services, post banks, commercial and trade services, agriculture productions

Criteria definition

Because there is not any fairly distribution of urban services in the city of Piranshahr, 22 Effective criteria have been used for prioritizing different places of the city in terms of urban services. These criteria have been presented in table 2. It is should be remembered that these include criteria from X1 to X22.

Table 3: the criteria of the study

Criteria	Indicators
kindergarten	X1
elementary school	X2
secondary school	X3
high schools	X4
Health centers	X5
physicians	X6
dentists	X7
drugstores	X8
laboratories	X9
bathrooms	X10
Library	X11
cafe net	X12
services accessibility	X13
green spaces	X14
sports facilities	X15
residential units	X16
bakery	X17
post banks	X18
Banking	X19
commercial and trade services	X20
agriculture productions	X21
green spaces	X22

Hygiene criteria

The hygiene status has been considered as a criterion that includes six sub-criteria. These include health centers, physicians, dentists, drugstores, laboratories, and bathrooms. The results revealed that the places of Haj Shafie Mosque is the best place in terms of hygiene

criterion and its sub-criteria and Emam street, Piran, Kasekaran, Kohne Khane, Beheshti street, and Khayyam have the lowest priority in terms of this criterion and its sub-criteria.

Table 4: the status of hygiene criterion and its sub-criteria in different places of Piranshahr

Places	Average	Rank	Places	Average	Rank
Shahrak	8	2	**Poshte Ashiane**	7	2
Padash	3	5	**Ghods**	8	2
Isargaran	1	9	**Kohne Khane**	2	5
Farmandari	7	2	**Seyed Abad**	5	4
Parke Shahr	3	5	**Kasekaran**	3	5
Doli Gerave	6	4	**Piran**	4	5
Ghizghapan	5	4	**Shinabad**	5	4
Emam Khomeyni	3	5	**Beheshti street**	2	5
Haj Shafie Mosque	10	1	**Oraz**	**6**	3
Khayyam	5	4	**Hajhar**	7	2
Parke Shahr	3	5	-	-	-
24 Metri	5	4			

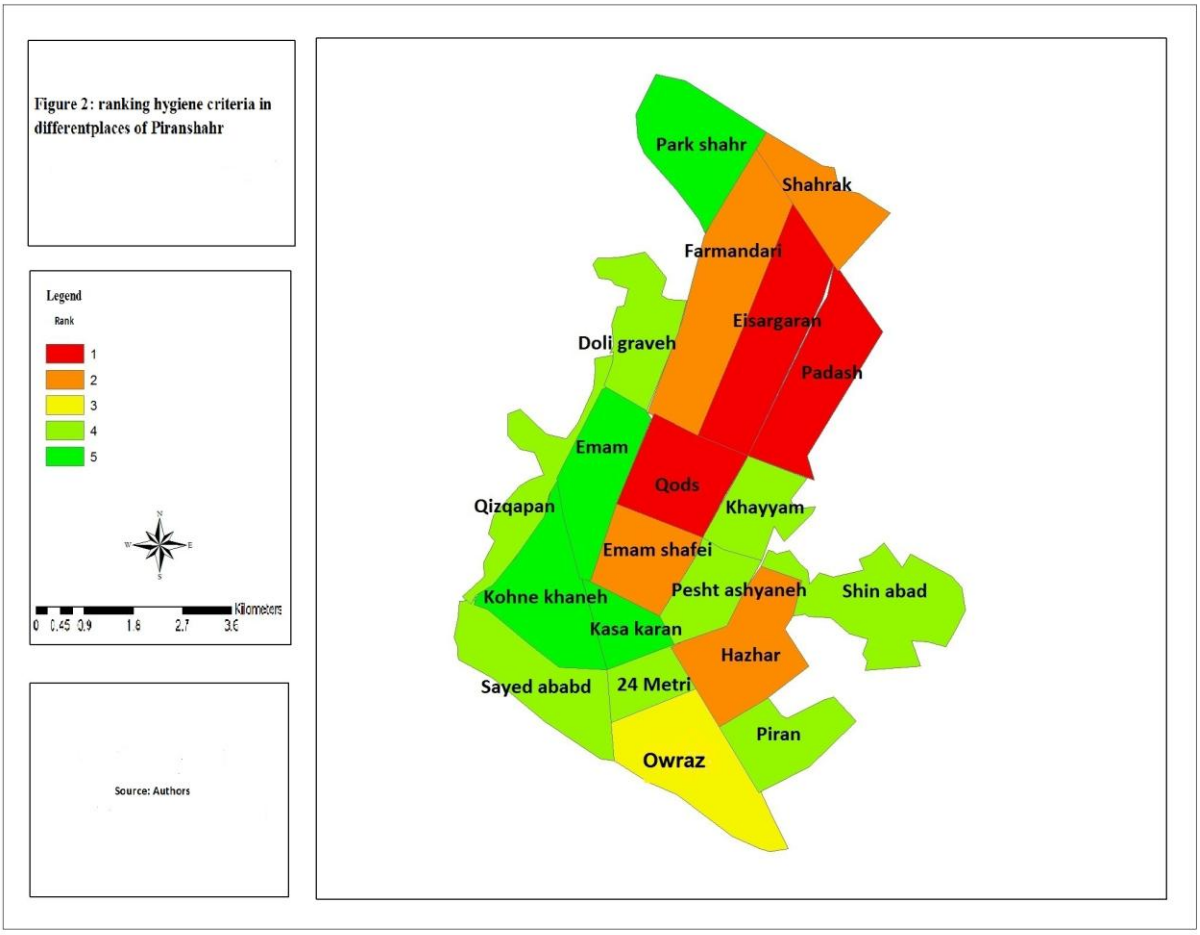

Figure 2: ranking hygiene criteria in different places of Piranshahr

Economic criterion

The economic status has been considered as a criterion that includes four sub-criteria. These include banking services, post banks, commercial and trade services, agriculture productions. Padash and Ghods are the first-prioritized places in terms of economic criterion and its dimensions. On the other hand, Kohne Khane, Piran, Shin Abad, Beheshti Street, Kasekran, Parke Shahr are the least-prioritized places in terms of economic criterion and its dimensions.

Table 5: the status of economic criterion and its sub-criteria in different places of Piranshahr

Places	Average	Rank	Places	Average	Rank
Shahrak	33	2	**Poshte Ashiane**	28	3
Padash	34	1	**Ghods**	36	1
Isargaran	31	2	**Kohne Khane**	14	5
Farmandari	23	4	**Seyed Abad**	26	3
Doli Gerave	23	4	**Kasekaran**	14	5
Ghizghapan	24	4	**Piran**	11	5
Emam Khomeyni	32	2	**Shinabad**	13	5
Haj Shafie Mosque	27	3	**Beheshti street**	12	5
Khayyam	20	4	**Oraz**	18	4
Parke Shahr	13	5	**Hajhar**	20	4
24 Metri	19	4	-	-	-

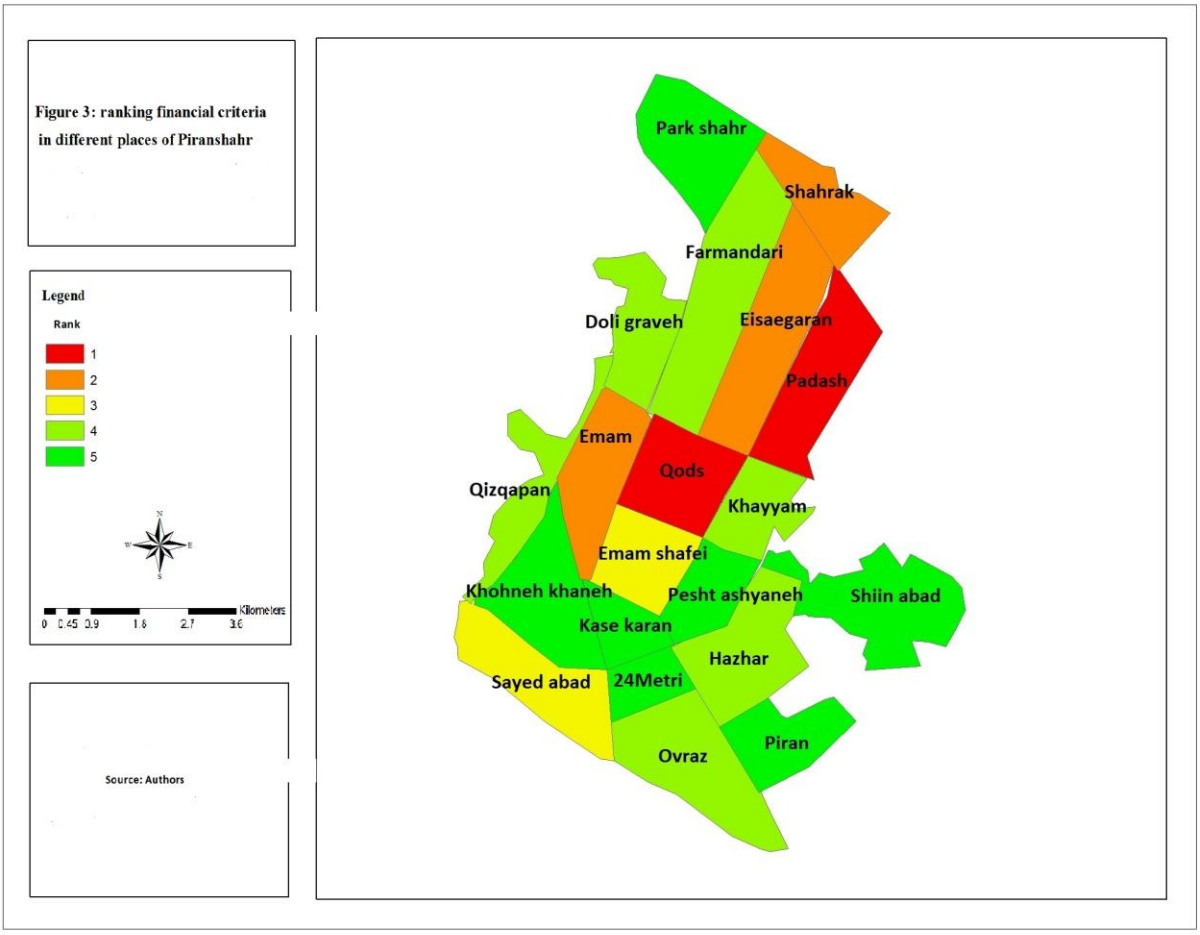

Figure 3: ranking financial criteria in different places of Piranshahr

Educational criterion

The educational status has been considered as a criterion that includes four sub-criteria. These include kindergarten, elementary school, secondary school, and high schools. Shahrak and Isargaran are the best places in terms of educational criterion and its dimensions. On the other hand, Doli Garave, Ghizghapan, Seyed Abad, Parke Shahr are the least-prioritized places.

Table 6: the status of educational criterion and its sub-criteria in different places of Piranshahr

Places	Average	Rank	Places	Average	Rank
Shahrak	7	1	**Poshte Ashiane**	5	3
Padash	4	3	**Ghods**	6	2
Isargaran	8	1	**Kohne Khane**	3	4
Farmandari	3	4	**Seyed Abad**	2	5
Doli Gerave	2	5	**Kasekaran**	3	4
Ghizghapan	1	5	**Piran**	5	3
Emam Khomeyni	5	3	**Shinabad**	4	2
Haj Shafie Mosque	6	2	**Beheshti street**	5	3
Khayyam	5	3	**Oraz**	3	4
Parke Shahr	1	5	**Hajhar**	4	4

24 Metri	4	3	-	-	-

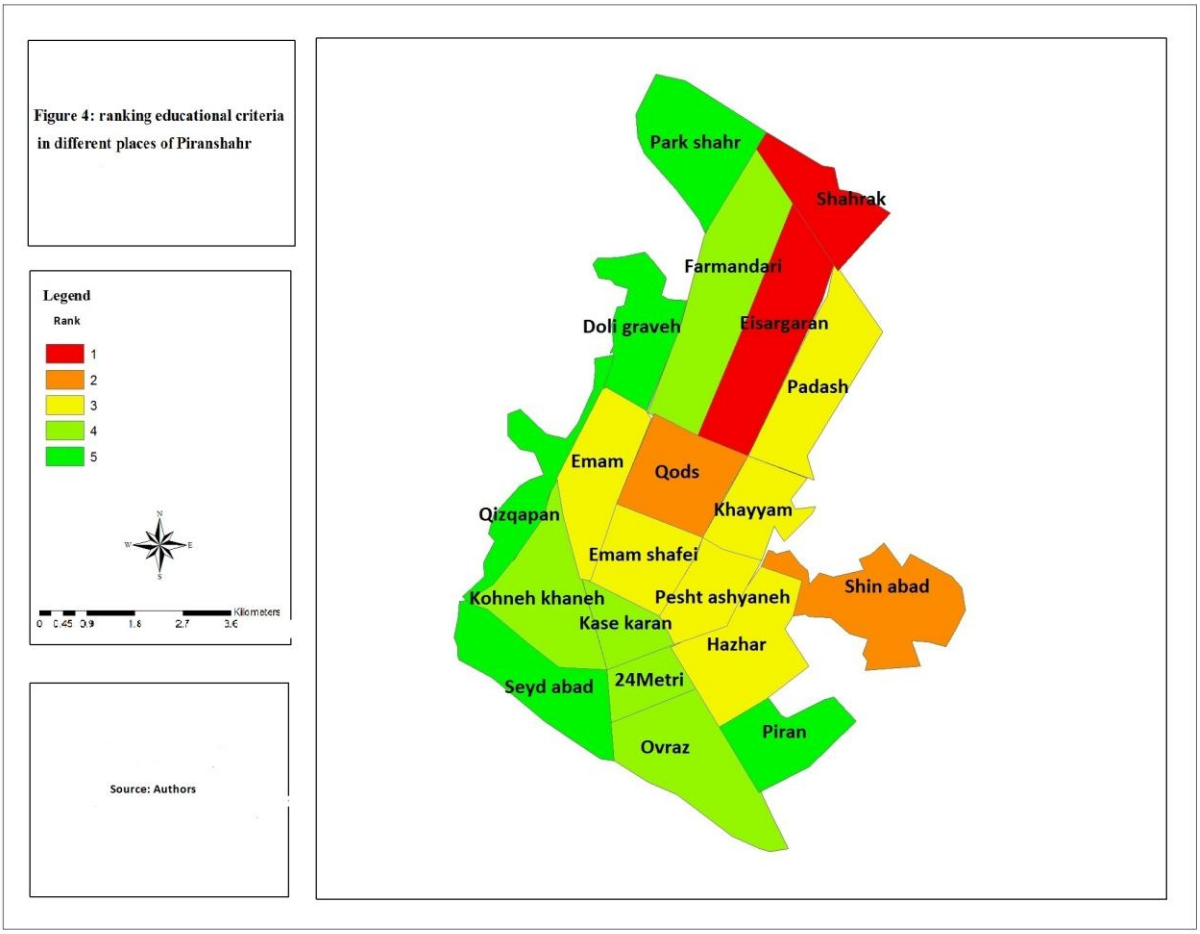

Figure 4: ranking educational criteria in different places of Piranshahr

Physical criterion

The physical status has been considered as a criterion that includes four sub-criteria. These include library, cafe net, services accessibility (such as water), green spaces, sports facilities, residential units, and bakery. Ghods is the first-prioritized place in terms of physical criteria and its dimensions. On the other hand, Farmandari, Doli Grave, Emam Street, Kohne Khane, Seyed Abad, Seyed Abad, Kasekran, Shin Abad, Beheshti Street are the least-prioritized places in terms of physical criteria and its dimensions.

Table 7: the status of physical criterion and its sub-criteria in different places of Piranshahr

Places	Average	Rank	Places	Average	Rank
Shahrak	41	2	**Poshte Ashiane**	38	3
Padash	34	4	**Ghods**	45	1
Isargaran	36	3	**Kohne Khane**	27	5
Farmandari	25	5	**Seyed Abad**	25	5

Doli Gerave	24	5	**Kasekaran**	26	5
Ghizghapan	37	3	**Piran**	37	3
Emam Khomeyni	22	5	**Shinabad**	25	5
Haj Shafie Mosque	40	2	**Beheshti street**	24	5
Khayyam	33	4	**Oraz**	33	4
Parke Shahr	35	4	**Hajhar**	23	5
24 Metri	34	4	-	-	-

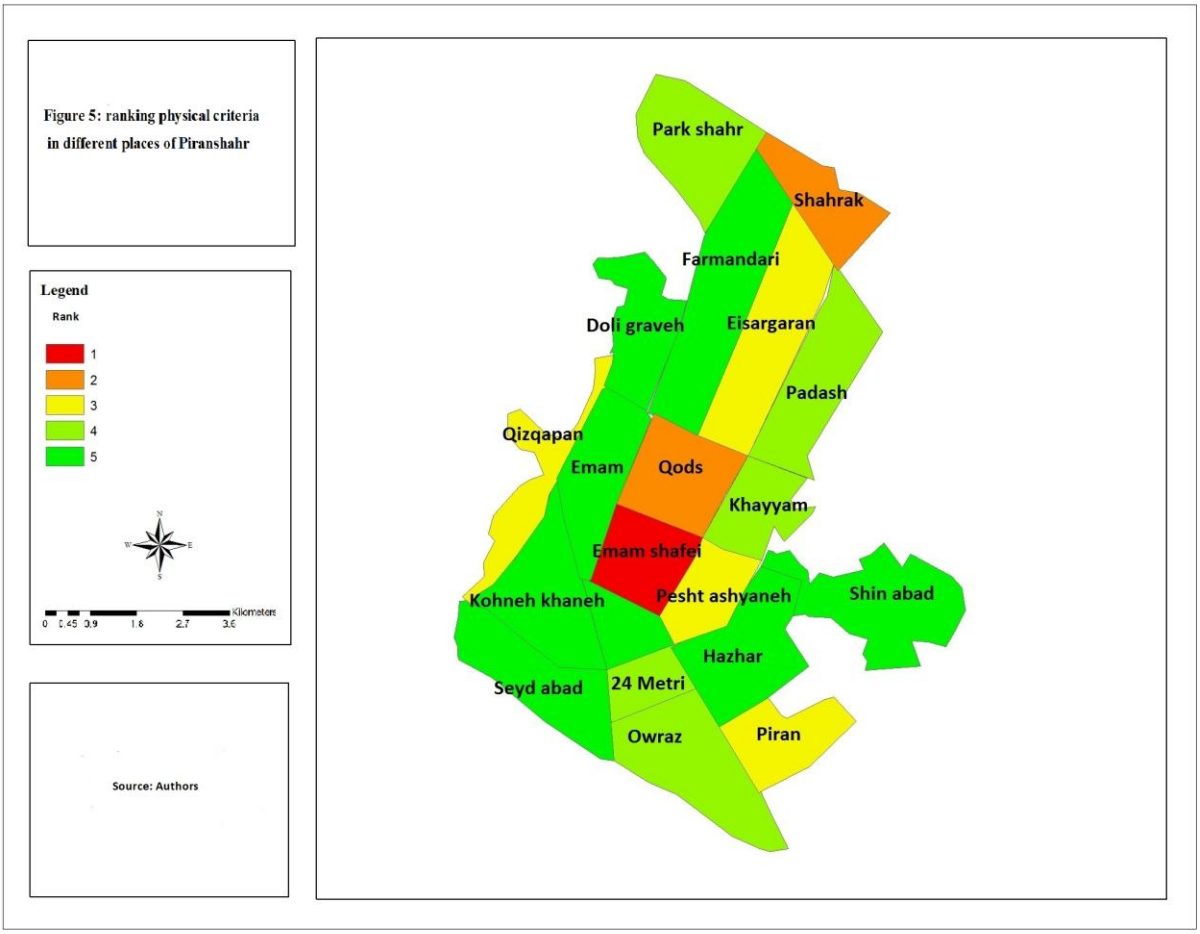

Figure 5: ranking physical criteria in different places of Piranshahr

Combined criterion

The results of 8 revealed prioritization results based on the combined criterion. These include hygiene, educational, economic, and physical criteria. Based on the results of table 8, Ghods is the best place and Parke Shahr is the worst place from combined criterion.

Table 8: the status of combined criterion in different places of Piranshahr

Places	Average of	Rank	Places	Average of	Rank

	urban services distribution			urban services distribution	
Ghods	0.8022	1	**Seyed Abad**	0.6156	3
Isargaran	0.8012	1	**Emam Khomeyni**	0.6030	4
Haj Shafie Mosque	0.7685	1	**Beheshti street**	0.5965	
Padash	0.7069	1	**Oraz**	0.5585	4
Shahrak	0.6976	2	**24 Metri**	0.5819	4
Khayyam	0.6820	2	**Kasekaran**	0.5591	5
Poshte Ashiane	0.6811	2	**Ghizghapan**	0.5545	5
Shinabad	0.6781	2	**Doli Gerave**	0.5472	5
Hajhar	0.6695	2	**Piran**	0.5430	3
Farmandari	0.6498	3	**Parke Shahr**	0.5383	5
Kohne Khane	0.6290	3			

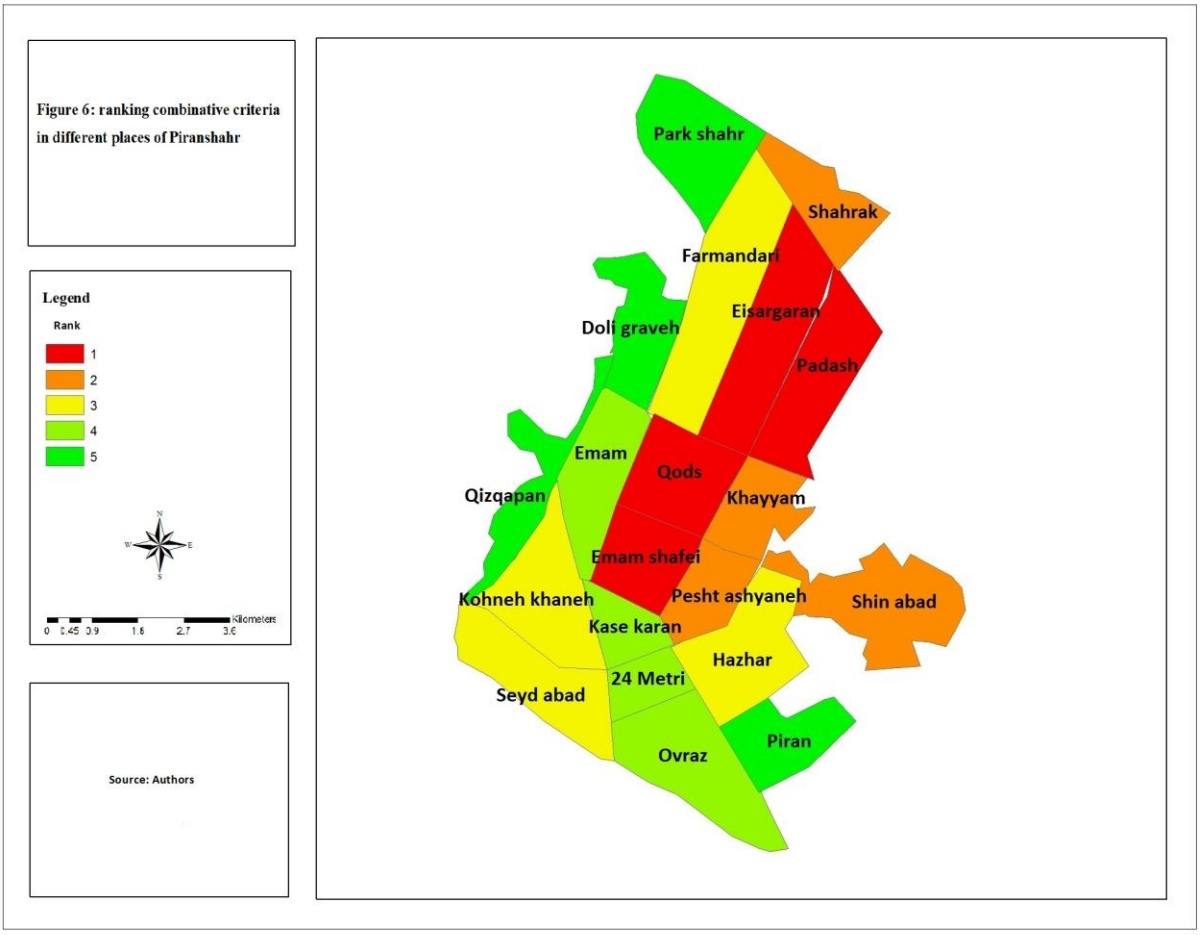

Figure 6: ranking combinative criteria in different places of Piranshahr

Table 9: the results of final ranks of places

Places	Rank of population	Rank of area	Rank of services
Ghods	5	**10**	**1**
Khayyam	**10**	**16**	**6**
Poshte Ashiane	**14**	**18**	**7**
Haj Shafie Mosque	**5**	**13**	**3**
Shahrak	**7**	**15**	**5**
Isargaran	**4**	**1**	**2**
Padash	**6**	**5**	**4**
Farmandari	**8**	**17**	**1**
Hajhar	**16**	**4**	**9**
Seyed Abad	**19**	**8**	**12**
Beheshti street	**16**	**19**	**14**
24 Metri	**15**	**20**	**16**
Emam Khomeyni	**11**	**9**	**13**
Shinabad	**1**	**2**	**8**
Ghizghapan	**12**	**12**	**17**
Kohne Khane	**2**	**6**	**11**
Piran	**13**	**14**	**19**
Oraz	**8**	**3**	**15**
Doli Gerave	**9**	**11**	**18**
Parke Shahr	**18**	**7**	**20**

Table 10: the results of correlation coefficient

		Population	Area	Services
Population	Correlation coefficient	1.000	.379	.584**
	Sig	0.000	.099	.007
	N	20	20	20
Area	Correlation coefficient	.379	1.000	.056
	Sig	.099	0.000	.813
	N	20	20	20
Services	Correlation coefficient	.584**	.056	1.000
	Sig	.007	.813	0.000
	N	20	20	20

The results of table 10 revealed that Ghods, Haj Shafie Mosque, Khayyam, Poshte Ashiane are the places that have low area, middle population, and high levels of services. On the other hand, Doli Garave, Oraz, and Parke Shahr are the places that have greater extent of area, low population, and low levels of services. The services distribution should be coordinated with

population and area. But the results of our study revealed that the urban services are not distributed based on the sound basis and its distribution is unbalanced.

Conclusion

The results of the present study revealed that the ranking of the neighborhood areas of Piranshahr is destroyed. The main and most important reasons of this phenomenon include increasingly growth of population, increasing needs, emergence of new needs in the urbanism. The main effect of growth in urbanism and development of urban areas is destroying services distribution system and weakness of services system. Such a problem exists in many cities of Iran. In order to use the statistical yearbooks of land uses, intra-city division has been done in the city of piranshahr. In order to this, the city has been divided into 20 places. Although population size is the main factor in distribution of urban services and facilities, but the results of TOPSIS technique revealed that there is a disorder in terms of urban services distribution in the city of Piranshahr. Also the results of the research data that has been collected through questionnaire indicated that distribution of urban services is not based on the spatial and social justice. In other words, the central and northeast areas had the most urban services and west and southwest areas had the least urban services. Therefore, it is necessary to redistribute the urban services among places especially in the more populated places with less service in order to decrease citizens' dissatisfaction of the urban services distribution. Indeed, it has a significant relationship with concepts and criteria of spatial and social justice as one of the main society needs. Obviously, attention to the spatial justice in services accessibility can be considered as one of the main solutions of reinforcing poor neighborhood areas, decreasing injustices, increasing citizens' satisfaction, and increasing political stability.

Empirical suggestions

- It is necessary to construct different urban services centers for offering services for poor places. This should be done based on the conditions of services users. For example, it is necessary to consider accessibility and services centers nearly in location of the urban services centers.
- With regard to this fact that urban services and infrastructures equipment are considered as the most important factors in the city development and its population, it is necessary to recognize and maintain the necessary lands for this purpose. On the other hand, it is necessary to develop the urban services centers location plans based on the population growth in all of the areas.
- All of the services centers have important role in the servicing efforts across the city. Therefore, they should be able to offer necessary services for its users. This is why that the best location of their establishment place should be attended by its planners.

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