

Investigating Location Theory In Residential Complexes And High-Rise Towers (A Case Study Of West Side Of Tehran)

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ABSTRACT: *In contemporary era, providing shelter is one of the key issues in the construction and development of cities. Tehran is considered as a focal point for urban population and a city for urban and population growth which lacks suitable land for construction. Thinking of constructing high-rise buildings and towers has always been analyzed by the experts of economic, social and physical issues. Agreeing and opposing views about constructing high-rise buildings have criticized it with putting an emphasis on a part of this process. Essential and notable category point in the field of location and constructing high-rise residential complexes is meeting increasing needs for housing in the city of Tehran. Some of these constructed cases lack the principles and regulations for constructing high-rise buildings because they have not observed residents satisfaction. In this research, factors influencing the optimal event of location are discussed. Therefore, this study tries to compare the analysis of conditions and criteria of access to the best and most advantageous location conditions in a residential complex and compare their strength and weakness points, and in this way the success rate of each is evaluated in providing adequate housing. A questionnaire was designed to assess the proposed model using a series of information in order to achieve qualitative results. The research hypotheses were evaluated by the help of inhabitants of two residential complexes. The research results indicate that in the midscale, in the case of providing service demands and cases related to interstitial and green spaces and paying attention to communal spaces, the physical component of being high-rise or low-rise in regard with a residential complex has no favorable and reliable effect on utility level of a complex location.*

KEY WORDS: *Location, Residential Tower, Tehran, High-rise Construction*

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I. INTRODUCTION

Shortage and simplicity of human settlements before the industrial revolution made it easy to identify the needs and analyze the issues of these settlements. However, after the industrial revolution, with the development of knowledge and technology of architecture and the expansion of size and number of a variety of users and creation of new users, new issues were created in the structure of cities, which caused cities to get out of their early organic state, and thinking city as a machine for life changed the original concept of the city (Lynch, 1998: 6). The collection of this process attracted urban planners to settle and plan the needs and urban facilities in appropriate places through taking into account all their requirements and specific characteristics (Altman, 2003: 57). Man chooses his own place of business in order to bear fewer costs, gain more profit and get access to resources easily. Although the observance of these three logical principles seems easy (Ostrovsky, 2000: 127), due to the increasing complexity of factors influencing localization, the specialists inevitably turned to use modern scientific methods. In this regard, various theories and models have been presented, each of which has advantages and disadvantage considered for specific use. Most of these theories put an emphasis on making quantitative the factors affecting localization process.

Von Thunen theory of location: The first theory of land use was developed by Von Thunen in the *Isolated State* book in 1926. It was assumed that in a land with the same and completely homogenous characteristics, the main part of city will be in city center, and the city will be expanded around it in the form of concentric circles. Von Thunen theory is the first spatial-economic theory in geographic science determined by the distance from the city center (Jahanbakhsh, 2015: 54).

In a theory of agricultural location, he divided the city into several concentric circles; based on this segmentation, a product with higher net yields per hectare is located close to the city center. In this theory, the type of agricultural productions varies according to the transportation cost, and the difference in regard with renting different areas is only in terms of their transportation costs. In the cost of production, factors such as farmers' income, the amount of perceived wage and standard of living are involved, and based on the distance from the central city, prices are reduced, wages are decreased and production costs are reduced regarding other agricultural factors such as fertilizer, soil, and climate (Litkouhi, 2015: 97).

Lanhard theory: Lanhard introduced the theory of location industries in 1982-1985; however, the scientific framework of this theory was founded by German Weber in 1909. Then, Losch and Christaller introduced central place theory by developing and expanding this theory, and ultimately Hoover completed this theory. In summary, Lanhard suggests a simple triangular model of optimal location of industries by considering two geographic situations of supply of raw materials and one situation of sale market. The optimal location is achieved between the vertices of triangle and rather complicated calculations by considering transportation costs (Jahanbakhsh, 2014: 54).

Hoover theory: In 1948, Hoover focused his theories on industrial location, assuming full competition between producers and sellers and the full movement of production factors. Hoover theory, in comparison to Weber's theory, shares the costs with a more realistic way to transport and production costs (each of which is sufficiently divided into sub-costs). Transportation costs are not only affected by weight and distance, and they will vary according to the length and direction of transportation (Charkhchian, 2015: 65).

Weber theory: Weber theory of industrial location was introduced in 1909. Weber's research focused on the manufacturing industries with a comparative and empirical aspect. These studies have been done in two parts: a part of Weber's studies was in the field of general and theoretical rules of location which must be tested in the real world, and the other part is the presentation of the theory of realism (Escamilla et al, 2018). In Weber's simple model, three factors of workforce costs, transportation costs as well as concentration and lack of concentration points affect industrial location. Weber initially considered the transportation cost and determined the point of minimum transportation cost, and then regarded the conditions in which factors of workforce and concentration were analyzed. He showed the least transport cost, as in Lanhard method, by location triangle (Litkouhi, 2015: 93).

Generalizing his analysis to the whole industry, Weber believed that the more important workforce for an industry, the more the effect of cheap workforce on location (Escamilla et al, 2018). He used the labor cost index to measure the importance of workforce, which is equal to the average labor cost needed to produce a unit weight of a product for each industry. The higher this index, the farther away from the minimum transportation cost. Weber believed that coefficient of labor in an industry can appropriately show the effect of workforce on location (Charkhchian, 2015: 65).

Losch and Christaller theory of place: One of the most scientific theories on the construction of settlements is central place theory by Walter Christaller, published in 1933 in his book *Central Places*. This theory has not been taken into consideration until the 50s, and since then it was considered as the basis of urban-regional study and came to be known worldwide. Walter Christaller, in the design of the central place theory, has mostly used the scientific ideas of Von Thunen (agricultural lands use) and Alfred Weber (industrial location). The principle of central place theory is the description of spatial organization of settlements and their sphere of influence. About two years later, August Losch changed some of assumptions of Christaller model, and established a city-based system that was more consistent with the truth. Contrary to the Christaller model, in Bosch model, cities of the same size can produce and supply different goods and services. In general, central places refer to centers where producing activities are focused in order to produce and supply goods and services (Litkouhi, 2015: 93).

However, these centers can be either main or sub-centers within a city or the city itself is considered as a production center in an urban distribution system because as it is known, the main role of a city is to produce and present goods and services to the surrounding areas. Walter Christaller bases his theory on a set of assumptions; in summary, it is as follows: imagine the city as a flat plain in which transportation is easily possible in all directions equally. Only one vehicle works in this plain. The population has been scattered evenly across the plain, and all consumers are in the same position in terms of income and demand for goods and services. The suppliers of goods and services are businessmen who always try to maximize profits, and as people refer to the nearest center due to the economic reasons, the suppliers of goods and services are diverging from each other to attract more consumers (Litkouhi, 2015: 93).

More functions are provided in this area in some of the central places. Such central places are located at higher levels of activity hierarchy, while places with only a few limited functions are at lower levels of hierarchy system (MEHDIZADEH et al, 2014). At higher levels of the central hierarchy system, all functions, including the functions of lower levels are also offered. Central places provide goods and services, and administrative functions are created, and consumers refer to the nearest central place that provides goods and services they need (Jahanbakhsh, 2015: 54).

In fact, consumers are taking a minimum distance to receive goods and services. The degree of each city's centralization is determined by its rank, so that cities with larger population and penetration zone are placed in the higher rank. Penetration zone refers to the population that in addition to the population of the city uses the goods and services provided in the city considered. Highly-centralized cities have diverse productive activities, and on the other hand, cities situated in the lower ranks are considered as centers for providing goods and

services that meet the basic human needs (such as meat, bread, dairy, clothing and fuel), which require regular and daily purchases (Bahreini & Tajbakhsh, 2000: 78-106).

In Christaller theory, the cost of transport and travel for the purchase of goods and services is considered as one of the determinative factors; consumers of goods and services refer to the nearest central place to avoid high costs of transportation. If a consumer refers to a farther central place (market) and pays more for transportation, he has to buy fewer goods and services (Charkhchian, 2015: 123).

This results in the reduction of demand due to the distance from central place. It is clear that, in addition to the extra transportation costs, the time spent, one of the major factors, will also be farther the number of referring to central place. Since goods and services are classified in different categories according to their market size, a network of central places (or urban hierarchy system) is created in which small centers and their surrounding areas are located within the boundaries of big cities' market. Urban hierarchy is the best form of organizing space in terms of several aspects. Distribution of goods and services in the whole society, the transfer of new technologies and innovations in the whole society, and existence of various ways of living in different environments and presence of such urban hierarchy make it possible adopt almost any size of the city with desired level (Bahreini, 2009: 56).

The urban hierarchy system, which results from the central places theory, can be shown in its simplest form using mathematical tools, and there is usually a direct relationship between activities' number and diversity and city population. Therefore, it can be said that cities with higher ranks are more populated. In this case, the city located in the first rank is the smallest city in the urban hierarchy, and the city located in the last rank has the largest size in the urban hierarchy system. It should not be forgotten that one of the important assumptions of this theory states that sources of production and population should be distributed uniformly in the region; however, the irregularity of spatial distribution of the sources of production and consequently, manufacturing and industrial areas, as well as the existence of savings property resulted from the accumulation disrupt the uniformity of the urban hierarchy based on the theory of central places (Behzadfar, 2009: 64).

Theoretical frameworks

Location indicators

To obtain the status of a system, there is always a need to measure that system with a series of ideals or a series of minima. In discussions related to location, there are always indicators which should be considered important in regard with comparing and determining the status; they are as follows:

- Cost-related indicators
- National and regional indicators
- Non-economic indicators

Cost-related indicators: These indicators include transport costs, labor distribution, location of resource supply, motivation or tax systems, market segments, spatial distribution of market and distribution network.

National and regional indicators: These indicators include facilities, financial access in regions, energy supply, access to adequate land and etc.

Non-economic indicators: These indicators include political, social, cultural, and legal constraints and conditions.

Therefore, before preparing urban plans for cities, citizens did not have any restrictions (except for common conventions) in regard with various uses of their own land in the city, and the owner of each piece of land was fully empowered in regard with how to construct his own land, which originated from his private needs. One of the important tasks of urban projects is to determine the type of land use in order to apply it in various fields needed for urban living in the legal area of cities and in accordance with the social, economic and physical requirements of citizens. The plan of urban land use is one of the important tools for achieving macro social, economic and physical goals that not only have a great impact on investment and public and private decisions, but also play an important role in the urban growth and quality of the city's physical environment. Sometimes, a kind of land use is recognized harmful in terms of environmental and social impacts, while the same land use is considered useful for some citizens in terms of economic benefits (Azizi & Maleknejad, 2007).

For example, agricultural lands around cities are vital to the cities from environmental and natural protection viewpoint, while the conversion of this land into a residential or industrial complex has economic benefits for its owners and even for some citizens. Awareness of this conflict of interests (the conflict of public interest against public requirements, as well as the conflict of economic interest against natural benefits) determines the necessity and importance of land use planning. Therefore, effective land use planning is rarely considered as a limited research or design, or a political decision; it is rather a combination of these three categories. The spatial dimension in land use is, in general, a standard by which the optimal location of a user is measured in the city. Spatial metrics refer to any kind of land use, reflection of social, economic and physical conditions of cities, as well as people who will benefit them in future.

In other words, the local characteristics and requirements of the city's residents and institutions based in the city are the basis of determining spatial criteria of urban land use. In a general division, the land use system can be classified into four residential, employment, leisure and communication fields (the main document approved by the comprehensive plan of Tehran, 2007).

The communication network connects three other functions to each other, which together form the physical structure of a city. In determining the spatial characteristics of any type of land use or any kind of urban activity, two leading factors, namely the factors of social welfare and economic well-being are evaluated in the model. Based on these two very general factors, the following six criteria are used as the basis of urban land use planning in localization of urban functions: Compatibility, comfort, efficiency, utility, health, safety. Compatibility is the most important urbanization effort in regard with localization for various uses at the city level and separation of incompatible uses from each other.

Uses which produce smoke and smell, and make noise and traffic should be separated from other uses, especially residential, cultural and social ones. This separation is not absolute, but in some cases, it is possible to limit the harmful effects of intruding uses. In spatial separation of uses, cost, profit and relative self-sufficiency factors are considered. On the contrary, there are activities that complement and set alongside each other.

Service provider uses are also identified in the order of neighboring priorities. For example, in terms of residential use, service provider uses, uses without physical structure (open space for leisure), recreational use such as park, health, medical, educational and business uses respectively enjoy the neighboring priorities. In regard with comfort and location standards, two factors of distance and time are the measurement units of comfort and convenience. Categories such as close distance or comfortable distance for living, pedestrian distances, access to transportation lines and urban facilities and installations bear the concept of comfort and convenience (The main document approved by the comprehensive plan of Tehran, 2007).

Ease of access to facilities

Urban services required for different uses and avoidance of disturbances caused by some crowded uses are considered to be factors of comfort.

The function of urban land pricing model is one of the most important factors and the basic criterion to determine the location of land use. Any kind of economic and investment use, estimation of land price and preparation costs and expenditures are identified by the cost-benefit analysis method.

Utility is factor of desirability; it is an attempt to preserve natural factors, landscapes, openness, and it is creation of open and green spaces, formation of roads, buildings, and urban spaces. This factor is also important in designing communication systems.

Health (healthy city): Today, observance of the environment and health administration standards plays an important role in improving spaces, buildings and industrial sites. Healthy city standards and regulations of environmental effects assess any urban activity in terms of environmental protection, protection of social amenities and cultural heritage. Therefore, by imposing environmental and health regulations, industrial disturbing factors and any type of manufacturing or service function and even the construction of highways, terminals and airports are effectively controlled, and these standards increasingly become important, so that the cleanliness and environmental control criteria are considered as the main determinants of each land use plan.

Security of safety factors proposesspecific standards for determining the location of urban activities. Security standards are generally aimed at protecting urban facilities and defending the city against potential threats; dangers such as natural disasters including floods, earthquakes, storms and volcanoes, and unnatural hazards such as possible attacks or wars (The main document approved by the comprehensive plan of Tehran, 2007).

The accumulation of urban industrial facilities in a particular area is virtually in contrast with the city's defense policy because military strikes against the cities, destruction of industrial areas, airports and strategic centers of transportation and communications are among the enemy's military targets. Therefore, the proximity of these functions to residential areas is dangerous and they should be separated from residential areas. Security and protecting the city against natural disasters such as floods, storms and earthquakes are also effective in spatial metrics of different activities and uses. Based on these criteria, generally, the boundaries of streams and rivers in the city are identified by specific hydrological research, and constructing any building and doing any activity in their proximityare prevented. Earthquake is one of the major dangers in cities especially in Iran, causing massive destruction and major humanitarian catastrophes. Compliance with earthquake zoning standards around faults, as well as the application of building regulations will reduce the risk. However, in addition to the destructive power of earthquake, the earthquake like air strikes during the wartime is accompanied by fire hazard, fuel explosion, rupture of gas pipelines and electricity cables. In addition to specific technical-safety and construction regulations, the localization rules of activities and the establishment of urban functions should be also observed to prevent urban destruction in the event of floods, storms and earthquakes,

and proximity of incompatible, disturbing or dangerous uses should be also stopped (Bahreini & Tajbakhsh, 2000: 78).

Urban uses

Urban designers consider the city as an organized complex set, consisting of three main components of body, imaginations and activity which are constantly changing and evolving. Urbanologists consider the city as a place where human begin to descend and think (Rapoport, 2004: 78).

The smallest physical element of a city is residential unit. A complex of residential units (90-200 units) constitutes residential complex or alley. Residential complexes (3-5 complexes) create neighborhoods. Neighborhood consists of two or three neighboring units. After neighborhood, district is one of the physical divisions of the city, consisting two neighborhoods. Two districts create an urban area and every four areas create a region (Rafatjah, 2007).

Urban lands are divided into two main groups of utilized and unutilized lands; utilized lands are those that have been constructed, but unutilized lands are areas that have no specific use. There are different categorizations for a variety of urban uses, one of which is more common is presented as follows:

Residential: low density, medium density, special density;

Commercial: urban commercial centers (markets, wholesale offices, banks, etc.) local commercial centers and retails, as well as non-permanent markets, day and weekly markets, etc;

Educational: nursery school, kindergarten, primary, secondary and high schools;

Professional education: professional education centers, vocational schools, universities;

Cultural: historical and cultural places, museum, library, community hall;

Religious: mosque, tekya¹, Imamzadeh, and religious places of minorities;

Tourism and recreation services: guest house, hostels, tourism camps, as well as restaurants, cafes, etc.

Medical: hospital, clinic, health home, medical centers

Sanitary: public bath, water closet, laundry;

Sport: sports facilities (stadium, indoor saloon), sport open spaces;

Administrative: public administrative centers, public symbols and private administrative centers;

Green space: public green space (parks), recreational and children's play area, protected green spaces, forest parks, gardens and private green spaces, farms and agricultural lands, military areas;

Industrial: heavy industries centers, disturbing industries (causing pollution), light industries and non-disturbing workshops;

Urban facilities and equipment: water, electricity, telephone, sewage, etc., as well as urban equipment, firefighting, collection and landfill facilities, slaughterhouses, morgues, cemeteries, etc.

Transportation and warehouses: terminal, airport, port facilities, customs, railway station, refrigerator, warehouse, silo, public parking and other uses (the main document approved by the comprehensive plan of Tehran, 2007).

Residential use

The great part of buildings in each biochemical complex is made up of residential units. Housing studies, residential densities and categories like them are very important in any planning.

Considering a comprehensive approach, housing planning should consider all aspects, including climate, natural and socio-cultural conditions or factors related to urban economics. The result of these studies determines the image and context of neighborhoods, and responding to the construction of a biological collection with all facilities is considered as its dependencies. Residential use divisions include villas, residential units, apartment complexes and abandoned units (Einifar, 2007: 87).

Residential use location

In order to create a suitable residential location, residential neighborhoods under no circumstances should be located in areas that are exposed to pollution and are not light enough, the humidity of the environment exceeds the accepted degree or they are exposed to a great deal of noise. Also, the following categories should be considered:

- Removing industrial uses
- Considering business centers
- Constructing appropriate access facilities
- Constructing on a suitable slope
- Avoiding construction in unstable and inappropriate lands
- Not constructing in proximity of watercourses

¹ A place where Shiite gather for mourning of Muharram.

Green spaces: spatial distribution of green space should be in the way that it can be accessed easily. Some estimate access time 10 minutes, which is 400-500 meters from residential areas (Mahmoudi, 2006).

Educational use

The criteria for location of educational use: educational centers should not be localized in the vicinity of residential centers, or at least educational and residential centers should be separated by a green space or a local path, so that students' voice does not bother neighbors during their leisure. Educational centers should not be selected in the vicinity of industrial centers due to air or noise pollution. Educational uses should be localized in the way that they become accessible to all urban beneficiary households. Educational uses also meet citizens' requirements in terms of size and area because the lack of educational spaces reduces the quality of students education (Mahmoudi, 2007: 142).

Uses division

Type and level of demand

- Uses demanded by citizens; demand for goods, services, housing and employment;
- Uses demanded by city; demand for manufacturing and agricultural centers, public services, urban safety equipment and facilities, transportation;
- Uses demanded by national and regional parts; demand for manufacturing centers, public services, power plants and dams, military, police and defense centers (Mahmoudi, 2006: 142).

Location and place establishment place

- Uses required by citizens which are settled in residential area (neighborhoods);
- Uses required by citizens and city which are settled in urban area;
- Urban, regional and national uses which are settled out of the city and neighboring areas. The establishment and location index is directly a function of use's size and dimensions. This means that usually uses required for everyday life of citizens which are located in the site are small in size, and urban uses that are located in the city area are of medium size and dimensions, and the neighboring and suburban uses are basically settled in outskirts of the city due to the need for extensive lands.

Functional scale: functional scale and the location status are very important, so that these characteristics are the base of following definitions and subdivisions:

- Neighborhood and sub-neighborhood uses, including housing and residential, educational, medical, administrative, commercial, and recreational services;
- Urban and regional uses, including market and business, administrative, police, educational (guidance and higher), medical (specialized clinics and etc.), terminals, stadiums, and other leisure centers;
- Urban and regional and governmental uses, including airport, warehouse and packstation, industries, barracks, prisons, slaughterhouses, power plants, stadiums and large resorts.
- Uses under the responsibility of the public sector that are based on building criteria and regulations, operating standards and concentrated executive programs, and are constructed by government funding.
- Uses under the responsibility of the public sector and municipalities that are based on some constructing and operating criteria and regulations. They enjoy semi-centralized executive program and are constructed based on inadequate laws and regulations. They are built based on municipal development credits.
- Uses under the responsibility of the private sector; despite the presence of prudential supervision and laws by state institutions, they are constructed on the basis of supply and demand, with no plans using capital of the private sector and people's (Mahmoudi, 2007: 124).

Location characteristics in residential uses

Living place of humans is the most important part of the city and constitutes a major part share of uses, so that in small and large cities, respectively more than 61% and about 41% of the urban area is applied by residential uses. Due to the existence of different patterns of housing in countries and even in cities and the diversity of users' conditions, several aspects should be considered in the location of residential areas (Source: *ibid*).

- Residential areas should be far from hazardous areas such as faults and watercourses, areas of water floods and landslides.
- Residential areas should be settled far from inadequate industrial and transportation activities because of avoiding disturbing overcrowdings and pollutions.
- Residential areas should be constructed in the vicinity of open and green spaces.
- Residential areas should be close to work areas and places for leisure time.
- Residential areas should be constructed on mildslopes and good-weather areas of the city with natural and beautiful spatial landscapes.

- Due to the topographical situation, residential areas should be developed in flat lands and areas with low and medium slopes (maximum level of 35%). They should not be constructed as far as possible in sloping areas with irregular pieces and inverted slope in particular.

- Residential areas should be directly accessible to the main roads system which connects the work centers and the main city centers to each other. They should be surrounded by traffic lanes or main streets, and these streets should not penetrate in residential areas. In principle, residential areas should be protected from transit traffic and risks caused by it.

- The internal street classification system of residential neighborhoods should be adapted to the natural effects of the land, such as slopes and natural watercourses. Hiraskar describes characteristics of residential areas as follows:

- Residential areas should have the capability to be separated from other parts of the city by the crossing Green Belt.

- Residential areas should be coordinated with their surroundings such as lakes, streams and green spaces.

- Residential areas should be oriented in the way that they can benefit from the maximum light and wind, and the highest and lowest parts of the location (source: *ibid*).

An important point in residential location pattern is that the selection of residential areas should be done in conjunction and association with the location of other activities (work place, transportation network, etc.) because each family needs the income necessary to estimate required costs in addition to need for shelter and life requirements (food, clothing and health). Since people should work to earn money, the work place and the place of residence are interlinked, and the physical distance between them and required costs are of particular importance when choosing urban residential use (source: *ibid*).

- To some extent, residential location protects and guides educational and business (how to buy and sell) activities. The location of kindergartens, schools, high schools and other educational institutions for different age groups connects to the families' location. Also, the availability of residential units to the market and purchase place is essential in order to have access to food, clothing and other everyday family requirements (source: *ibid*)

Therefore, in the location of residential activities, efforts are made to avoid waste of time in regard with availability to purchase and educational centers. In addition to the mentioned categories, each of the residential areas of the city, as a subsystem of the whole urban system, should provide the following characteristics:

Neighborhood housing should provide adequate housing for households, which in addition to shelter, provides essential services within the residential unit, including water, sewage, etc. (source: *ibid*).

Neighborhood security should result in health and stability, and in general, the neighborhood should be far from traffic dangers, rape and offenses, criminal acts and psychological and natural events. Neighborhood symbol must be a clear indication of place and belonging sense and reason of inhabitants convenience and pride. The social interaction of the neighborhood should provide personal cooperation among social networks, organizations and natural facilities. The neighborhood leisure should provide conditions for the use of leisure services such as cultural, educational and open space facilities for people's convenience. Neighborhood availability should be in the way that it can provide access to employment and purchase centers and services for families (source: *ibid*).

General effectiveness: The neighborhood should reduce social or public expenditures resulting from the accumulation of households, including costs of water, sewage, garbage collection, firefighting and police services, training, leisure and transportation, as well as costs resulting from the maintenance and expansion of public capital such as street and sidewalk (source: *ibid*).

Case study: Ekbatan Residential Town

To investigate the concepts of the location of residential complexes, Ekbatan town located in the west of Tehran's metropolitan area is examined. This selection has been done among options offered in this area, including Shahrak-e Gharb (Qarb town) and Ekbatan town. The pattern involved in the selection of this case study is paying attention to the layout of the residential space and the altitude compared with the vicinities and zonings (source: the author).



General view of the Ekbatan city, the northwest side

The reason for choosing these two cases over a period of time is having indices in terms of physical, social and cultural viewpoints with a well-organized background and high-population. Due to the wide range of residential complexes in Shahrak-Gharb and Ekbatan town, a certain areas of these two districts were selected in order to be investigated. The second phase of Ekbatan town and the third phase of Shahrak-Gharb were considered due to their more population and homogeneity of residents (source: the researcher).



General view – Ekbatan town, middle space

Ekbatan town is one of the largest residential complexes in the Middle East, located in the west of Tehran. It was established in the fourth decades with the aim of settling educated people with middle income. Applicants for living in this area were modernists who were interested in residing in modern apartment units (source: the researcher).



General view of Ekbatan town—beginning of the Tehran – Karaj highway

The Ekbatan town is divided into three phases. Each phase consists of several blocks, and each block contains several entrances; in general, a set of 33 blocks can be observed. The area under investigation in this study was selected from the first phase of Ekbatan town; it includes 10 blocks and has a better location than the second and third phases of Ekbatan town, and its surrounding space includes more diverse service and commercial facilities. The history of residency in the first phase of Ekbatan town is more than other phases, and its inhabitants are more homogeneous (Rafatjah, 2007).



General view – Sanat Square, Ekbatan town, Tehran

Ekbatan town is located in the northwestern part of Tehran. It was set up in the fourth decades, and was constructed on divided lands of historic village of Khovardin, and American design consultants implemented it in a new and completely different manner from the old urban context of Tehran. At the time of exploitation of this town, a number of experts and industrialists who came to Iran to expand the scientific and industrial activities settled in these complexes, and therefore, this residential area in the city was known as the Shahrak-Gharb (the west town) (Azargasht, 2008).



Residential complex located in Shahrak-e Gharb, the north side of Sanat Square, Tehran

Implementation of programs with the title of capital modernization at the time of Pahlavi II has had an effective role in the formation of central area and Shahrak-e Gharb. Different urbanization, modern towers and luxurious villa houses constructed with high speed and high quality in current years in Shahrak-e Gharb have made this region one of the urban symbols of modern Tehran. With the large displacement of population in 1992s and 2002s in Tehran, the population context of Shahrak-e Gharb has become closer to the other parts of the city. The case study of this research was selected from the third phase of Shahrak-e Gharb (source: the researcher).



General view – residential complex located in Shahrak-e Gharb, Tehran

To measure the proposed model and conduct a qualitative research, a questionnaire was designed and a survey was carried out among inhabitants of two residential complexes in these towns. Since the research goal was to achieve a qualitative result, a questionnaire including twenty questions with four-choice, explanatory and graphical responses was prepared and presented to about 60 inhabitants of both samples (source: the researcher). The content of questions raised in the questionnaire can be divided into four sections:

The first part includes individual information of respondent;

The second part involves the three layout categories mentioned previously;

The third part involves assessing each factor affecting the formation of a bio space layout; this category is the result of the proposed research model (source: the researcher);

The fourth part relates to the mental mapping of the architectural audience in regard with a residential complex based on the questions raised. During this field research, a supportive question has also been considered for each question because of spatial differentiation in this research. This is for achieving accurate results, and provides the opportunity to compare responses with each other. Mentally mapped designs were analyzed separately. Previous questions were compared with each other at the same time that new questions were raised in each part. In order to organize the research population and ensure the results of field survey, the subjects were selected from the middle aged group. It was covering the history of residency, and due to the thinking similarities and psychological comfort of individuals, it was possible to compare the residential neighborhoods with each other and with other neighborhoods (source: the researcher).

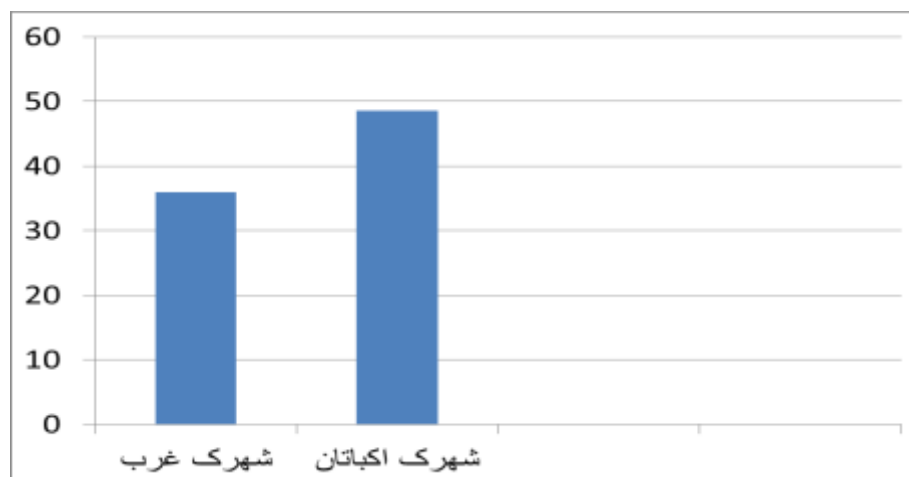
II. RESEARCH METHODOLOGY

A questionnaire was designed to assess the proposed model using a series of information in order to achieve a qualitative result. The research hypotheses were evaluated by the help of inhabitants of two residential complexes (Tahersima et al, 2017). The questionnaire with 18 questions accompanied by supporting questions for each was distributed among 45 inhabitants of residential complexes. The questions covered categories mentioned in the theoretical framework of the research. Each of factors influencing the construction included location of designs and residential complexes in the proposed research model (Tahersima, 2017).

A supportive question has also been considered for each question to achieve accurate results, and this provides the opportunity to compare responses with each other. In order to organize the research population and ensure the results of field survey in terms of qualitative aspects, the subjects were selected among the age group with an average age of about 48.3 (Tahersima et al, 2018). This age group had more residential experience in the areas under investigation. This gives an opportunity to compare a residential complex with its neighbor (Tahersima, 2017).

III. DATA ANALYSIS

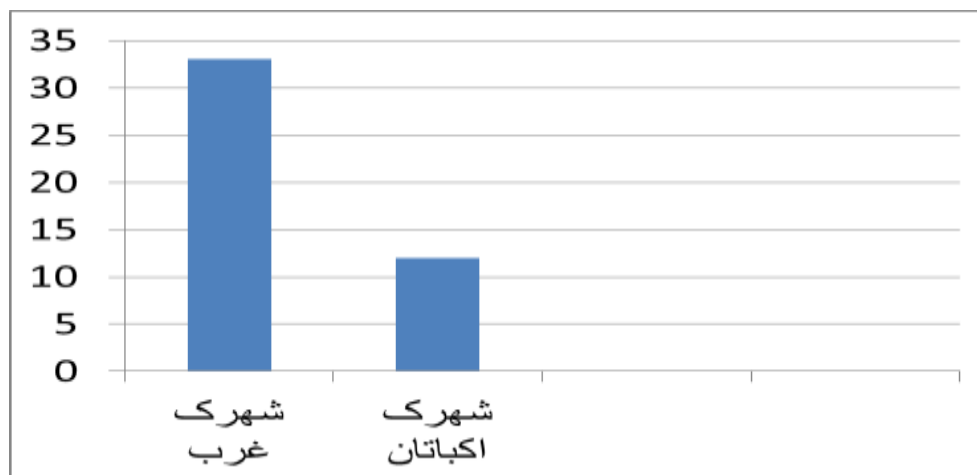
During the study and field survey, the spatial scope of two residential complexes was selected, and the category of how to localize and suitability of this localization and other issues were investigated. Gathering effective factors on localization, the research process in regard with the location of two residential towns in the west of Tehran was formed (source: the researcher). Residents of these two towns mention their local and special identity in most cases. 72.3% of population is satisfied with the appropriateness of local access and communication paths. The proper location and the imagination of being considered a town in regard with the residency in two complexes was measured; it was recognized well in Shahrak-e Gharb (36%), and Ekbatan town (48.6%) (source: the researcher).



Graph 1. The sense of being a town (percent)

Good neighborliness with other paths and neighborhoods was questioned in the questionnaire that was answered with “high” satisfaction. Meanwhile, in terms of layout of subsets of a residential town, Ekbatan town has higher communal identity and uniform density. Green space and relatively good climate of Ekbatan town are categories that help improve the design due to its location. More homogeneous residents and people with common culture and low population density are among the other features of the residential complex in Shahrak-e Gharb (source: the researcher).

In reviewing the research questionnaires related to the residents of Ekbatan town, it was found that about 12% of people living in this area refer to this complex as a place with a neighborhood identity (Karami et al, 2018). In the question of spatial and neighborhood scope and identity, it was concluded that despite the presence of layout and consideration of a neighborhood-based architecture and collective identity issues among the blocks, there is a great deal of difference between spatial boundaries and location characteristics. 33% of respondents in Shahrak-e Gharb know their living place with the name of a street, a connectiveroad or adjacent square.



Graph 2: A sense of a collective identity (percent)

Localization in Ekbatan town is done through non-categorization of blocks in a fuzzy manner. This finding includes field survey (source: the researcher).

Therefore, due to the survey conducted, the whole of Ekbatan town can be identified and localized in two possible ways in terms of some people living in this area and geographic location. In the next step, the fuzzy divisions can be taken from a location viewpoint (source: the researcher).

The important point in regard with the location of Tehran' Ekbatan city is that residential phases are not classified externally; each of which is individually and independently localized. In other words, in the location between two phases, moving impairment does not occur, and the interspace between two phases is not considered as a residential phase. About 63% of respondents in Ekbatan town have mentioned this research finding (Source: the researcher).

Due to the hierarchy created in Shahrak-e Gharb, the location of spaces is separated by access routes, and places are gradually separated. In Ekbatan town, the separation between places and how to find the route among spaces are done through regarding the form of buildings. Comparison of respondents' answers shows that localization in Shahrak-e Gharb is more specific than localization in Ekbatan town. The questionnaires and findings of this study show that localization and layout of communal spaces among blocks of Ekbatan town increase sense of belonging to the location, and access to neighborhoods and path identification is done appropriately (source: the researcher).

IV. CONCLUSION

People living in a residential complex, in a collective or individual form, seem to demand for comfort and a sense of security within their own area of living. Localization is a tool for biological preferences and the power of human choice. It can be considered as a supportive mechanism for desires of human life. Localization is related to various and complex factors that are mentioned in the proposed model of research. Attitudes to physical, functional, social and human affairs are effective in localization of human habitats. Geographic, temporal and cultural issues are also involved in localization and affect its process. There was a great deal of difference between two case studies in terms of their scope, neighborhoods and the vicinity areas. The results of this research can be classified into three macro, middle and micro scales. It is concluded that the wishes and priorities of residents of both residential towns are not consistent with the planning and implementation of

opinions and estimates of designers of the above-mentioned residential complexes (macro scale). The project is based on objective conceptualization and reference to the architectural thematic records. In future, designers and planners can pay more attention to viewpoints of people residing in the complex in the process of designing projects and their localization (source: the researcher).

The research findings can indicate that in the mid-scale, in the case of providing service demands and categories related to interspaces and green space and paying attention to communal spaces, the physical component of being at high or low surface of a residential complex has no favorable and reliable effect on the desirability of the complex location (source: the researcher).

According to the comments of respondents, it can be stated that in regard with issues related to the vicinity and neighborhood with other neighborhoods or residential complexes, the category of equalization and balanced distribution of facilities should be possible. The green space layout among residential blocks plays an important role both in terms of physical and social factors affecting the human habitation (source: the researcher). In micro level, if the location of residential complexes is considered, the localization can be in the way that personal and public security is provided throughout the night life for users of residential complexes. The continuity of such exploitation from spaces and the full-time dynamics of human being's place of residence can also be effective on forming the location of living and satisfying users (source: the researcher). The attention of designers to the micro, mid and macro scales and layout of small spaces in the vicinity of residential blocks can significantly help improve the spatial quality of residential environments and develop and optimize their location and geographic conditions.

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