Location of educational centers Using Combined Overlap Index and Analytical Hierarchy Process (AHP) (The case study: the guidance Schools of Kazeroun city)

Extended abstract

1- Introduction

Educational use is one of the most important uses through the physical body of cities and is importance for this issue. The existence of educational use is accounted as an index element through the urban areas (Zarabi et al., 2009:46). Nowadays, with regards to population invasion to big cities and due to construction of whole urban lands and insufficient positioning of municipal services especially in educational centers, several problems have been caused in the field of youth and students services. So, optimal positioning of educational centers is necessary (Mikaeili; 2009: 6).

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According to the statistics of Fars educational organization within the year 1388, across the city of Kazeroun, there are only 31 schools with 4611 students. Now, the educational space of guidance schools is about 58005 m2 which is accounted as less than as 1percent.. This level of area in comparison with its optimum situation, 99117m2, shows 44112 m2 shortages (Consulting Engineers of Naghshe Mohit, 2009:53). So, the necessity of making new schools across the city of Kazeroun and their proper positioning is felt.

2- Methodology

The descriptive- analytical method has been used in this research. All data have been collected by field observations, study of comprehensive models of Kazeroun city and educational organization of this city. Then, proper locations for constructing guidance schools were preceded using the GIS software and after information entry, data management and analysis them.

3- Discussion

In this research seven following data layers have been used in order to proper positioning of guidance schools of Kazeroun city; involving proximity to communication network, proximity to urban green space, proximity to residential centers, proximity to cultural centers, distance from available guidance schools, locating across the proper land use, locating on proper slope. Table 1 shows the Rating to information layers according to distance.

Table1. Rating to information layers according to distance

distance in meters					score
Green spaces	Cultural centers	Communication network	Residential areas	guidance Schools	
0-100	0-100	0-50	0-100	900+	10
100-200	100-200	50-100	100-200	800-900	9
200-300	200-300	100-150	200-300	700-800	8
300-400	300-400	150-200	300-400	600-700	7
400-500	400-500	200-250	400-500	500-600	6
500-600	500-600	250-300	500-600	400-500	5
600-700	600-700	300-350	600-700	300-400	4
700-800	700-800	350-400	700-800	200-300	3
800-900	800-900	400-450	800-900	100-200	2
900+	900+	450+	900+	0-100	1

Reference: Authors.

For land use, has been rated the economical value and its proportion. For instance, sterile use is higher rated and commercial use is lower rated according to their lower and higher economical values, respectively. In the following, the optimal locations maps in order to build new guidance schools across the city of Kazeroun could be seen.

drawn by authors | Map1. Optimal locations for guidance schools construction
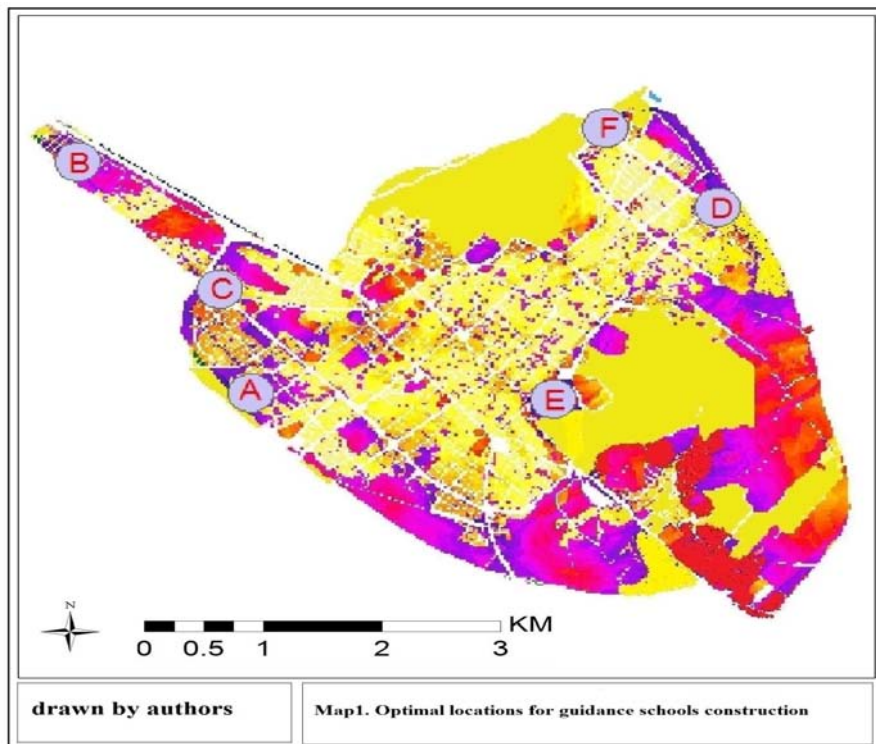
As shown in the map1, major proposed locations for guidance schools construction are located at suburbs; because of suburbs in comparison with other places have higher grants. Considering with the shortage of these places, the construction of guidance schools in proposed areas not only will affect the development of whole city of Kazeroun but also can help citizens access to educational services.

4- Conclusion

There are several causes in positioning of educational centers (guidance schools), which their different aspect analysis are not been possible by traditional methods. Therefore, geographic information system is necessary for a great deal of information analysis. Also, analytical hierarchy process (AHP) and geographic information system (GIS) have a high efficiency in the field of guidance schools positioning. This efficiency is not related to the comparison and estimation different locations and optimal place selection according to mentioned criteria. After revealing the problems of guidance schools positioning of Kazeroun using GIS, , analytical hierarchy process (AHP) and index overlap model have been used in order to position new guidance school buildings. Ultimately lands which are located in the city limits of the legal and privacy of Kazeroun were leveled and six locations were investigated for new schools. Then, using AHP, these six locations were preceded and best place was detected.

Key words: Geographical information system (GIS); Analytical hierarchy process (AHP); Index overlap model

(IO); location; Guidance schools; Kazeroun

References

Ale Sheikh, Aliasghar & Helali, Hossein & Soltani, Mohammad Jafar (2002): GIS application in the areas of Flood, Journal of Geographical Research, number 4, Isfahan.

Almaspur, Farhad (2000): Application of GIS and network analysis in location of pharmacies, case study: 6th district of Tehran, M.A. Thesis Geography and Urban Planning, Tarbiyat Modares University.

Environmental role of Consulting Engineer, Detail Design of Kazeroon City, Kazeroon Municipal.

Farajzadeh Asl, Manucher & Rostami, Moslem (2004): Assessment and location training urban centers by GIS Case Study: town teacher Kermanshah, Journal of Modares Human Science, Number 1, Tehran.

Farajzadeh Asl, Manucher (2005): GIS and its application in tourism planning, Samt Publishing, Tehran.

Hesamiyan, Farokh & Etemad, Giti & Haeri, Mohammadreza (1999): Urbanism in Iran, Aware Publishing, Tehran.

Karami, Mohammadreza (2003): Location Technical and Vocational School by GIS, M.A. Thesis Geography and Urban Planning, Tabriz University.

Khakpoor, Baratali & Velayati, Sadollah & Kiyannejad, Seyed Ghasem (2007): Changing pattern land use in Babol city during 1983-1999, Journal of Geographical & area development, number 9, Mashhad.

Khandehroo, Javad (2003): Evaluation how to location user training secondary and high school levels in Mashhad by GIS, M.A. Thesis Geography and Urban Planning, Tarbiyat Moallem University.

Lalehpoor, Manijeh (2002): Land use survey in urban planning by GIS case: education use (primary school) 8th zone Tehran, M.A. Thesis Geography and Urban Planning, Tarbiyat Moallem University.

Lotfi, Sedigheh and Koohsari, M.J (2009): Analyzing accessibility dimension of urban quality of life: where urban designers face duality between subjective and objective reading of place, social indictors research (2009) 94: 417-435.

Micaeli, Reza (2004): Location pattern of educational spaces Sari city by GIS, M.A. Thesis Geography and Urban Planning, Tarbiyat Moallem University.

Nazari Adli, Saeeid & Kuhsari, Mohammad Javad (2007): Combining Boolean logic and AHP by GIS, Journal of face city, Number 40, Tehran.

Ngai, E, W.T.E. W.C, Chan (2005): evolution of knowledge management tools using AHP, expert systems with applications.

Plan and Budget Organization of Fars (1996): Fars faces (Kazeroon), Plan and Budget Organization of Fars Publishing, Shiraz.

Purmohammadi, Mohammad Reza (2003): Urban land use planning, First Print, Samt Publishing, Tehran.

Richard L. Church (2002), Geographical information systems and location science, Computer & Operations Research 29.

Saeedniya, Ahmad (2004) Urban land use, Vol.2, Tehran.

Salehi, Rahman & Mansoor, Rezaali (2005): Organizing spatial locations of teaching (high school) Zanjan city by GIS, Journal of researches Geography, Number 52, Tehran.

Sanjari, Sara (2009): Arc GIS 9.2, Abed Publishing, Tehran.

www.farsedu.ir

www.sci.org.ir

Zangiabadi, Ali & Mohamadi, Jamal & Safaei, Homayoon & Gaedrahmati, Safar (2008): Analysis of vulnerability indicators of urban housing in the earthquake, case study: Isfahan urban housing, Journal of Geographical & Development, number 12, Zahedan.

Zarabi, Asghar & Ghanbari, Mohammad (2010): Health city, articles set 2th conference national Health city, code 75, Sabzevar.

Zarabi, Asghar & Gholami Bimorgh, Younes & Musavi, Seyed Ali (2009): Land use survey Noorabad Mamasani city by GIS, Journal of urban and regional research, Number1, Isfahan.

Zebardast, Esfandiar (2001): Application of AHP in urban and regional planning, Journal of Fine Arts, number 10, Tehran.

Ziari, Keramatollah (2002): Urban land use planning, University Yazd Publishing, Yazd.