An Analysis of Space Distribution and Applied Site Selection of Urban Lands with an Emphasis on Access to Civil Services Based on AHP Model in GIS Environment

(Case Study: Qazvin Institutes of Higher Education)

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Abstract

One of the important issues for the majority of the planners is the optimized concentration and distribution of service centers. The well-balanced distribution of these centers and services need appropriate site selection so that all walks of life have easy access to these services. From among service centers, site selection for higher education centers is important in terms of their importance and the quality of environmental and physical conditions such as comfort, efficiency, health and safety, vicinity to compatible centers and distance from incompatible centers. This is important in quality of the services. For realization of this type of site selection various data should be gathered and it is very difficult to extract outputs from these data to remove the problems. During the recent years, new systems and models have been added to the urban planning and land use planning, which have become good instruments for understanding and confrontation with everyday complications of cities thanks to the advancements made in the information technology. One of the recent technological developments is the geographical information system or GIS that has high capabilities in spatial analysis. Due to the complexity and abundance of information on the subject matter of this research, we have used GIS.

This research, that has been conducted by descriptive-analytical-applied method and based on GIS system, spatial analysis, using spatial data, and reviewing and comparing sites proposed in upstream plan of Qazvin (Sharmand), reviewed selection of best sites for higher education centers in Qazvin. The selected sites were compared and contrasted with the land use of the existing parcels of land and finally sites with first and second priority were selected for construction of higher education centers in District 3 in a concentrated way. The selected sites were located in Ayatollah Abutorabi Blvd. and around Mir Emad Blvd. with first priority. The lands on Abutorabi Blvd. gained priority due to certain reasons we will mention in the coming pages. In the second priority, the downstream areas of ShahrakMinoo were proposed for establishment of higher education centers.

Keywords: Site Selection, Service Use, Higher Education, Qazvin, GIS, AHP

1. Introduction

Lack of appropriate access of educational centers to urban services has created problems for the young generation and university students who constitute a relatively large population in our country. On the other hand, this has given rise to the transportation costs, traffic jam, and most important of all educational loss and disinterest in school and university. Therefore, there is a need for wise planning in site selection of the higher education centers. If the preliminary studies are precise and if in the process of site selection workable strategies are applied, the site selection will be efficient and the result will be saving time and energy and preventing inaccurate decision-making. Also optimized distribution of higher education centers can ease achieving social equity and reducing psychological and physical damages resulting from long trips in heavy traffic. (Mikaeili, 2004: 5)Fair access to land and optimized use of land is among major factors in sustainable development and social equity. Today, the concepts of land and space have undergone changes in the cities and naturally the dimensions and objectives of urban land use planning have become broader and richer. Therefore, these two common and vital elements must be used under principled planning. (Ziari, 2002: 13) The importance of using GIS in urban planning has become clear with the rapid development of cities and the delirious increase in information that must be processed for the city management. (Farajzadeh and Sarvar, 2002: 180) Qazvin, like other cities, has followed this rule

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because due to valid higher educational centers and their multiplicity as well as low level of services by some of these centers because of location in an inappropriate zone we see lack of social equity and coordination in spatial distribution of higher education centers in this city.

Therefore, it is a need to study optimized distribution of higher education centers within a research plan for such goals as: creating an appropriate model for optimized site selection for establishment of higher education centers in Qazvin, boosting efficiency, reducing general costs, economy in land purchasing and construction of higher education centers, reformation of decision-making strategy of the city officials, and meeting student welfare in the city of Qazvin**.**

2. Problem Statement

The major goal of urban planning is is creation of cities that provide desirable place for the social life and welfare of the citizens. Fair access to the land and optimized use of land are among the key components in sustainable development and social equity. In this connection, access to urban services is one of the priorities that must be addressed by the city planners. Therefore, the initiatives of the majority of city planners must be toward removing shortages and faults in this field. Balanced distribution of land use requires wise site selection and rendering appropriate facilities so that all walks of life enjoy these services equally.

From among these applications, in the site selection for higher education centers, due to their importance as well as attention to the quality of environmental and physical conditions such as comfort, efficiency, health and safety, vicinity to compatible centers and distance from incompatible centers must be paid due attention. This is important in quality of the services. In Iran, due to inattention to infrastructural studies and farsightedness, as well as emphasis on instant and hurried decisions have raised problems for officials in selecting sites for higher education centers. This is why the selected site faces problems with the increasing number of students and pertinent activities so that the past centers become unable to meet the present demands of the students. This is important in Qazvin due to valid higher educational centers and their multiplicity as well as low level of services by some of these centers because of location in an inappropriate zone.

3. Research Goals

a. Creating a proper model for optimal site selection of higher education centers in the city of Qazvin
b. Boosting efficiency, reducing public costs, economy in land purchasing for higher educational centers and operating costs for construction of these centers
c. Reformation of the decision-making strategies of the city officials
d. Meeting welfare and comfort of the students
e. Meeting social equity in the city

4. Methodology

This study has used documentary, descriptive, and analytical research method in data gathering. The maps and site data were statistically saved in data bases. Then non-site data (descriptive) was added and categorized. After these stages, the input data management, processing, analysis and modelling were carried out. This method has enabled recovery, classification, analysis, deletion and addition of the data. Finally, while reviewing the status quo the output turned to be maps displaying appropriately zoned sites for establishment of higher education centers in the city of Qazvin.

5. Discussion

The recognition and determination of criteria that facilitate optimum site selection for land use is itself a guide toward selection of optimized places for appropriate site selection. Prioritization of various urban textures and levels for optimal site selection for various types of land use, and planning and site selection for urban land use are necessary for preventing disruption in land use and adoption of strategies for unbalanced dispersion in land use.

This requires classification of indicators and criteria in various functional, social, economic, formal and environmental areas. The best zone for for establishment of local and regional centers, optimal site selection for urban installations and utilities, inefficient structures and textures, gifted areas for dense areas and high-rise buildings are selected this way.

Urban site selection has been encompassed by ambiguities and uncertainties because site selection in the past by Boolean logic and other models do not allow spatial criteria as continuous spectrum of membership. Therefore, we have used AHP or Analytical Hierarchy Process.

6. Site Selection for Higher Education Centers based on GIS

Right site selection needs definition of criteria and appropriate indicators to realize this goal. To that end, we will hereunder continue with reviewing the limits under study in the criteria and sub-criteria and in each case,

when needed, we have used Expert Choice software and well-defined expert studies layered in GIS software. Therefore, each sub-criteria has an indicating figure in GIS. These layers are are overlapped in the sites understudy in the areas involved (three districts in Qazvin), and finally through which the appropriately zoned site for construction of higher education centers has been shown.

7. Prioritization of Criteria and Dependent Sub-Criteria in Site Selection for Higher Education Centers in Qazvin

At this stage, with respect to the hierarchy of goal, criteria, sub-criteria, as shown in Diagram 1, the criteria and sub-criteria were weighed.

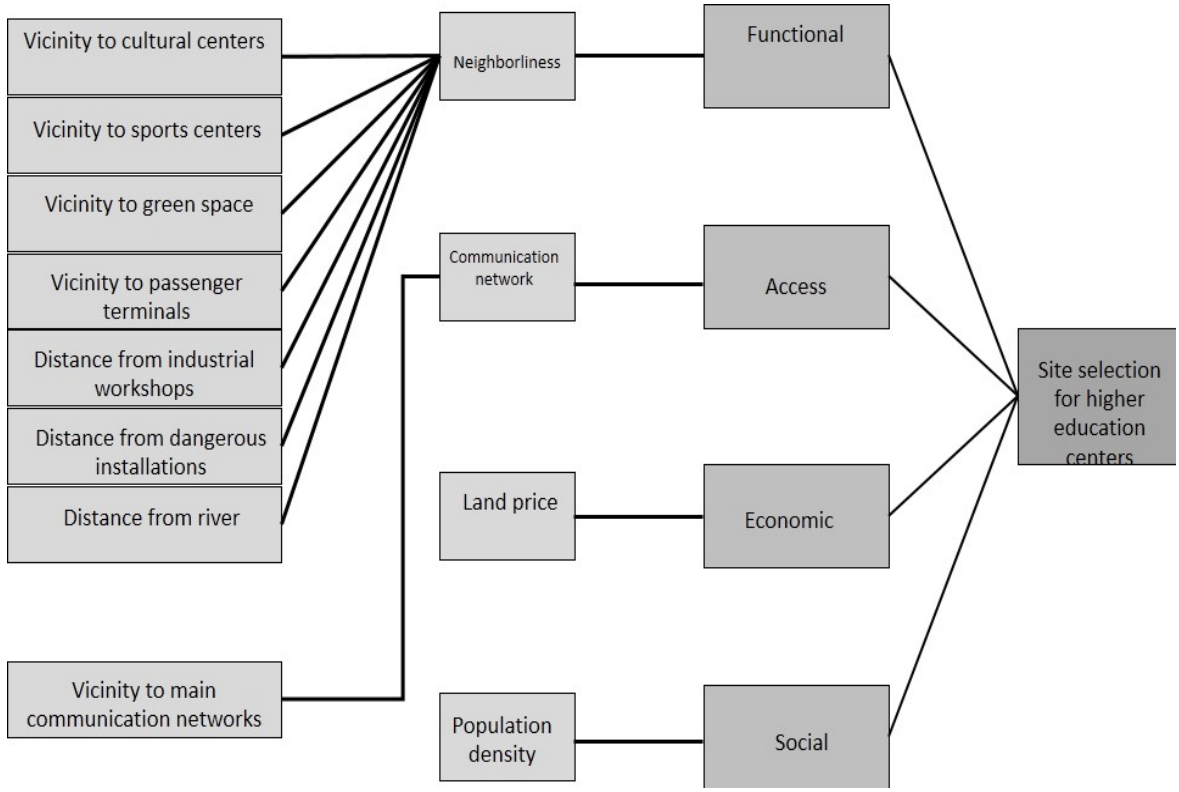
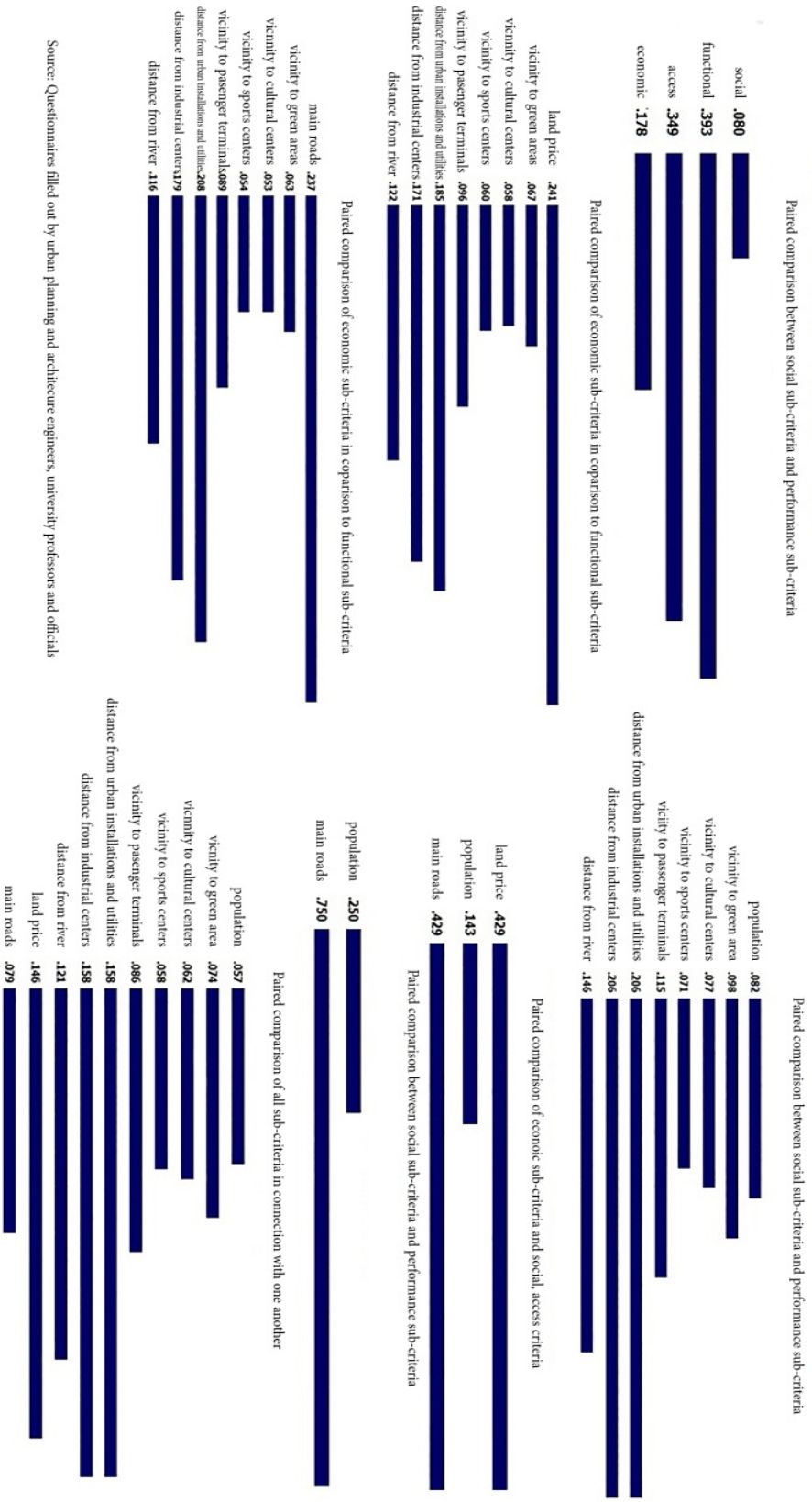


Fig.1. Hierarchical Tree of Site Selection for Higher Education Centers

Site Selection for Higher Education Centers

- Functional (Neighborliness)
  - Vicinity to cultural centers
  - Vicinity to sports centers
  - Vicinity to green areas
  - Vicinity to passenger terminals
  - Distance from industrial workshops
  - Distance from dangerous installations and utilities
  - Distance from river
- Access (Communication network)
  - Vicinity to main road
- Economic (land price)
- Social (population density)

After formation of the hierarchical tree, the criteria and sub-criteria were compared in pairs to determine the weight of each factor. To that end, questionnaires were distributed by 30 experts. Finally the method gave out criteria results as the following.



Source: Questionnaires filled out by urban planning and architecure engineers, university professors and officials

Fig.2. Paired Comparison Analysis of Criteria and Sub-Criteria

8. Determining Important Data Layers in Site Selection of Higher Education Centers and Weighing Each Layer Based on AHP

In this section we try to analyze the major indicators in the form of data layers that are capable of inputting in GIS, there exists the possibility of continuous spatial analysis that can be used as a quantitative tool in realization of operation objectives. After determining the components and major criteria and weighing them, it is necessary to make a data layer as the base layer out of these data. To make the base layer it is necessary in the beginning to make the related components by using GIS and one of its tools as Spatial Analyst. This software is also capable of combining spatial layers based on the weight of each layer to achieve a combined spatial layer.

8-1- Functional Dimensions

Functional criterion was selected as one of the site selection criteria for higher education centers in the city of Qazvin. In this connection, we will continue with the analysis of the neighborliness of the land use in view of compatibility and non-compatibility with higher education centers. In connection with determining factors we have referred to a few important factors such as noise pollution, air pollution, environmental pollution, and pollutions coming from the functional nature of land use and access.

8-1-1- Vicinity to the compatible land use: This means sameness and conformity of the activities so that they are compatible and do not bother each other. For evaluation of the compatibility we have considered four criteria (1- vicinity to green areas and parks; 2- vicinity to cultural land use; 3- vicinity to sports land use; and 4- vicinity to passenger terminals) for each higher education center.

8-1-1-1- Vicinity to park: Educational centers must be positioned in a way to have the maximum degree of conformity with the environment. To that end, the higher education centers must be at least close to a public park. Green space is one of the instances of appropriate vicinity because it is the best place for leisure time of the youth that also reduces air pollution. The more the higher education centers are closers to parks and green spaces, the more valuable they will be. For site selection we have measured the green areas and parks distance from higher education centers in the city in such a way that there should be minimum distance. In this measurement the higher education centers with less distance got higher coefficient and the others with relatively long distance got lower coefficient. In terms of distance from the green space they were classified in five classes. (Map 1)

8-1-1-2- Vicinity to sports centers: the small-scale sports centers are among the land use compatible with the higher education centers. Stadiums and large sports complexes are not compatible due to the large size and crowdedness. Thus when they are closer to the higher education centers, it will gain less score or coefficient. Since sports centers are small and medium sized in the city of Qazvin, the closer the distance, the higher will be the positive score. This has been classified in four classes. (Map 2)

8-1-1-3- Vicinity to cultural centers: The existence of centers with cultural use such as library, museum, exhibition, cinema, tourist centers, etc. in the vicinity of the higher education centers can serve as complements to the educational services and activities. A 300m limit has been considered as ideal distance from the educational centers so that centers within this limit are evaluated as ideal and outside this ring of 300m distance they will be inappropriate. In this research, the vicinity of higher education centers from cultural centers is 0 to 800 meters that have been classified in five groups and the centers with shorter distance have gained better scores in terms of site selection. (Map 3)

8-1-1-4- Vicinity to passenger terminals: Passenger terminals are among the centers with compatibility to the higher education centers because students come from various cities. Therefore, access to the passenger terminals can be useful for the students. We have classified terminals in four groups. (Map 4)

8-1-2- Distance from incompatible centers: To evaluate incompatible centers we have used three criteria (1- Distance form industrial workshops; 2- Distance from dangerous installations and utilities; 3- Distance from river) for each educational center.

8-1-2-1- Distance form industrial workshops: The existence of such centers in the city has undesirable impacts on educational centers in terms of air and noise pollution and finally exposes students to the risks of health. This is why in site selection for these spaces based on site selection, it is necessary to observe a distance of 500 km. (School Renovation Organization). Consequently, observing relative distance between the higher education centers and industrial workshops with

respect to the high number of industrial workshops is among the first principles for site selection of higher education centers. To do this, we have identified the industrial centers, registered them in GIS and provided 250m buffers around them. The closer these centers to the higher education centers, the lower their scores will be and vice versa. (Map 5)

8-1-2-2- Distance from dangerous installations and utilities: The dangerous and risky urban installations and utilities in this research are: graveyard and filling stations distributed in the city. These are among the incompatible centers that create such problems as bad odor, noise pollution, and fire outbreak. In connection with filling stations, we should say that they are also among incompatible centers. To avoid traffic and fire risks the filling stations should be at least 250 km away from higher education centers. Therefore, the longer distance the better will be the scores and vice versa. With respect to the above four limits have been specified for installations and utilities. (Map 6)

8-1-2-3- Distance from river: The river course and its limits when overflowing are the important factors in site selection for higher education centers. This is because overflow of the river can cause serious problems for installations and utilities and higher educations are no exception to this. The only active river in Qazvin running from the north was analyzed within three classes with the priority of its distance. Based on site selection regulations, a 200m limit was considered for this river. (Map 7)

8-1-3- Summing up neighborliness of the land use: On this basis, with respect to the compatible and incompatible land use with higher education centers, the land uses were classified into four groups of compatible, relatively compatible, incompatible, and relatively incompatible so that compatible lands have higher scores and incompatible lands have lower scores.

8-2- Access: It is one of the most important criteria for site selection of higher education centers. In this research, the access criteria includes an important criterion such as the communication network.

8-2-1- Access to main roads: The access network plays a vital role in the cities and all land uses need access to the roads according to their function, so that their durability is impossible without appropriate access network. If the sites for higher education centers are selected without considering accessto the roads, it will be risky in terms of the safety of the users and the transportation system. Therefore, the higher education system should have a logical distance from the main roads. (Esmaeili, 2002: 43) Therefore, the closer the distance of higher education centers from the main roads, the higher will be the score and vice versa. With respect to the above, the main roads in Qazvin classified as first and second class fall into the four main classes we have mentioned. (Map 8)

8-3- Economic aspect (land price): Land price is an important factor in site selection. Urban lands have difference prices according to the vicinity to the main roads and service centers. Usually land pieces close to the main roads and utility and service centers are economically more valuable in comparison with the land pieces far from these services.

With respect to the importance and role of land use it is not economical to use valuable pieces of land for insignificant purposes. Also, since land use for higher education centers have economically lesser value in comparison with other land uses, the lands with lower prices in Qazvin are more appropriate for construction of higher education centers. In this study the land prices for higher education centers ranged from 15 to 45 million rials per square meter which have been classified in four groups. (Map 9)

8-4- Social aspect: with respect to the diversity of social dimensions for site selection for higher education centers as well as lack of access to the statistics in this regard, in this research work we have sufficed population density.

8-4-1- Population density: Since higher education centers are created for the use of the university students and for educational purposes, proper access of a greater number of citizens to these lands and attention to the highly dense population centers can be a good criteria for site selection of the higher education centers. Therefore, in this study, we provided layers of population density based on the 2006 census and considered such factors as neighborliness with dense population centers, and desirable places for the construction of higher education centers. It should be noted that in this research the gross population density has been classified into five groups. (Map 10)

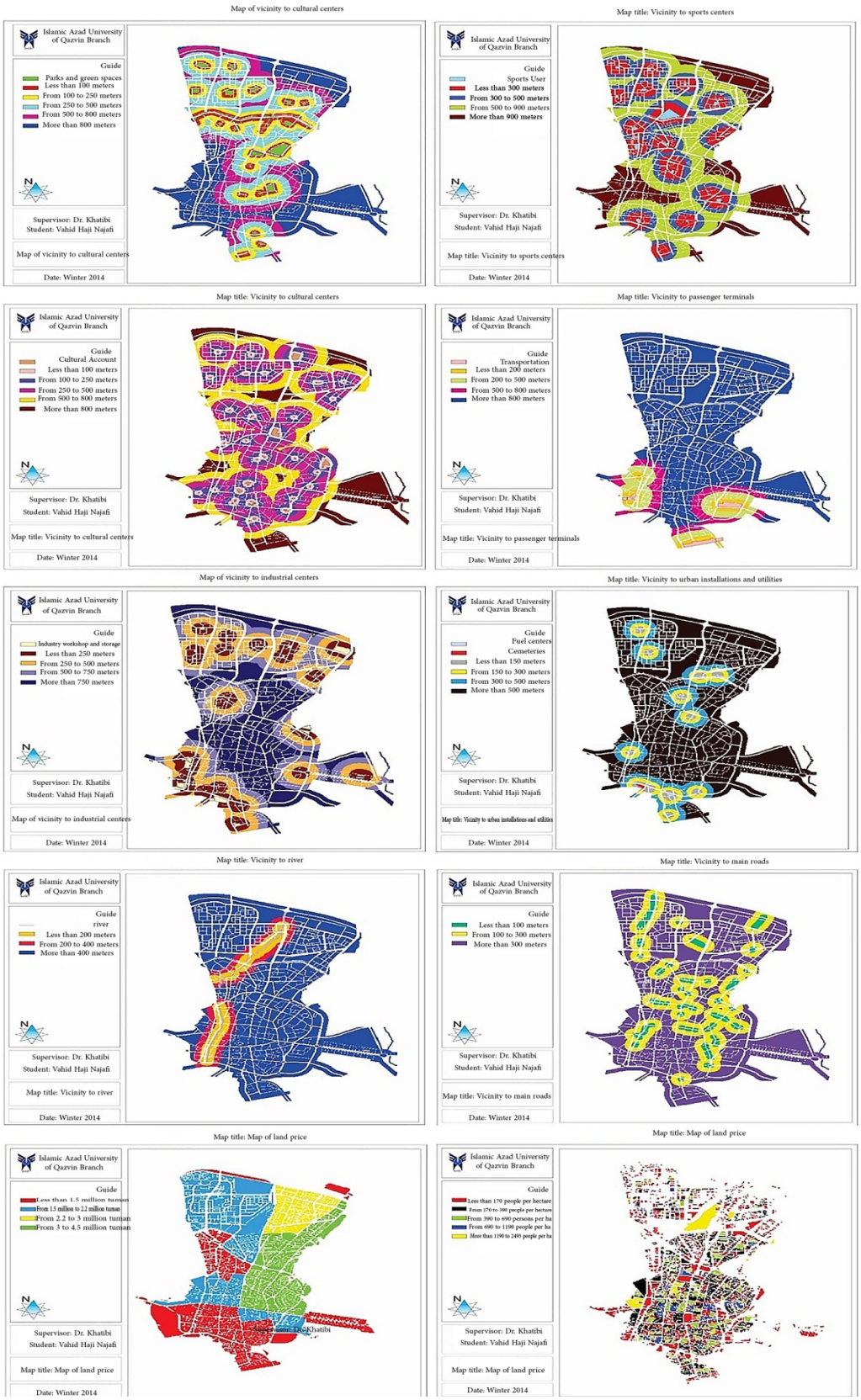


Fig. 3. Map of important data layers in site selection for higher education centers and

9. Criteria for site selection, classification and calculation of scores in each class by AHP

Tables of Criteria and Sub-criteria Classification and Their Scores

Table 2
Sub-criteria gross population density scoring

Criteria	class		Score
Gross population density	1	Less than 170 people per hectare	1
	2	From 170 to 390 people per hectare	3
	3	From 390 to 690 persons per ha	5
	4	From 690 to 1190 people per ha	7
	5	More than 1190 to 2493 people per ha	9

Table 3
Sub-criteria land price scoring

Criteria	class		Score
Land price	1	Less than 1.5 million tuman	9
	2	From 1.5 million to 2.2 million tuman	7
	3	From 2.2 to 3 million tuman	5
	4	From 3 to 4.5 million tuman	3

Table 4
Sub-criteria vicinity to main roads

Criteria	class		Score
Vicinity to main roads	1	Less than 100 meters	9
	2	From 100 to 300 meters	5
	3	More than 300 meters	1

Table 5
Sub-criteria vicinity to green space scoring

Criteria	class		Score
Vicinity to green space	1	Less than 100 meters	9
	2	From 100 to 250 meters	7
	3	From 250 to 500 meters	5
	4	From 500 to 800 meters	3
	5	More than 800 meters	1

Table 6
Sub-criteria vicinity to sports centers

Criteria	class		Score
Vicinity to sports centers	1	Less than 300 meters	9
	2	From 300 to 500 meters	7
	3	From 500 to 900 meters	5
	4	More than 900 meters	3

Table 7
Sub-criteria vicinity to cultural centers

Criteria	class		Score
Vicinity to cultural centers	1	Less than 100 meters	9
	2	From 100 to 250 meters	7
	3	From 250 to 500 meters	5
	4	From 500 to 800 meters	3
	5	More than 800 meters	1

Table 8
Sub-criteria vicinity to passenger terminals

Criteria	class		Score
Vicinity to passenger terminals	1	Less than 200 meters	9
	2	From 200 to 500 meters	7
	3	From 500 to 800 meters	5
	4	More than 800 meters	3

Table 9
Sub-criteria distance from dangerous installations and utilities

Criteria	class		Score
Distance from dangerous installations and utilities	1	Less than 150 meters	1
	2	From 150 to 300 meters	5
	3	From 300 to 500 meters	7
	4	More than 500 meters	9

Table 10
Sub-criteria distance from industrial workshops

Criteria	class		Score
Distance from industrial workshops	1	Less than 250 meters	1
	2	From 250 to 500 meters	5
	3	From 500 to 750 meters	7
	4	More than 750 meters	9

Table 11
sub-criteria distance from river

Criteria	class		Score
Distance from river	1	Less than 200 meters	1
	2	From 200 to 400 meters	5
	3	More than 400 meters	9

(Source: Opinion poll from urban planning and architecture engineers, university professors and officials)

10. Merging Maps

After formation of the spatial information layers on pertinent components and criteria, they were merged in AHP and GIS to constitute the collective spatial layer that is a resultant of all layers. This layer is the yardstick for identifying priority of various sectors of the city for proper site selection. It will provide a management framework out of merging multi-criteria decision making (MCDM) and GIS whose principal specification is the availability of expert and technical interference in spatial decision making procedures.

At this stage, Raster Calculator and UNION or map merging were used for the scoring the information layers in each section. Therefore, the total columns related to the data layers in each section shows the criteria for site selection. Summing up the scores in each criteria and forming a databank with respect to the frequency of the data gives out four groups and the city of Qazvin is placed within four priorities. The sites with higher scores will be of first priority and the sites with lower scores will be of low priority. In maps 11 and 12 the overlaying operations of all layers under study have been considered for site selection for higher education centers.

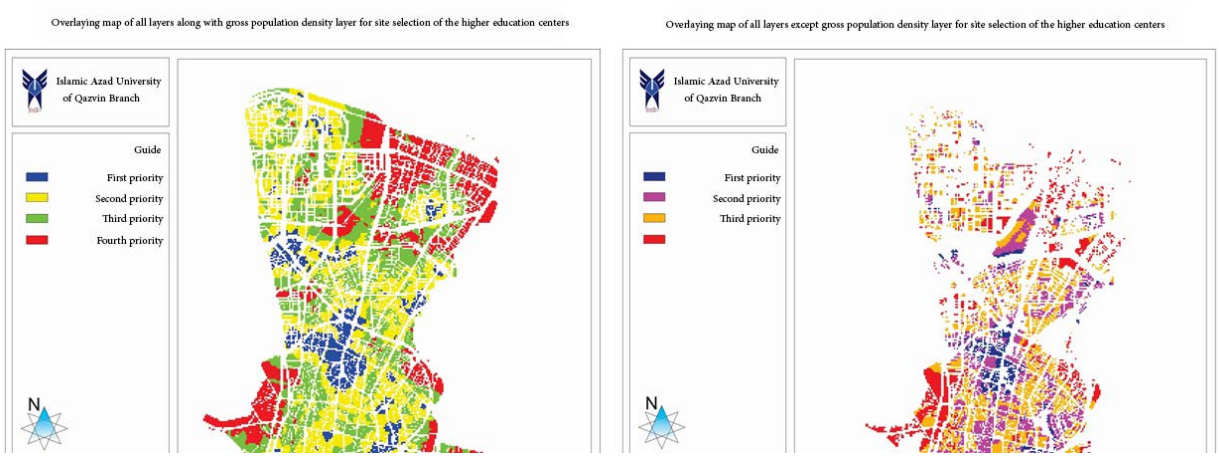


Fig. 4. Map of merging and overlaying the layers

11. Results

The results show that a number of higher education centers have been located in the vicinity of incompatible land uses such as industrial centers, large shopping centers, crowded areas, etc. Therefore, it is proposed that the executive organizations along with the municipality embark on relocating these centers to reduce the adverse impacts of these centers on the higher education centers. The findings of this study showed that such criteria as vicinity to the cultural and sports centers, green spaces, … have not been considered in a number of site selections for higher education centers. Therefore, their situation is inappropriate. In connection with such criteria as distance from the industrial centers, filling stations and rivers it became clear that some higher education centers have been located in an inappropriate distance from these lands uses.

In the final analysis of the status quo of the higher education centers in the city of Qazvin and relying upon the qualitative and quantitative evaluations in each case we came to the conclusion that a number of the higher education centers, specially the non-profit centers are not appropriately zoned and finally whatever true in the case of the higher education centers situation in Qazvin is this that they have not observed the rules and regulations required for site selection. This is going to be intensified. Therefore, the authorities and officials in charge should seriously think about this problem.

In the large cities, fair distribution of facilities and services is one of the major concerns of a smart manager. Meeting this social equity in service rendering will not be possible without spatial analysis of the land use and reviewing and analyzing the strong and weak points in each case. GIS is an effective softwarefor realization of this goal. Presenting various alternatives for meeting the demands of a region without evaluation of the existing land uses and finding its compatibility and incompatibility with the present functions will not be possible. This method is significant in all-out survey of various components such as qualitative and quantitative factors with influence on compatibility of the land use such as odor, noise, form, etc. High flexibility is the key feature of this method. Planning for spatial distribution of the higher education centers is part of this planning process and it should be seriously taken into consideration in urban planning in line with sustainable development and social equity. Meeting at least minimum standards in balanced distribution will be helpful and will serve as the basis for higher education centers' spatial planning.

The experience of intervention in urban structure in Iran shows that the majority of plans and programs are about the form of the building only and other important factors such as access ways, communications, enjoying blessings of neighborliness, urban facilities and utility centers have been neglected in the meantime. Therefore, it is necessary to consider various factors. To identify the the criteria for site selection of higher education centers in the cities, various variables should be taken into consideration among them we can refer to access to valuable urban spaces, access to the main roads and communication networks, access to the urban facilities and utility centers and analysis of their neighborliness, access to the existing higher education centers, access to the upstream documents, land price, …

There are various methods for merging the criteria and the most important methods are Boolean Logic of the Zero Logic, Index Overlay, Fuzzy Logic, Probability Logic, Regression Logic, Artificial Neural Networks, Analytical Hierarchy Processes, Taxonomy, Factor Analysis, … These models have worked on the qualitative and quantitative components during the past three decades. Analytical Hierarchy Process is one of the effective methods in this regard. In this model the value of each variable is determined based on the importance of the indicator, i.e. such factor as access becomes important several times more than vicinity to passenger terminals and the values are educed in hierarchical order. In other words, each variable is influential in the result according to its importance, role and function and the criteria is determined by expert opinions.

The survey was carried out by a questionnaire which is useful specially when expert views are the only source of data, for long-time forecast (20 to 30 years). After summing up the scores of each criteria of site selection and forming its databank with respect to the frequency of the data, they were classified in four classes and the city of Qazvin was placed on them for site selection of the higher education centers so that after classification the land pieces with higher scores received first priority and vice versa.

12. Reviewing and comparing the locations of higher education centers in upstream plan with the sites proposed in this study

According to the Sharmand master plan, the places proposed for establishment of higher education centers have been chiefly large parcels of land. At present it seems it is the only criteria for site selection of higher education centers because other conforming criteria such as vicinity to green area, cultural centers, sports centers or passenger terminals as well as non-conforming criteria like distance from river, dangerous industrial installations, industrial centers have not been included. With respect to the criteria on site selection for higher education centers, some of them have been located in inappropriate zones so that no studies has been carried out on their site selection. Of course, the newly established universities are more inappropriate including the Dar al-Fonun Non-governmental Non-profit Institute of Higher Education or Kowsar Non-profit Higher Education Center that are located in residential districts with less facilities and desirable spaces. Another center is Caspian Higher Education Complex located close to the factories and industrial workshops outside the city.

With respect to the studies and considering the conforming and non-conforming criteria with land uses for higher education centers and merging all maps, the result of the site selection map for higher education centers in Qazvin is like the following:

The sites with first and second priority for establishment of higher education centers in District 3 are located in Abutorabi Blvd. and around MirEmad Blvd. Given the following reasons, Abutorabi Blvd. is more appropriate place for establishment of higher education centers.

Reasons:

1. Qazvin passenger terminal is located in northwest wing of Ayatollah Abutorabi Blvd.
2. Azadegan urban bus terminal is located in northwest wing of Ayatollah Abutorabi Blvd.
3. Traditional gardens of Qazvin are located around the boulevard as a potential for implementation of the plan for rehabilitation of traditional gardens and optimal use of these spaces as green areas complementary to the higher education land use.
4. Large workshops along the road can be turned into higher education centers on the two sides.

In the second priority, the land pieces downstream ShahrakMinoowere proposed for the establishment of higher education centers. Therefore, with respect to these capacities, it seems that Ayatollah Abutorabi Blvd. is an appropriate place for establishment of higher education centers in Qazvin.

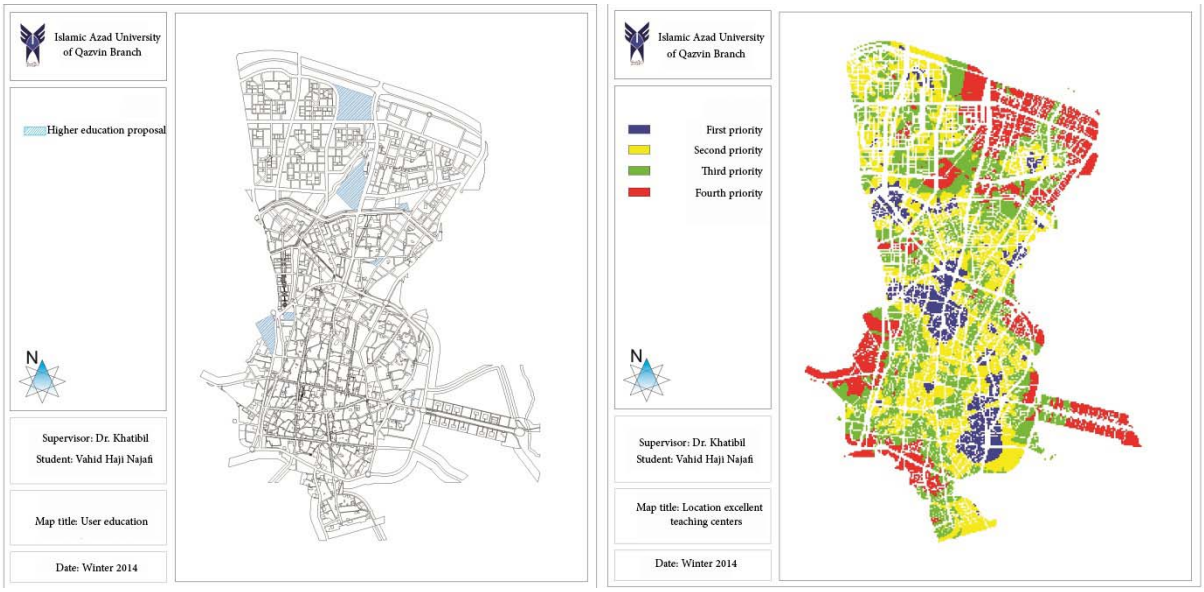


Fig. 5. Comparative map of higher education centers sites between upstream plan and this study's proposal

13. Proposals and models for establishment of higher education centers

1-Higher education centers must be located at sites with minimum negative impacts coming from the environs.

2- The students must have the chance to enjoy the facilities and services of the centers located in the vicinity of the higher education centers.

3- Higher education centers must meet the demands of students within their area under control and in general, in the region

In site selection of the proposed higher education centers, various criteria for optimal site selection of higher education centers were used including the following:

1- Attention to the communication network for access to the higher education centers in terms of vicinity to the streets and main roads
2- Attention to land pieces neighboring higher education centers. In this connection, observing distance from each land must be proposed as: 1-vicinity to green area; 2-vicinity to cultural centers; 3-vicinity to sports centers; 4-vicinity to passenger terminals; 5-distance from industrial workshops; 6-distance from urban installations and utilities; 7-distance from river, water wells, aqueducts, high-pressure power, gas pipeline, …
3- Considering proposals in upstream plan (detailed plan) in connection with higher education centers
4- Economic surveys like land price
5- In determining the neighborliness of higher education centers, access to the dependent applications such as green areas, cultural centers, sports centers, etc. have been considered. In order to present an optimal model for site selection of higher education centers in the city of Qazvin based on the site selection rules and gathered data, the data layers were turned into formats usable in GIS and AHP software for analysis. The output showed the compatibility and non-compatibility degree of the higher education centers in the city of Qazvin and the prioritized sites were proposed for establishment of the higher education centers.

14. Conclusion

Any scientific research is carried out based on a certain goal, i.e. the goal of the researcher is either scientific that leads to the expansion of an area of science or it is applied that intends to solve a problem or promote the level of quality and quantity. Therefore, the researcher must focus on one of the goals above and present the result of his research. The important point about each scientific research is this that a research work must be always accompanied with jurisprudence and opinion, so that in the end the researcher openly expressed his well-supported opinion to help the development of an area of science he was working on theoretically. (Hafeznia, 2008: 220)

The higher education spaces are important centers in a city that are of special significance in comparison to other urban services. During the recent years, due to the rapid development in urbanization and consequently lack of a comprehensive planning and management in urban system of Iran, like other urban services these spaces face increasing problems. The problems chiefly come from unbalanced and inappropriate distribution, inefficient site selection, and lack of anticipations for appropriate spaces in the cities. Lack of standards for site selection for higher education centers, according to studies, are the major causes for the emergence of these problems. It is clear that upon population growth, the educational services in these centers must be expanded. Therefore, anticipations must be made from now, otherwise in future big cities will face serious problems in this area. Studies in Qazvin showed that higher education centers have been inappropriately zoned so that some of them are close to non-conforming industrial centers, installations, utility centers and dangerous urban installations and they are affected by such problems as air and noise pollution and reduction in quality of education services. Therefore, to minimize the adverse impact of such non-conformity, the executive and administrative centers must embark on construction of physical barriers and relocate the buildings when their life expectancy is over.

According to the experts at urban planning and architecture, university professors and officials, the gifted lands for transformation into the higher education centers are barren lands, state-owned lands such as those allocated for training, military, administrative, and agricultural purposes located within the future expansion plan of the city and the like. These parcels of land should have distance from other academic centers, cultural centers, urban installations, military bases, construction sites (central district of the city), highways and main roads, industrial and trade centers, graveyards and mortuaries, mountains and rocks.

Refrences

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