Geographical analysis of parking land use in Genaveh applying AHP Model

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Extended Abstract

1- Introduction

Each year Genaveh Port receives millions of tourists (2302154 people in Nowruz Holidays in 1390) from all over the country for its tourist attractions and trade and recreation centers. The presence of this huge populace has created several traffic problems, the main root of which can be found in the shortage or the incorrect positioning of the function of parking lots in this city. However, the issue gets into its peak in the time there is boom in tourism in holiday seasons. field data, a questionnaire with a sample size of 320 participants including 100 citizens and 220 tourists has been incorporated, This applied study uses a descriptive analytical research design.

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In the analysis of the current situation, and for providing the and SPSS has been used for further analysis. After assessing the area and the number of required parking lots applying parking building methods, the influential standards in situating public parking lots has been weighted through the analytic hierarchy process (AHP) in Arc GIS software zone, and then appropriate places for launching parking lots has been recognized by OWA (Ordered Weighted Average) fuzzy method. Results show that with regard to the need for 1863 parking lots in addition to the current lots in the studied area in one day, there exists no logical relations between the demanded parking lots and the existing parking lots in the city of Genaveh. Nevertheless, it should be admitted that the present parking lots in the city are appropriate considering the geographical standards; but limitations exist with regard to the number of these lots. Hence, considering the characteristics of this city, the most logical option is the use of smart parking.

2- Theoretical Bases

- Traffic

Traffic is an international term; it means transportation vehicles and passersby walk on roads and adding three humans, vehicle and road are formed (Rezaei, 1369, p. 7).

- Stop surface car

The average surface to stop any car is considered to be 14 square meters and the average number of passengers per car is two; thus, there is a need for at least 7 meters of the city for the parking of each passenger. Since car is a personal device, there is a need for at least two parking spaces for a car: one in the living place and the other in working place or sites such as shopping centers and city centers (Shahi, 1376, p. 85).

- Analytic hierarchy process (AHP)

The analytic hierarchy process is a structured technique for organizing and analyzing complex decisions. In this process, decision makers find the answer that best suits their goal. It provides a comprehensive and rational framework for structuring a decision problem. Analytic hierarchy process is based on pairwise comparisons, which makes it easy to judge the accuracy of calculations (Hosseini et al., 1389, p. 73).

Geographical situation and population of Genaveh

Ganaveh County is a county in the northwest of Bushehr Province in Iran. The county's area is 9.69 square kilometers and Genaveh port is located in the Persian Gulf coast. According to the latest census in 2006, the county's population was 59,583 (30,169 males and 29,414 females).

3- Discussion

This applied study has a descriptive – analytical nature.

A questionnaire was completed by 320 participants including 100 residents and 220 tourists, and SPSS software was used for further analysis. After estimating the size and the number of required parking lots applying parking product method, the optimal locations for the construction of public parking lots in the city were identified using the analytic hierarchy process (AHP) in Arc GIS software zone, and then appropriate places for launching parking lots was determined by OWA fuzzy method.

4- Conclusion

For locating parking lots the traditional method is used in most cities which is incapable of applying all effective parameters in location finding simultaneously and is time-consuming. These disadvantages make the constructed parking spaces useless. This made an increased interest in using the appropriate tools, which can simultaneously integrate a large number of spatial parameters, such as GIS. One of the most important stages in this process is to weight the parameters. Different weighting methods can lead to different results.

Using GIS in situating parking lots instead of traditional methods increases the process speed and enhances the efficiency of suitable constructed parking.

Weighting methods are less accurate than the AHP method due to lack of a strong theoretical basis.

In locating parking spaces, the walking distance to the parking place is very important

and in different places of the studied area which need more parking spaces and have heavy traffics, some places for constructing parking places should be found.

5- Suggestions

According to statistics available, the parking area in Genvaeh is 56,990 square meters and the required area for parking is 85,997 m daily. Thus, the area needed for parking is 26,072 m in addition to the existing parking spaces and we need 1863 parking lots in the studied area (city center) for a day. The proposed public parking is provided in the following table.

Table - Public parking proposed in Genaveh

number	Parking type	position	Total Number of Floors	Area	Substructure Area	Capacity
1	class	St. Imam - Imam Khomeini St. Clinic	5	1000	5400	160
2	class	Taleghani Street	5	800	4300	130
3	class	Abuzar Street - opposite the market	5	2500	17500	580
4	class	Mobilization Street - opposite the hotel.	5	700	3700	110
5	class	Pasdaran Street - opposite the Yazdani grocery	5	1200	6400	200
6	class	Imam Square - opposite the Central Branch of Saderat Bank	5	2200	11300	360
7	class	Nakhodahamzeh crossroad - behind Ahmadian passage	5	2300	11700	380
Total	-		37	10700	60300	1920

Source: authors

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