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Using Sustainable Materials in the Design of Sports Halls in Order to Improve the Quality of Sports Spaces

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Abstract

The establishment of any urban element in the location of the city follows certain rules and principles that in the case of observing the success and efficiency of that element will result in that specific location. Therefore, this study has been conducted with the aim to find out the most proper place among sports complexes in Urmia to redesign. In this regard, requirements and obligations of location finding were identified after studying international experiences and study the top regulations and documents, then, effective parameters were categorized in the two levels of main indices and options according to AHP. In following, information received from opinions of experts, managers and professionals were determined in determine the importance of the indexes and analysis and weights of indexes. Finally, Urmia two thousand seater sports hall was selected among other candidate places as the best place to redesign and also environmental problems are considered as an important situation in construction. Waste Management has activated the warning signs and alerts to the environment. Reuse, recycle and reduce the wastes is the only ways to recycle created wastes. However, these executive cases have more space for progress. In this study, we investigate the use of building materials in two-thousand seater sports hall of Young house of Urmia that emphasis is on the recyclable materials. Recycling as one of the strategies is to minimize wastes. And ultimately Sport Cultural of Young house has been redesigned from sustainable materials and suggestion was designed and presented with more details ranging from architectural maps and sections and the main structure of the stadium in three-dimensional.

Keywords: Redesign the Sports Hall, Safety Regulations and Standards for Sports Facilities, Location Finding, AHP Process, Sustainable Materials.

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1. Introduction

The exercise and healthy recreations are one of the most important strategies of today industrious human to maintain health and mental and physical growth and creating more fun and happier life and as well as life insurance for the period of aging and aging years. The exercise and sport can be considered and can be investigated of various individual and social aspects. What is important is understand the role of sport and healthy recreations in the machine life of today and that heavy and full of sadness life will be easier with tend to sport and healthy recreations. Physical health and better efficiency of better body organs and their coordinate are the most important aspect of the exercise and sport that consequently the psychological role of sport is revealed. Exercise has a big role in terms of mental relaxation and reduces the stress of life. A positive individual role of sport will affect the society and its dynamics.

A society that has people with strong spirit certainly will be dynamic and sustainable society and will destroy many social and personal corruptions that emanates from apathy and lack of spirit. Exercise on the other hand was strengthened spirit of cooperation and coordination between different people and prepares them for a better life in the community. Now that it is clear for everyone the importance of exercise and sport, and recreation facilities, the creation of tools and equipment needed for various sports and the public interest have paramount importance (Faezeh, 2010). Right place and proper and standard tools are of the main requirements to exercise. Sports regulations and laws find importance at a later stage. So appropriate measures towards the creation of them would be taken by the authorities according to the need existence of sports places.

A recent thesis is about the sport and redesign a place for sports and leisure; It is followed by that due to standards of these types of places and sports standards and also interests of people of region about various sports and due to intensive shortage of these spaces and equipments in area find a good solution to solve this problem and this plan is responsive to the problem and it is the solution.

A place where has been intended for sports complex, according to the master plan in selection the sports also has been tried that this choice be sports according to the interests of the people of our region which are in more attention of both public perception and also planning the BPO and budget. It is hoped that this step is in order to identify problems of sport of area that any enthusiast has to sports and can answer to sports needs (Faezeh, 2010).

2. Problem Statement

According to the need of the country and policies regarding accretion per capita the sport spaces, massive investment in order to build and develop sport facilities have been conducted by the government and the private sector, However, because of the lack of a specialized and study reference, often established sport facilities or under construction are without engineering training standard.

Therefore, in education, training and tournaments that are main parts of sporting activities are disrupting and performed investments are without proper and qualitative achievements. Because according to the past experiences and unfamiliar of operators with standard indexes and new safety and also not availability of these indices have caused this defect. Although the construction of sport facilities in the past had been lack in the majority of issues related to standards, but these issues are addressed and implemented at the present time by selecting qualified consultants to a large extent.

In line with this matter, before addressing the main issue of the research means redesign the gym, we chose the best option from between venues and sports complexes by using existing software of location finding and opinions of experts to all costs and investments and most importantly time that will be spent on this research be applicable in well way and it is in order to raise more efficiently management and planning these problems.

3. Research Background

If the definition of the concept of sport facilities, we accept all spaces that there are possibility of sport doing, physical activities and exercise and recreation movements for all individuals in a society, no one can clearly says that the exercise has been conducted in which place of this planet and or the first exercise was performed in which place or, for example, the first time game of polo in what land, with what facilities and equipments, has been held by whom and how.

For these reasons, it can not be specified the date of construction and the establishment of first sports place. With this introduction, we investigate the sport facilities and stadiums in ancient civilizations. We find with study the history of physical education and sport in ancient

civilizations with games such as polo, harness, hunting, shooting, swimming, horse riding, yoga, etc. that each one has been held by a special purpose (Ahmadian, 2012).

For example, in ancient Iran, harness has being allocated most part of Mehregān ceremony. Education the wrestling, swimming and archery also have had military purposes and hunting was trained to meet the needs of food or was taught to defend against the attack of wild animals. In Indian civilization yoga has been run to get rid of passion of the world. Asparts physical education programs at the beginning were performed in flat lands with the name of Zhymnazyom but as much the attention of Asparts was increased to physical education and military programs, more resources, and equipments were spent on building sport facilities and arenas.

These places were in Athens civilization as: wrestling schools that were famous to Balastra and sports stadiums that were built outside the city generally and in most of them there was a wrestling school.

Li Seyoum and Synosarjz academies can be named as the most important and largest sport stadiums of Athens (Ledrman, 2015). In addition, sport centers, the Olympic Games were also held in Olympia (mountain range of the same name).

Also the tournaments of T-min were held in the valley of Ney Miyaher every two years. Other sport place that at new Athens was prepared two-year program for physical education was the school of adolescents. In Roman civilization, also because old Roman were warrior and seeking for world people, military exercises and sports activities were done in military camps and square of Maritus that were considered as the school's physical education.

Makzymous circus and Flamynous circus can be named in New Roman civilization from the military school. Makzymous circus was one of the most popular sport places among them that had a capacity of hundred and fifty spectators. A sport that had many interested people among Roman was gladiatorial combat. These tournaments were held on graves, markets or pits that none of these places, had not comfort locations and accommodations for spectators, this problem began to solve with the construction of wooden chairs around the Oval places (Hojati, 2011).

Later these movie theaters were built as stone buildings, which this matter was a sign of attention and interest of people in the gladiatorial combat. Flavin famous theater that had a

capacity of ninety thousand spectators and it was particular for gladiators. It also had all the comfort equipments and tools for spectators. Amprorkalykola can be named as one of the important gladiator schools (Hojati, 2011).

Another recreational facilities and relaxation in Rome were baths. Which were built by the wealthy people or by the government and there was exercise room in them. Karagola with capacity of 3,200 customers and Dyoklytyn with a capacity of 1,600 can be named as among the most beautiful and most important of them (Saeedi, 2014).

With the advent of Christianity in the Middle Ages and the loss of idolatry, stadiums were destroyed and forget the benefits of exercise and sport competitions of Olympic were finished and Olympia was burnt by Greek kings. In this period there were no significant sports activities and tournaments, or if there was, there is no evidence of them in there. Stadiums and Olympiad competitions took on negative aspect with the demise of the Byzans Emperor until later a place was built by the help of French "Baron Pyrdo Coubertin" and others with a capacity of 75,000 spectators made of marble and Greeks love to sports and competition began again. Coubertin revived the Olympic Games again (Saeedi, 2014).

3.1. History of Sport Facilities in the New Era

Thinking behind the design and construction of sports facilities in the new era goes back to the beginning of the nineteenth century. These thought at first strongly were influenced by the sport in the UK and then gymnastic movement in Germany and the Scandinavian countries and finally developing the sport of swimming in the whole of Europe as a way to avoid tinking the poeple and a way to health were effective issues in the field (Nikbakht, 2014).

Facility planning principles were foundedat the beginning of the twentieth century. A large part of these principles were presented in the years 1920 to 1940, and after World War II. Europe-wide exchange of information began in 1957. This later led to take shape the World Association of recreation and sports facilities in 1965. With the exception of a few sports that are done in the green areas outside the cities (eg navigation) and (mountain biking) other sports generally need special infrastructure development.

It is necessary to satisfy the requirements of sports facilities that a network of scientific information is provided in the fields of education related to sport of medicine, psychology, sociology, biomechanics, accident prevention, architecture, design and landscaping, engineering, testing of materials, economy and ecology (Jahromi, 2011).

3.2. Places Management from Antiquity to Modern

Although the facilities have been significantly changed over the years, but it is interesting that management and the kind of its tasks is almost stable. Some of the issues and considerations that after centuries still exist in the present day include:

- Control the huge crowds of people on the move;
- Management of unruly and violent individuals and populations;
- Flexibility in managing the multiple purpose locations (such as Gladitors and mock naval battles, basketball and ice displays);
- Provide security and protect important people;
- Control of the mass and partial crimes due to the large concentration of people;
- Keep the places clean and usable;
- Guidance of proper policies related to investment for public places (Jahromi, 2011).

Some concerns exist today and in ancient times managers have no problems with them include the following cases:

- Provide favorable conditions for the press, including interview rooms and media rooms with Internet access;
- Installation of cable television and communications platforms for television cameras;
- Sale of advertising space and naming rights;
- Providing rehearsal rooms for athletes;
- Use heating and air conditioning systems;
- Compliance with legal issues related to the environment, users, access and other legal cases (Jahan, 2015).

4. Research Methodology

The research approach is that in following and in Section 5 explores the place of study area and implementation of project and optimal location can be selected by using multi-criteria decision methods. Then, we will investigate the redesign of sport complex in selected location in the sixth part. The steps and stages of mentioned cases have brought as schematically in Figure 1.

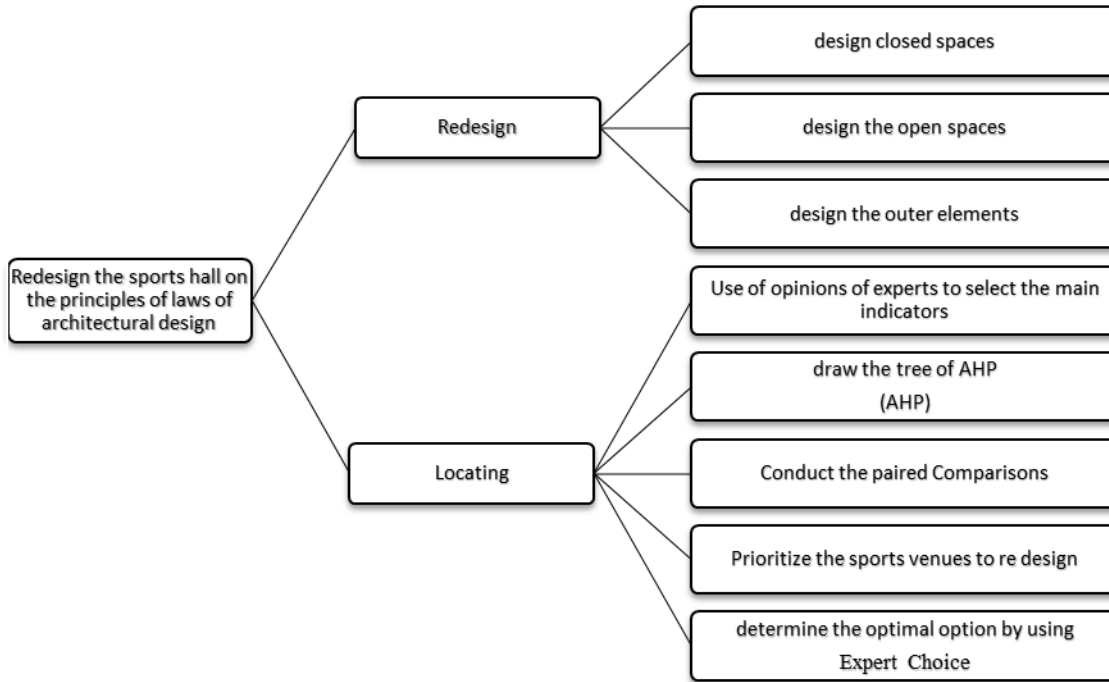


Figure 1. Research methodology.

5. Economic Theory of Reference Location Finding

The maximum profit method is known as the most logical method, but due to the influence of Weber's theory and problems related locating the most benefit, still minimize cost method is more general to locate the industries and centers of sports services. However, in the remainder, this publication emphasizes more on the minimum cost method by presenting the classical linear programming models and transportation models, it is more logical that the assumption of minimum cost is considered as a principle in the case of uses of such models

One of the first and most essential steps in planning to offer a product or service to applicants is determine the best location of presenting the service or product. According to the conditions, a diverse location selection model in this regard has been provided by the researchers. Research conducted regarding the location finding was quite extensive and has had many practical applications in various fields (Williams, 2007).

Location finding models are divided into various categories based on the conditions of the issue. Hong Zhong Jia and his colleagues introduced eight factors that are effective in sorting

the location models of facilities. These eight factors are: geographical characteristics, characteristics of facilities, goals, solving method, patterns of demand, a variety of supply chain, time horizon and input parameters of one of these models, is covering location finding models. These models often are introduced in locate the emergency equipments such as medical centers, ambulances, security forces and other similar cases and final goal of them is determine the centers of deliver service around the points of candidate, so that the most or best serve is given to the areas of demand (Williams, 2007).

The aim of location finding is selecting a suitable place for the construction of a series of service centers so that the best performance is obtained with respect to the objectives of considered activity. The aim of minimize a function is called to objective function in location finding issues, which is defined in accordance with the conditions of effective issues and parameters in the decision making. There are various methods for placement required centers, that each one due to specific traits and conditions are more appropriate to solve a bunch of issues fits with those conditions (Forough-Bavar, 2012).

In following this section we select the best location among candidate locations to redesign the gym of an area of six-thousand square meters in Orumiyeh by using decision-making methods and appropriate tools available and as well as expert's opinion; and we describe fully the methods and tools used and process of their application.

5.1. Stages Used in the Location Finding Design of Gym in Order to re-design

Location finding is a branch of engineering of industry that attention to it causes to reduce the costs and success of the service industry units. Stages during this process are as below.

5.1.1. Choosing an Appropriate Location Finding Indicator for the Gym to re-design

This research benefits from opinions of experts, conducted comparative studies and reports as well as the current academic literature. The research collects the valuable information under eight key criteria including: technology infrastructures, the geographical locational conditions, urban infrastructures, educational infrastructures, communication and information infrastructures; research infrastructures, industrious infrastructures and commercial infrastructures were selected and were identified 25 sub-criteria (Yekani Fard, 2002).

Location finding indicators for re design a gym of young home of Urmia are as follows:

- Passive Defense: security and defense.
- Program Indicators: in the privacy and limit of the expansion of being urban the city and compliance the approvals.
- Indicators of development: available land area.
- Privacies: the flight corridors, military centers, etc.
- Network of communications and road: the quality of traffic and access to the roads.
- Existing infrastructures: water, electricity, telecommunication, etc.
- Climate indicators: climate, altitude of the sear surface, vegetation, etc.
- Environmental indicators: the edge of the river, the distance to faults and other natural effects.
- Economic and social indicators: access to logistical facilities and state of the earth to prepare. Carefully select the location of the main entrance of the stadium by facilitating the return movement and control of reffering and as well as it can be displayed as a sign of the stadium.
- Access possibility to facilities and infrastructures and operational facilities in the most economical way of network of gas, telephone, electricity, water, sewage and waste discharge and disposal of surface water.
- Prevent the transmission of noise due to landscaping system and plant density, positioning based on pattern of noise and use the sound transmission artificial barriers.

5.1.2. Analytical Hierarchy Process (AHP)

For each decision, there is the decision space that is continuous or discrete. It may also be single or multi-criteria decision-making criteria. In addition, these measures can be as quantitative, qualitative forms or a combination of both (in multi-criteria case) that, in each of these modes the decision-making is different. Space of continuum decision-making, makes decision-making much more difficult (Rahman, 2011).

The space of decision is discrete space and multiple criteria in positioning of industries and service and training units. The impact of criteria is needed to measure against eachother in multiple criteria decision-making. A multi-criteria decision-making system must have the following characteristics:

- The possibility of reformulating the problem and give it a review,
- Consider the various options,
- Take into consideration Different metrics (which are generally in conflicts)
- Involve quantitative and qualitative criteria in the decision-making,
- Consider the comments of different individuals about the options and criteria,
- Give possibility of integrating judgments to calculate the final rate,
- Be based on the strong theory.

5.1.3. AHP Output

As previously mentioned, the method used in this study is hierarchical analysis and opinions of those who are polled were analyzed by Expert Choice software after scaling analysis and the results were presented. Since the process of AHP it is better people's comments enter to the group calculations at time that the rate of maladjustment of opinions of each of them is less than 0.1, the rate of maladjustment of opinions of each of the experts was investigated and it was tried that this amount is less for all the options and main criteria as much as possible. In the tables that have brought in follow, the final weight of criteria and options has been given that were analyzed by the software.

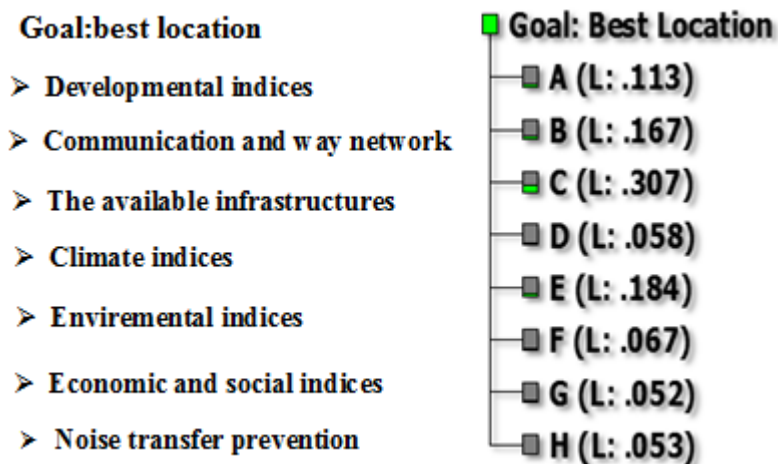


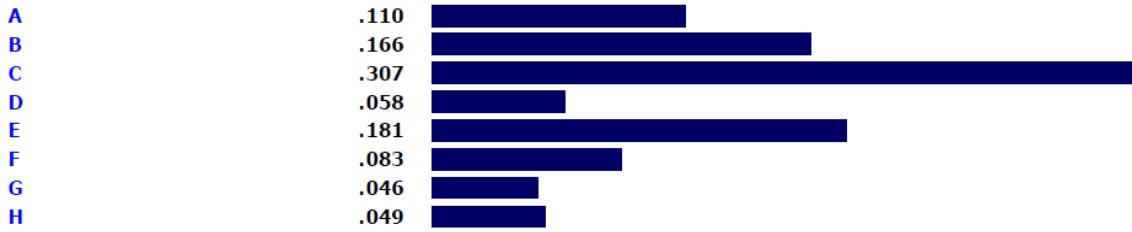
Figure 2. Tree structure of analysis hierarchical (Output Software of Expert Choice)

Table 1 shows the relative importance of general standards of expert's opinion that all numbers were become normal and relative weight as well as their inconsistency rate have been obtained after entering them in Expert Choice software (specialized software of AHP). Inconsistency rate of pair compare of these criteria was 0.09, which indicates acceptable accuracy of this pair comparison (Figure 2).

Table 1. The relative importance of general standards of expert's opinion

Criteria	Passive defense	Development Indicators	Communication network and road	Existing infrastructures	Climatic indicators	Environmental indicators	Economic and social indicators	Prevent the transmission of noise
Passive defense	1	1/2	1/3	3	1/2	1	3	4
Development Indicators		1	1/5	2	1	3	3	7
Communication network and road			1	3	3	3	3	3
Existing infrastructures				1	1/5	1	2	1/2
Climatic indicators					1	2	3	7
Environmental indicators						1	3	2
Economic and social indicators							1	1
Prevent the transmission of noise								1

Priorities with respect to:
Goal: Best Location



Inconsistency = 0.09
with 0 missing judgments.

Figure 3. The weight and inconsistency rate of main criteria

Table 2. The weight of the main criteria in the selection location of the sports gyms for redesign

Main criteria	Determine the weight of criteria																		Main criteria
Development Indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Communication network and road	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Existing infrastructures	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Climatic indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Environmental indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Economic and social indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	passive defense	
Communication network and road	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Development Indicators	
Existing infrastructures	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Development Indicators	
Climatic indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Development Indicators	
Environmental indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Development Indicators	
Economic and social indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Development Indicators	
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Development Indicators	
Existing infrastructures	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Communication network and road	
Climatic indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Communication network and road	

Environmental indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Communication network and road
Economic and social indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Communication network and road
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Communication network and road
Climatic indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	existing infrastructures
Environmental indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	existing infrastructures
Economic and social indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	existing infrastructures
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	existing infrastructures
Environmental indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	climatic indicators
Environmental indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	climatic indicators
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	climatic indicators
Economic and social indicators	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental indicators
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	Environmental indicators
Prevent the transmission of noise	9	8	7	6	5	4	3	2	1	2	3	4	5	6	7	8	9	economic and social indicators

In continuation the process of weighting the main criteria, turn is weighing the related options that this matter also has been done by the experts by paired comparisons according to the following tables;

Forms 4 to 11% indicate weight and inconsistency rate related to the main options in locating the gym for the redesign in terms of the main criteria

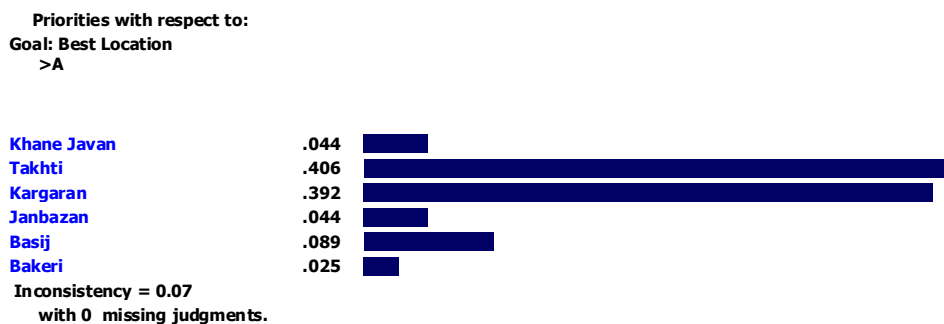


Figure 4. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of passive defense

Priorities with respect to:
Goal: Best Location
>B

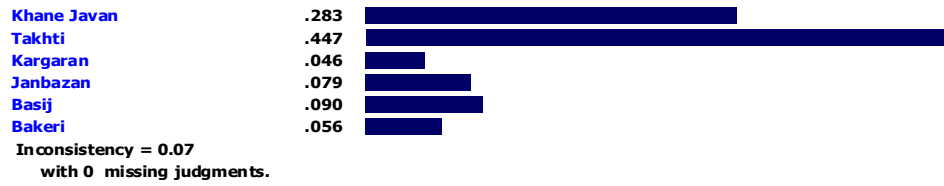


Figure 5. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of development indicators

Priorities with respect to:
Goal: Best Location
>C

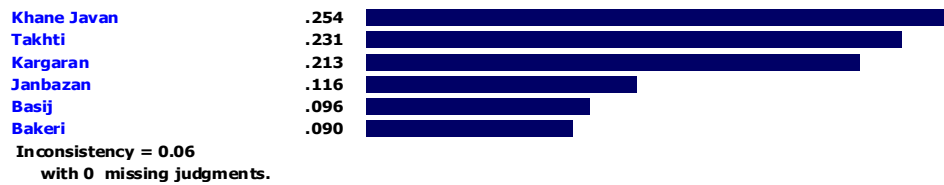


Figure 6. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of network of communication and road

Priorities with respect to:
Goal: Best Location
>D

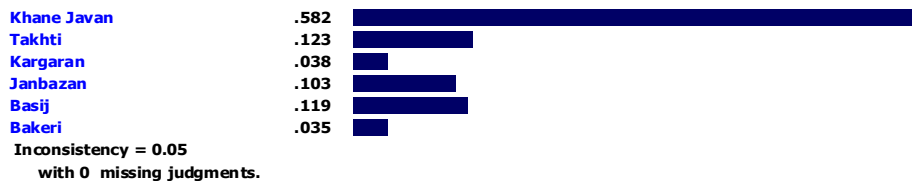


Figure 7. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of available instructures

Priorities with respect to:
Goal: Best Location
>E

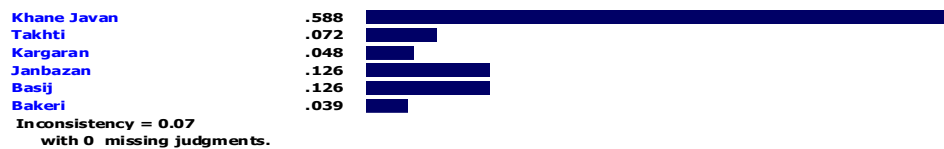


Figure 8. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of climatic indicators

Priorities with respect to:
Goal: Best Location
>F



Figure 9. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of environmental indicators

Priorities with respect to:
Goal: Best Location
>G



Figure 10. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of social and economic indicators

Priorities with respect to:
Goal: Best Location
>H



Figure 11. The weight and inconsistency rate of main options for locating of gym in order to redesign in terms of prevent the transmission of noise

After entering all the data and information to the Expert Choice software, the final weight of options have been shown as below in Figure (12).

Model Name: varzeshgah

Synthesis: Summary

Synthesis with respect to:
Goal: Best Location
Overall Inconsistency = .08



Figure 12. The final weight and rating gym location options for redesign

In this study, the rate of incompatibility of main criteria and options were calculated by using Expert Choice software; these rates as have been expressed in the paired comparisons section all are less than 1.0. Inconsistency rate of hierarchical structure has been calculated using the same software. And it is equal to 0.80 that it is less than 0.1 which is indicative of compatibility in comparisons and the respondents' credibility is confirmed.

Finally, sports and cultural complex of Young home was selected by a score of 0.313 among candidated locations from other locations by using Analytical Hierarchy Process and Expert Choice software for the redesign sports hall in the city of Orumiyeh.

6. Re-engineering and Redesign

Reengineering means a new beginning, a new birth, a new start-up. Re-engineering means the transformation, the transformation in mind, attitudes of managers and employees in the culture and value system in the processes and processing, the organizing and structure and in method of use of information and communication technologies in organizations.

In re-engineering, radical design of processes, organizations and the culture of a company to achieve extraordinary mutations are made in company's performance and abandonment of traditional and old practices and new approach is concerned to create proper product and good service and value to the customer. Re-engineering aim is to meet the needs of contemporary

times as superior quality, services, flexibility and low cost, and therefore the processes should be simple.

The above definitions show that re-engineering is usually done in the entire body, in an organization or company and attempt to it only in one part of the organization can not be called reengineering, although business processes of a subset can be done re-engineering but perhaps applying this management discussion in all of complex is needed due to the challenges ahead present age is so that it is subjected to fast and steady changes and these changes also affect the behavior and needs of customers. So, organizations also need to analyze these changes and their effects on the customer and apply them in process of their activities (Nejati, 2007).

7. Sustainable Materials

What are sustainable materials? Sustainable building materials have been made from renewable resources instead of non-renewable resources and are environmentally friendly. Features of sustainable materials include: 1. Resuable or recyclable materials; 2. Abundant, natural, and renewable; 3. The produced products cause to reduce energy consumption; 4. Reduce greenhouse gases; 5. Local; 6. Durable; and 7. Non-toxic.

7.1. What Is Covering System of Zip Seamless and What Advantages Does It Have?

How to produce and install zip panel covering zip panel system is in a way that has no weak point that causes water leakage. This means that there is no hole and screw in ultimate layer of this system. Roll forming machine produces metal sheet profiles in required length, in workshop with no length limitation in zip panel system and after install them along together these profiles are paired (zip) with special device with each other. This system has the ability to run as a layer or two layers, which means that a lower layer of galvanized sheet can be mounted in places where there is need for roof or wall insulation and final layer can be run according designed details after run the moisture and heat insulating.

The advantages of this system are as follow: 1. Unlimited design capabilities for all geometric shapes in terms of designers; 2. Production and quick implementation; 3. Length of production to more than 150 m.; 4. High thermal and acoustic performance; and 5. The best

choice for covering of stadiums, industrial salons, large commercial and administrative buildings, hospitals, airports and mosques.

Production at the project site of Crowe zip panel roll forming machine can be used anywhere. Capabilities of this system are the ability to cover ceilings with convex or concave arc. The ability to manufacture the considered profile needed spherical or oval-shaped roofs has in the form of (conic). If the produced profiles are placed on roofs with a radius of curvature more than 40 meters without having to bend and under the influence of its own weight are placed on the roof. In the conditions that the radius of curvature of roof is less than 40 meters, needed arc should be created in the profile with a special curving device.

Main used insulation is rock wool in zip panel system that polystyrene, polyurethane and fiberglass can be used instead of it. Rock wool in addition to thermal insulation that its amounts specified in the table below, sound insulation is good that the rock wool insulation resistance is equal to 53 db in the unit area according to the conducted tests.

7.2. Zip System

In fact, zip system is a style of flexible building that it is the heat- sound insulating and it is resistance against the adverse effects of weather and corrosion. This system can easily cover large openings and even curved shapes and it requires no special maintenance, so use of it causes to reduce costs and increase the added value in long term even it is possible to use them again. (Giles-Donovan, 2012)

7.3. How to Produce and Install Zip Panel

Cover system zip panel (single zip) is such that no drawback that is caused to water leakage in it. This means that in ultimate layer of this system there is no even a screw and hole. In the zip panel system that its other name is Bemo, the roll forming machine in the workshop produces the profiles of metal sheets in the required length without length limitation, and after installing them together, these profiles are paired with a special machine to eachother (zip).

This system has the ability to run as a layer or two layers. This means that in places where there is a need for ceiling or wall insulation. A lower layer of galvanized sheet can be wall

mounted and carry out the final layer in accordance with designed details after the implementation the damp-proof and thermal membranes (Giles-Donovan, 2012).

Considering that the main materials used in zip system is aluminum. This system is very light, and considering the dimensions and flexibility of used sheets in it, its installation performs extremely fast and easy. Aluminum used in this method is lightweight material while being resistant to corrosion and erosion due to its non-toxic. It can be recycled and re-used.

The main layers of this waterproofing system typically include:

- Laminate zipper profile
- Thermal insulation
- Closed of aluminum (hidden fixing of zip profile)
- Spacer
- Thermal insulation block
- PVC primer
- Perlin
- Trapezoidal sheet
- Insulation of vapor control and air lock layer

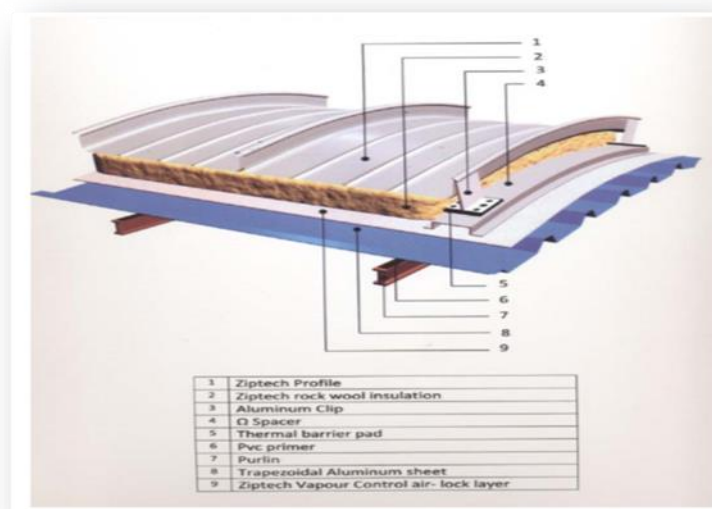


Figure 13. The main layers of zip panel system

More complete descriptions of the individual layers of zip system:

Materials of a final coating is a kind of aluminum profile with special chemical compound to the thickness of approximately 1 mm and a width of approximately 400 mm that they are connected to each other by zip device. A variety of profiles can be used and are common to final cover:

- Plain aluminum sheet and no color
- Forged aluminum sheet which has pores and it is suitable for areas with high dust due to depressions on the surface of dust and dirt on the covers and dirty appearance.
- Colored aluminum sheet with polyester paint (PE) that is cover resistant to UV rays and is divided into two categories: matte and glossy.
- Colored aluminum sheet with PVDF color (fluorine-carbon) made of carbon, fluorine resin, pigments and solvents of liners that after cooking at high temperatures, a color as solid and dry film covers the surface of it. This color is resistant against environmental conditions such as dust, chemical and toxic gases and to UV rays of the sun and its anti-electrostatic property prevents the absorption of suspended particles on the surface so that clean and bright of surface will not fail.

The other issues include;

1. Thermal insulation, which is run of fiberglass or rock wool depending on the climate of project location and other facility information of project.
2. Fixing the skid aluminum or holder legs that made of aluminum and are made with different heights.
3. Spacer mainly is galvanized in 5.1 mm that is used as a holder and to carry out thermal insulation.
4. The block between materials
5. Perlin is used as cushioning and to implement trapezoidal sheet.

6. The 5.0 mm thick galvanized sheet or color aluminum sheet in thickness of 7.0 mm color with trapezoidal cross-section as the lower cover.

7. Vaporizing layer (humid insulation), which is normally consist of an aluminum foil layer, a layer of polyester and two layers of polyethylene.

In fact, zip system is non-flammable and due to the ability of above material to conduct electrical current to the conductor and has lightning. This system by having a protective coating has high resistance to acid rains and UV rays and also shows acceptable stability against invading microorganisms (Giles-Donovan, 2012).



Figure 14. The three-dimensional and perspective design the hgym by using software 3d Max in circular shape



Figure 15. The three-dimensional and perspective design the hgym by using software 3d Max in circular shape

Conclusion

Public uses in many cities for reasons such as high population density, lack of discipline in the establishment of uses and lack of attention to the accessibility and population thresholds are not able to provide optimal service to citizens. This is more growth in large cities and especially for utilities that are associated with increasing demands [14]. Sport spaces that are considered as kind of social residential spaces are one of the important public applications that are important for the general health of society that through actions such as the simultaneous presence of numerous and dense human population, mobility, leisure and recreation of residents of large cities and metropolitan areas, face-to-face communication, and performing sports games and competitions between demographic groups, holding night meetings and other gatherings out of sports with social and sometimes political purposes, compared to other municipal services have considerable importance (USSR Academy of Sciences, 2014).

In recent years, due to the rapid growth of urbanization and mutually lack of planning and massive management in urban systems, as well as other sport places as other urban services have been faced numerous problems mostly caused by uneven and inappropriate distribution, non-optimal location and lack of prediction the suitable spaces for applications in the cities.

Improve the situation, makes heavier responsibility the urban planners and required them to respond (thoughtful respond) to inconsistencies because the optimum positioning and various optimal working in accordance with the principles and rules of urban planning that can be effective to solve many of the problems and urban land use issues (services, traffic, etc) (Ledrman, 2015). This allocation according to rank and physical size of cities has prime importance, so as much the city is larger the state of allocation of uses and urban required spaces is more complex (Massah, 2013). This group of people based on mission that have in the field of spatial and temporal changes ruling on the phenomena have always helped to development of ideas of locating in order to maximize profits and to minimize the costs of urban land use. So, today, in addition to the economic outlooks (to maximize profits and minimize costs) that should be considered in urban land use, due to the complexity of human needs and consequently, the growing complexity of urban systems, without a systematic approach and the definition of precise criteria, urban land use and locating the activities on the basis of it, it will not be possible to respond to these needs (Saeedi, 2014).

So, obviously the establishment of such urban elements, in particular space-physical situation of the city follows its own rules and principles which, if observed will lead in success and efficiency of that element in that specific location, otherwise it will probably cause problems [14]. Several studies indicate that people in a case have trend to do physical activities that have convenient and easy access to places for physical activity, such as parks, sports fields and stadiums. Eight key criteria including: passive defense, development indicators; and communication network and road; existing infrastructures; climate indices, indicators of environmental, economic and social indicators and prevent the transmission of noise were elected according this study, first according to opinions of experts, and based on comparative conducted studies and also the use of the information provided through Internet sites and the reports provided by them, as well as preparation and translation of books and articles that have been written on this subject. These materials that have been presented suggest that the selection of suitable sites to build or redesign Sports Hall has paramount importance. Questionnaire to determine pairwise comparisons between criteria and sub criteria were determined in next step after determining criteria and factors needed in order to locate the sports hall to redesign in order to determine the weighting of criteria. For use in the later

Stages, and the fifteen experts are requested to do comparisons. In following these matrixes were analyzed to determine the weight of criteria by using Analytical Hierarchy Process and Expert Choice software that led to the selection the sport and cultural complex of Young home of Urmia to redesign.

Choosing sustainable and proper materials causes to preserve the environment and provide more health of that because these sustainable materials also cause to reduce the adverse effects to the environment and this matter causes to reduce the emission of air pollutants and greenhouse gases, it also reduces the use of natural resources and society approaches towards sustainability criteria.

All the presented maps and perspectives of three-dimensional views designed on the concept of the crystalline and engineering principles and international standards that it is very elegant and unique in its kind.

References

- Ahmadian, Reza. et al, (2012). *Community and government facilities, educational projects*, Tehran: Tehran University Department of Urban Developmen.
- Environmental Planning Consulting Engineers, (2014). *Principles and Criteria for Designing Urban Parks, a Third Report*. Tehran: Organization of Parks and Green Spaces.
- Faezeh, Atshan, (2010). *Sport Places, Halls*. Tehran: Department of Cultural Education of Physical Education Organization.
- Foroughi, Mohsen, and Bavar, Sirus, (2012). "Iranan Founders of Modern Architecture". *College of Architecture and Urban Planning*. Fifth Edition, Summer. Pp: 23-33.
- Giles-Corti, Bilie. Donovan, Robert.J., (2012), *The Relative Influence of Individual, Social and Physical Environment Determinants of Physical Activity*. *Social Science and Medicine*, 54, 1793-1812.
- Hojati, Ashrafi, (2011). *Complete Set of Rules and Regulations of the Municipality*, Tehran: Treasure of Knowledge.
- Jahan, Farzaneh Asadi Malek, (2015). *Multipurpose Football Stadium of Port Anzali*, (Master Thesis). University of Imam Khomeini (RA)/School of Architecture and Urbanism.
- Jahromi, Masoud Naderian, (2011). *Ethics in Sport*. Tehran: Pubisher of Institute of Physical Education.
- Lederman, Alfred, (2015). *Game Space and Recreation*, Translated by Consulting Engineers of Zadbom. Tehran: Cultural Spaces Development Company.
- Massah, Masoud, (2013). *A Public Library*. Master of Architecture Thesis. Tehran: Tehran University.
- Nejati, Hamed, (2007). "Sport Spaces and Urban Planning". *1th National Conference of City and Sport*. Tehran.
- Nikbakht, Abdolhamid, (2014). *Pathology the Behavior of Audience of Sports Competitions*. University of Isfahan/Master's thesis of Department of Social Sciences.
- Rahman, Pour, Ali Akbar, (2011). *Localization Criteria Forschools and Evaluation*, (Case Study: Ayatollah Saeedi Marand School), *Geography Education*, 3, 24-31.
- Saeedi, Rezvani, (2014). *Municipalities and Leisure of Citizens*. Tehran: Center of Urban Planning Studies.
- USSR Academy of Sciences, (2007). "*Human, society and the environment*". Translated by Dr. Salaheddin Mahalati. Tehran: Shahid Beheshti University.
- Williams, Peter Harvard, (2007). *Architecture of Sports Stadiums*, Translation by Kamran Khani. Tehran: Publication of the Association of Architects.
- Yekani Fard, Ahmad Reza, (2002). "*The Principles Location of Treatment Centers*", *Municipalities Magazine*, 33, Organization Municipalities, Tehran.