Explanation of Effective Factors on Perceptual Organization Pattern of Area 1 of contemporary Tehran Based on Pattern Language Theory

Sina Mansouri [a], Leila Karimifard [b,*], Hossein Zabihi [c], Seyed Hadi Ghoddusifar [d]

[a] Department of Urban Engineering, Kish International Branch, Islamic Azad University, Kish Island, Iran
[b] Department of Architecture, Faculty of Art and Architecture, South Tehran Branch, Islamic Azad University, Tehran, Iran
[c] Department of Urban Engineering, Science and Research Branch, Islamic Azad University, Tehran, Iran
[d] Department of Architecture, Faculty of Art and Architecture, South Tehran Branch, Islamic Azad University, Tehran, Iran
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Abstract

District 1 of Tehran had experienced many changes during the past few decades and many of these changes had included few tangible matters, and never considered the public's concept of urban system pattern. The present study tried to explain the pattern language system of district 1 of Tehran, based on Christopher Alexander's theory of pattern language and adapt this theory to the public's concepts. This purpose was done by examining different theories belonging to prominent theoreticians, interviews, and maps obtained from the public and adapting them to the data of district 1 urban geographic system, live patterns were obtained according to pattern language theory. According to the findings of the research, among five major indexes of perceptual organization (node, edge, landmark, path, and district) from Kevin Lynch's view, nodes had more importance to the people of District 1, and other indexes stood at lower levels of importance. Based on a 4-page format that was used for the first time Nafeh in her thesis at Waterloo university, in field study format, these nodes were surveyed and analyzed by interviewing team on the pages, and consequently, 37 graduals and reticulated live patterns were obtained. Since these 37 patterns were based on the public's concepts, they had the characteristics of being live and natural as well.

***Keywords*:** Perceptual organization pattern, District 1 of Tehran, Pattern language theory, Meaning of the city

1. Introduction

In the present era, refusal of urban planning and architectural theoretical foundations and ideas of Iranian intelligentsia and theoreticians have been prioritized and many of these theoreticians know this refusal as the essential condition for improvement and moving forward. Increasing growth of following urban planning of foreign countries without even knowing their foundations and principles has threated visual beauty and perceptual organization patterns of Iran cities, so conducting qualitative and practical researches with scientific foundations in order to reform this issue is needed. District 1 of contemporary Tehran is a district in which the richest people of Iran live there, and -because of extramural effects- not only is in the concern of Tehran citizens but also in concern of citizens of other cities, and consequently the increasing growth of urban planning of countries like England and France in this district led to multiculturalism and misunderstandings in public, however the Islamic and Iranian foundations are so rich and need to be focused more accurately.

In examining and cognition of these dualisms among foreign and domestic users of these spaces, what is recognizable and tangible is the fundamental issue of perceptual organization patterns being insignificant which have not been shaped based on thoughts and mental images of public users of these areas and is merely shaped based on ideas and perspectives of some powerful people in framing their power. The significance of this issue shows itself where perspectives and social norms of a group of people of a neighborhood, district or even city and their activities and use from urban spaces get an unintelligible and fleeting shape to themselves and the sense of place fades and eventually disappears. This issue reaches to its top-level when the urban spaces have no significance for their users because they lose their language somehow, or speak in another language (except Persian) to their users.

In order to answer this problem which is a qualitative problem, in 1977 a theory called language pattern theory was proposed by Christopher Alexander, one of the theoreticians in architecture. The aim of the present study is to recognizing affecting parameters on perceptual organization pattern of district 1 of contemporary Tehran based on language pattern theory, in order to do so, the perspectives of prominent theoreticians, books and articles are examined accurately. The present study tried to propose parameters for urban perceptual organization patterns that return the meaning to the urban environment based on live and effective patterns, by considering the publics' ideas and

*Corresponding author Email address: lkf@karimifard.org

mental images and adapting them to the urban geographical system. This theory, in general, believes that patterns should be domestic and come out of the culture of a place.

2.2 Urban perceptual organization pattern

2.2.1 Urban perceptual organization pattern definitions and dilemmas

There are many different perspectives in defining urban perceptual organization patterns, these perspectives in general, have similarities in some aspects including; paying attention to public activities, reciprocal interaction between environment and people and people to environment, corresponding between public activities and urban organization are parameters which are examined in defining urban perceptual organization pattern, in order to do so, here some of these definitions and dilemmas that are presented;
Silva and Farrall overcome the dichotomy by suggesting three "spatial planning dilemmas" that evolve as a result of the inherent gap between plans and the actual use of physical settings. The first is the gap between the formality of rules and the flexibility of norms, the second is the gap between top-down planning approach and bottom-up approach, and the third is the orientation of planners to plan either for or with the users. Neoliberal urban governance and planning are producing new forms of residents' engagement in spatial production, delegating responsibilities for urban development to market actors in collaboration with groups that are motivated by economic gains (Eizenberg, 2019). An overlay on the spatial and temporal dimension revealed the urban spatial structure with respect to changes in human social activities within the city (Li, Lang, Wu, Hui, Chen, 2019). Urban perceptual organization is the result of the stabilization of citizens' images of their living environment or the order of elements that define the city as a whole. The most important point in differentiating cities is the difference in their perceptual organization, these diversities result from the difference in orders of each city as a separate system (Mansouri & Mohammadzadeh 2017).
In the above definition, the mental image (mental mapping) of the public is addressed, in the next definition, on the other hand, what is more, emphasized is the flow similar to Alexander's definition of "events";
In examining theoretical consideration related to perceptual organization and urban systems as Interdisciplinary majors, two separate paradigms of the size of the base and the grid base are indistinguishable. The first paradigm defines the urban system as the complex of nodes that are fixed on their inner characteristics and in describing the centrality of urban spaces, emphasize the level of habitancy centralization, activities, and usage of a place. However from past few decades, by defining a complex of cities as a system, unlike the past, the relationship element became much more important in defining urban system, and the place of any city in the city system in contrast to its position in the system depends on the flows which are running between cities and consequently results from the relationship between other neighborhoods. This paradigm looks at the relationship between cities on a horizon and non-neighborhood format by focusing on relationship data and aims at space processing in a perceptual organization (Dadashpoor & Afaghpoor 2016).

2.2.2 Perceptual organization indexes

There are not many indexes proposed for perceptual organization, but according to examinations and the importance of citizens' mental images, reviewing the ideas of theoreticians who have examined mental images is at a high level of importance, among these theoreticians, in Kevin Lynch's book called "the image of the city" and some other theoreticians have proposed direct and considerable points: Defining indexes of urban perceptual organization are: centrality (historical memory and the mental and activity gravity center of the city), small wholes (neighborhoods and semi-dependent complexes in the city), structure (linking elements of small wholes), and territory (an area which its habitants have a reciprocal sense of belonging), (Mansouri & Mohammadzadeh, 2017). As any system and structure consist of components, the perceptual organization consists of elements and components. What Lynch suggested as the elements of citizens' understandings about urban space and conceptual order, consisted of five following elements; path, edge, district, node, and landmark. Bill Erikson describes perceptual organization elements as the armature of the city, to him, this phenomenon is a complex of functional and body elements that form the arrangement of urban perceptual organization. These elements consist of; public places, dynamic structure, a combination of function and activity, ecological environment and landscaping and hierarchy (Zekavat, 2010). Based on a consideration of even the newest theories about the indexes of perceptual organization, these 5 indexes are the finals yet and this research can make use of it: Route, Sign, Edge, Node, Area

2.3 Pattern language

These days in qualitative researches especially surveys which is about the meaning of space and social norms, there is a need to use a theory that considers mental effects in a tangible way. The pattern language theory can affect the present study with its emphasis on the importance of the publics' cooperation, needs, and feelings of them and the type of their interactions with space.
He (Alexander) further claimed that the quality of architecture is objectively good or bad for human beings, rather than only a matter of opinion. There is a shared notion of beauty among people regardless of their faiths, ethics, and cultures, and it accounts for 90% of our feelings. The idiosyncratic aspect of beauty accounts for only 10% of our feelings and depends on relatively small differences in

individual life and cultural history or biology. As Alexander claimed, beauty or order coming from a segment of music is no different from that of a physical thing like a tree, since both the music and the tree possess the kind of living structure with far more smalls than larges. Both life and beauty come from the same source, the very concept of wholeness. Thus, wholeness, life, and beauty constitute a trinity, which is the foundation of the nature of the order, as well illustrated by his wife Maggie (Jiang, 2019).

2.3.1 What is pattern language?

In the field of urban planning and architecture, especially in the qualitative examination of these majors, many questions have been proposed which one of the most important questions is that, why the space of old Iranian cities still conveys a sense of joy and beauty to their visitors? Is this sense of joy in the contemporary era is mere because of their historical features or has other reasons?

Many theories have been proposed in order to answer these questions, including Salingaros statements which in supporting the theory puts this way; we see the world around us, then we recognize its structure by summarizing it as cause and effect, and then relying on solutions which are repeated in different situations. (These experimental rules which are the indicators of orders and rules of behavior are called patterns. Visible patterns are the simplest description of the concept of the pattern) (Salingaros, 2000). Many patterns exist in humans' minds from the beginning: we inherit actions and reactions which guarantee our existence but other patterns should be learned and build an additional and artificial part in the human mind. The ability of understanding patterns provides us benefits such as adaptation and change of environment. In order to recognize the mechanism of a pattern in a particular complex however, all of its components should be determined separately. The language of a group of patterns provides a basis for working with any system of those patterns. The language of learned pattern –not innate- were protected in the past. Many human patterns are hidden inside religion, myths, and epic literature. These patterns, in fact, are a Wisdom of the crowd which came to existence by the alliance and unanimity of discoveries made by different people. This process is true about all patterns. Since mathematics can describe phenomena by rules and orders or logical patterns, different sciences rely on mathematics (Steen, 1988).

2.3.2 Indexes and structure of pattern language

Alexander besides proposing the philosophy of nature and life believes that the connection between humans' minds and nature is much deeper than what science and architecture believe. He proposes behavioral patterns, order and deep geometric relationships with the concept of life and live structures and believes that the potential energy of entities can be activated by creating powerful and homogeneity centers and the ability to make them-entities-alive. The nature of order suggests that all phenomena in the world can be examined by dividing them into two live and non-live structures, Alexander sees the world whole, homogeneity and ordered which contains live and non-live entities. Basic and important concepts in forming Alexander's theory include; life, wholeness, strong centers and live structure patterns which need to be noted briefly before we examine different aspects of the theory.

- Life: is a quality that exists in the nature of space or in anything such as functional spaces or a biologically live system. Life, in general, is a state which exists in any formal, geometric, structural and social connected space domain.
- Wholeness: shaped as an accurate structure consisting of various components that the existence of space roots in these components; the strengthening of life depends on this function of the entity as a whole and it means that we see it as a part of a connected chain.
- Center: is a structured area with an independent complex in space which due to its structure that is because of its inner cohesion and its relationship with the location, shows a kind of centralization. Wholeness which consists of strong centers and life creates live structures (Hatefi cited from Alexander, 2015).

2.3.3 Critics to pattern language

Most of the critics of Christopher Alexander's theory of pattern language are about its virtuality and mismatch between the economy and today's world. Salingaros and other theoreticians answered to some of these critics which are presented at following;

Many critics to Alexander's pattern language are true to some extent, for example, these patterns are reflections of the 1960s philosophy, are extreme and cannot contact easily with contemporary planning or ignore anything that considered to be important in 20^{th} century architecture, but these problems are nothing in comparison to the message which patterns present. Another critic of Alexander's patterns is its disharmony with the present economy and the construction process. The problem is that contemporary architecture never accepted Alexander's patterns completely and considers this theory as a marginal flow which has a more emotional and religious aspect. For certifying the above-mentioned patterns should study them bottom-up, the human mind can combine smaller patterns into groups. Bigger patterns emerge by using these groups which have new characteristics besides their own component features. When we consider patterns in a way in which they seem to be growing (bottom-up processing), then the human mind can recognize them subconsciously (Salingaros, 2000). Trying to create a pattern for architecture, is incompatible with this idea that there are patterns as many as people. How can you assure that all these pattern languages support each other when some of these languages are separated cruelly? How can you sure that the pattern language itself is alive? If the structure of life which is a quality, can be

produced by patterns or algorithm approaches? In order to create a live structure, there is a need to use new rules and forming meaningful proceedings based on a general understanding of what is considered to be a structure. The quality of human judgment based on human emotions is a necessary thing that the algorithm lacks it. When the understanding of a function is not important, using algorithm approaches are appropriate (Penrose, 1995).

3. Methodology

The present study is qualitative and quantitative simultaneously. This study is fundamental because it concerns with the discovery of the structure of city based on citizens' recognitions and the relationship between its variables and tangible variables of the context and reaches to theoretical structure, and is practical at the same time due to its usage from the results of the study in order to improve methodologies and instruments for determining publics' mental images about present Iranian cities. The method of the present study is survey research and following this method, this study tried to study the publics' mental images in order to improve urban perceptual organization patterns by using information-gathering instruments (interview, observing and mapping). However, this study does not merely content to public mappings but also looks for discovering affecting factors on these mappings. This study finds a sense of qualitative and analyzing nature in this part. This part of the study should be considered as part of positivism studies which tries to test hypotheses by objective methods (Geographic Information System) and analyzing data. From another point of view, another part of this study can be considered as a case study. In the case of studies, unlike experimental researches, the researcher does not manipulate the dependent variable to see its effect on the independent variable, on the contrary, it chooses a case and examines its important aspects in the study. The case study which is selected in this study is district 1 of contemporary Tehran. For analyzing body, functional and space characteristics of human-made context of district 1 of contemporary Tehran, a GIS-based objective analysis approach was implied and a method of analyzing space arrangement which needed analysis the structure of urban network (UNA) was used, then the AGRAPH approach was used in order to examine the interconnecting value of every single path to the districts. In analyzing the qualitative part of the present study and mental mappings, the AHP approach and 'Expert Choice' software were used in order to examine and analyze the values based on the priority which people determined.

3.1 Statistical population

The Statistical population method was stratified random sampling corresponding to the population.

3.2 sample size and measurement method

Considering the use of the statistical population from stratified random sampling corresponding to the population, the Yamani method was used.

$$n = \frac{N}{1 + N(e)^2}$$

Here N is the population size and e is the measurement accuracy and the population size of district 1 of Tehran is 349465 people also the measurement accuracy is 5%.
According to the formula; N= 349465/ e= 5%
By applying for these numbers in the above mentioned formula, the sample size will be 400 people.
In the next stage, in order to determine the portion of every district to be examined among 400, the sampling intervals should be obtained based on systematic random sampling and the population of each district should be divided on it.

$$I=\frac{N}{n}$$

I= sample interval / N= population size/ n= sample size
In this formula, the population size is 349465, and the sample size according to Yamani formula is 400, by applying for these numbers in the above formula the sample interval equals 873.662. In the last stage, the population of every neighborhood which is obtained from the Tehran municipality is divided into the sample interval for computing the portion of each of them. In table 1 the population and sample portion have been shown in table1.

3.3. Information Gathering Tools

In order to achieve the controllable data, based on their type of effect, using the following tools is required:
1-Structured face to face interviews, based on questionnaires (sketch map type of cognitive map method) and standard formats of the questionnaire that are based on how to help you draw mental images, have been provided by people, that consist of three parts:
*First Part: Functional Level
In this level, the goal is to ask questions in order to obtain the type of physical interactions of people with the environment, in this regard, 5 principles, such as ways, paths, districts, signs, and nodes have been mentioned by Kevin Lynch, that are important and helpful tools for analyzing functional aspect of people's mental images of the city. In this part, answering these questions is important:

A) How do people move around the city and find their way?
B) Regarding finding your path and way, which of the urban elements, urban spaces or artifacts play an important role?
C) From your point of view, which of these elements or urban spaces is an indicative and important space?
D) What types of activities occur in this district (place) and which spaces cover these activities?
E) Which of urban spaces or architectural monuments has been used more by you or certain groups?

F) Are types of urban programs that have been executed by organs for district corresponded with types of popular activities in this district?

*Second Part: Identity of the Urban Environment

In this part, the identity of the urban environment has been questioned at the next level. This level "Color Data" of the environment has been specified by adding meaning to areas. Urban form has an identity like a person. Cultural meaning is revealed by a combination of certain elements which belong to an integrated set of different aspects in our urban environment. Urban composition, architectural style, housing typology, street life, facilities, using public space or even regulations, all of them can help with identifying the general identity of an urban area. In this part, answering to the following questions is important:

A) From your point of view, which of urban spaces or places in this district are known by the public?
B) What is the name or sign of this district? Does it have a specific indicator that is known to other people in the city?
C) Which of urban spaces, urban elements or artifacts in the city have a special meaning for the people?
D) What is the culture of the people of this district that they are known for? Is this type of culture physically visible?

Table 1
List of neighborhoods and sample portion for each (Source: Authors)

Row	Neighborhood	Population	Sample Portion
1	Farmanieh	11394	13
2	Darakeh	5820	7
3	Evin	3635	4
4	Velenjak	13209	15
5	Mahmoodieh	6217	7
6	Zafaranieh	24425	28
7	Darband	13048	15
8	Jamaran	6466	7
9	Niyavaran	9591	11
10	Shahrak Naft	5000	6
11	Tajrish	7840	9
12	Qeytarieh	20561	23
13	Hesar Boo Ali	12526	14
14	Chizar	12227	14
15	Sohanak	22006	25
16	Azgol	20166	23
17	Shahrak Mahalati	26307	30
18	Araj	11667	13
19	Dar Abad	10398	12
20	Kashanak	13941	16
21	Baq Ferdows	17324	20
22	Golabdareh	11195	13
23	Dezashib	10927	13
24	Daneshgah-Golha	2604	3
25	Imamzadeh Qasem	18466	21
26	Hekmat	29708	34
27	Koohsar	2797	3

*Third Part: Analyzing non-lingual relations of people with the surrounding (mental implications and individual perceptions from the environment)

The level of assumptions and conclusions are based on personal meaning added to urban characteristics. Urban residents link their environment to their concept.

Regarding this link, people can communicate with expression, the identity of objects and their surroundings inactively. Determination by others who have valuable orientation or lifestyle is possible with the cultural and symbolic content of the urban environment. All of us, constantly measure and judge a set of urban characteristics. We (can) only show the general orientation of people in an area just through passing it and making assumptions based on the meanings that have been expressed as characteristics of the environment. Metropolitan areas mean "poverty" and "wealth", ethnical or social origin, lifestyle, etc. In this part, answering to the following questions is important:

A) Which of the spaces in this district is pleasant to you and gives you a feeling of pleasure?
B) From your point of view, which of spaces is unsafe or causes insecurity in the district?
C) Which of the spaces is worthy of appreciation by the people due to its presence in this district?
D) From your point of view, Is there a shortage of spaces that reflect the popular values of the district in the urban maps of this district? If yes, how are these spaces associated with other public information about the urban environment?
E) What is your judgment about the transformation process of this district over time?

*Final part after questionnaires:

After asking questions and receiving answers in the form of the semi-structured interview from people of various districts, they are asked to draw a sketch map of the district and specify important signs with certain marks in this sketch through which they address others or they navigate based on them or even they have certain concepts for them. Various mental maps are categorized, positioned and compared in terms of subject. Then, accurate maps can be created based on specific compounds or a set of individual maps. To reproduce mental maps produced as raw materials, it is important to have an insight into the background orientation of those involved in mental mapping. Different people produce different mental maps because they are personal and relevant to their lives (style). Similarities may be comparable between maps of people with a lifestyle, age, interest, or degree of experience in the area. The creation of traditional maps is due to the question of whether the mental maps of the area of people or various groups are similar to each other. What are the cohesive factors in the different maps of these groups? Therefore, the meaning of certain parts of the area can be shown to specific groups. In addition to the research tool for urban studies, mental mapping can be used as a tool for urban transformation while providing sufficient support for defining scheduled programs. Insights in existing and actual identities, their expression in the urban landscape, values of society and its relations with that urban community as a general basis should be extended to planning and transformation intervention. Then, more appropriate strategies between physical form, its use, symbolic index, recognition and appreciation of different groups of people will result in distinctive comprehensive and meaningful urban areas.

2-Structured Observation: In this regard, based on field studies, the signs and nodes are indicated and studies and information gathering from these nodes and signs are made in the localities.

3-Information Banks and Computer Networks: In order to obtain some information from foreign articles, Google Scholar site is used.

4-Writing Summary: In the field of library studies, the present study is used to codify and write important content.

All deductions have been made in different hours of the day, have been conducted by research teams in the form of 3 to 5 people and form the findings of the research.

4. The Study Area

Tehran area one is the largest city, capital of Iran, the center of Tehran province and the city of Tehran. Its population is about 8,244,535 million and it is the 25th most populous city in the world. The area of this city is 730 km2. Tehran city is located in northern Iran and south of the Alborz mountain range. This city has a highway congestion network. Tehran, from the north, has led into mountainous areas and from the south, has led into desert areas. As a result, the climate in the south and north is different. Tehran has been divided into 22 areas, 123 regions, and 374 districts. Azadi Tower is the symbol of Tehran City. Another symbol of it is Milad Tower. The results of the research have been shown that between districts of Tehran municipality one, there is a big difference, in terms of the use of spaces and cultural facilities. Meanwhile, Hekmat district has more cultural development than other areas and other districts such as Qeytarieh and Chizar districts are ranked lower (Hosseinpour, Haraschian, Ahmadi, Shayeghan, according to the municipality 2017).

5. Findings and Discussion

As mentioned above, in the discussion of collecting qualitative data, a cognitive map method was used that was accompanied by an interview and drawing of sketch maps by the people of the region and in Figure 1 there is a sample of popular drawings.

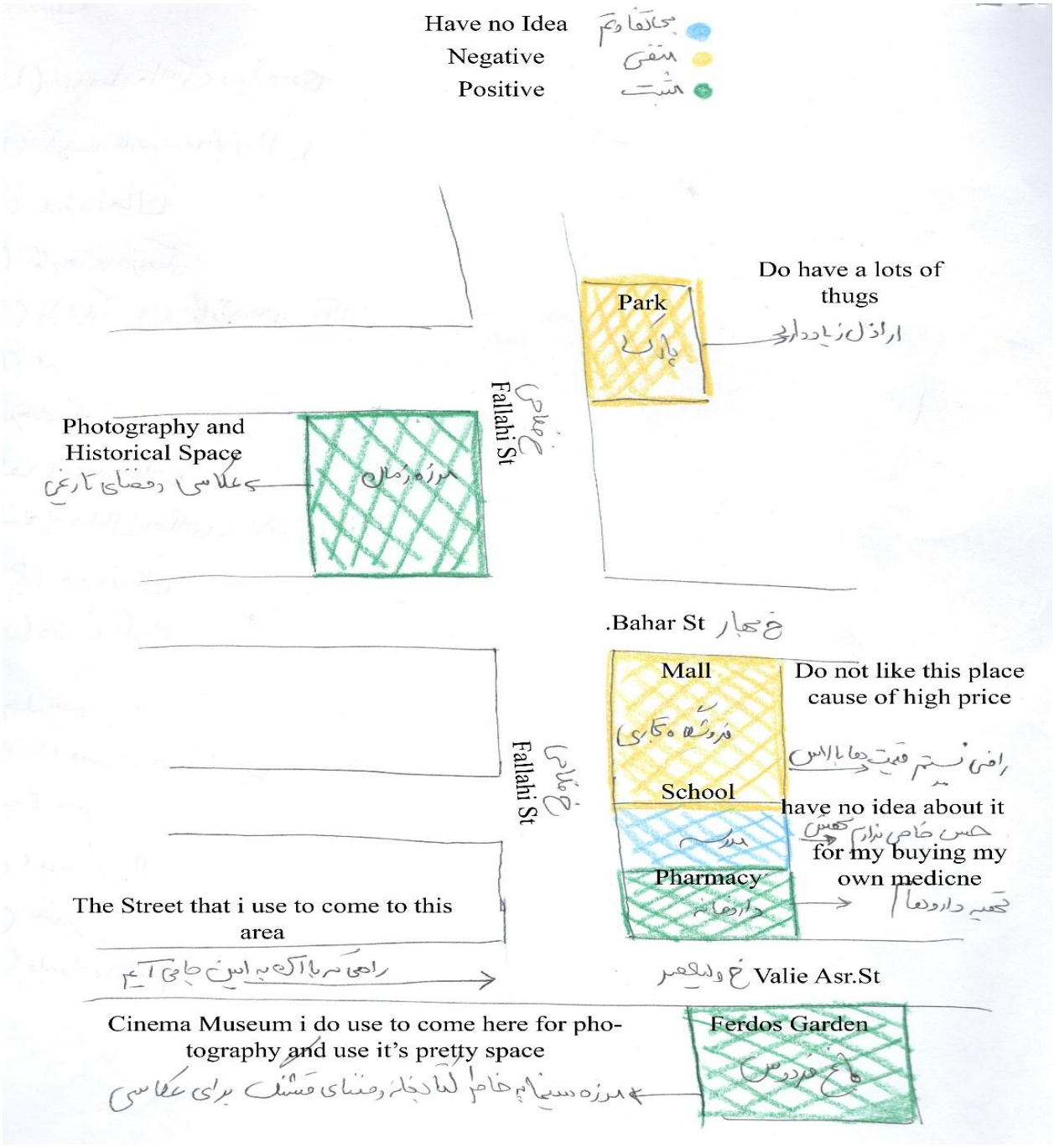


Fig. 1. A sample of sketch maps drawn by people of the area based on their mental imagery and the most important signs on their idea. (Source: Authors)

Here is an example of a field study on one of important signs (Islamic Azad University) in SOHANAK district based on a form of cognitive mapping that all 11 groups filled based on a people mental imagery, this template used by Nafeh in Waterloo University in Cairo case study: (Figure 2-5).

PATTERN TEMPLATE-WORKSHOP
picture/sketch of the pattern

Taken by Tazamir Noori Fawad ebrahimi
on March 7,2019

Fig. 2. Cognitive mapping form that filled by people based on their mental imagery of the area one of Tehran contemporary and arranges by the groups that gathered the information. (Source: Authors)

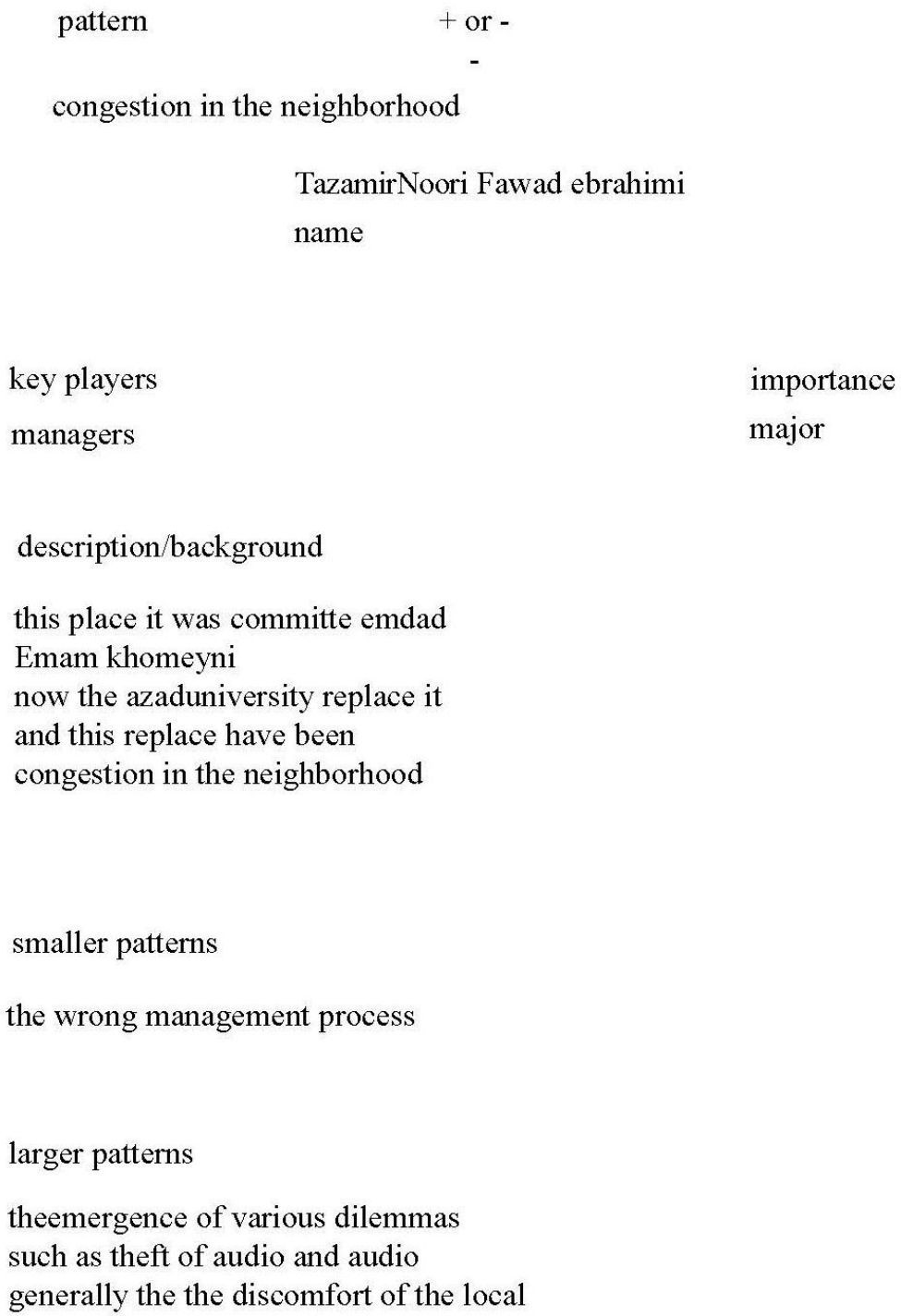


Fig.3. Cognitive mapping form that filled by people based on their mental imagery of the area one of Tehran contemporary and arranges by the groups that gathered the information. (Source: Authors)

problem

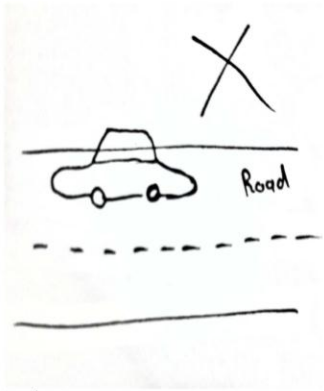
congestion in the neighborhood

potential

provide knowledge for students

solotion/tools to optimize pattern

illustration



tools

park down the street

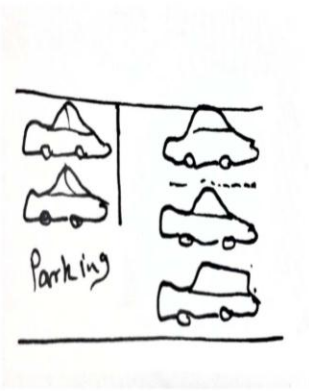
description

park down the street causing traffic in the neighberhood

new key players

Govenment

illustration



tools

select the right space

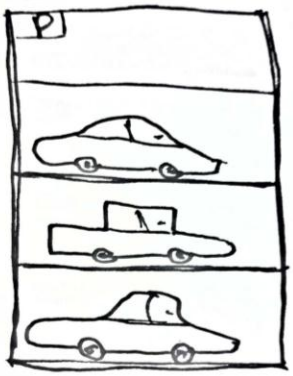
description

select the right spaces fo rthe parking student problems and and solves the situation

new key players

university

illustration



tools

build a parking lot

description

build a parking lot
little space and the same time
it will be pulished park
more place

new key players

university

Fig. 4. Cognitive mapping form that filled by people based on their mental imagery of the area one of Tehran contemporary and arranges by the groups that gathered the information. (Source: Authors)

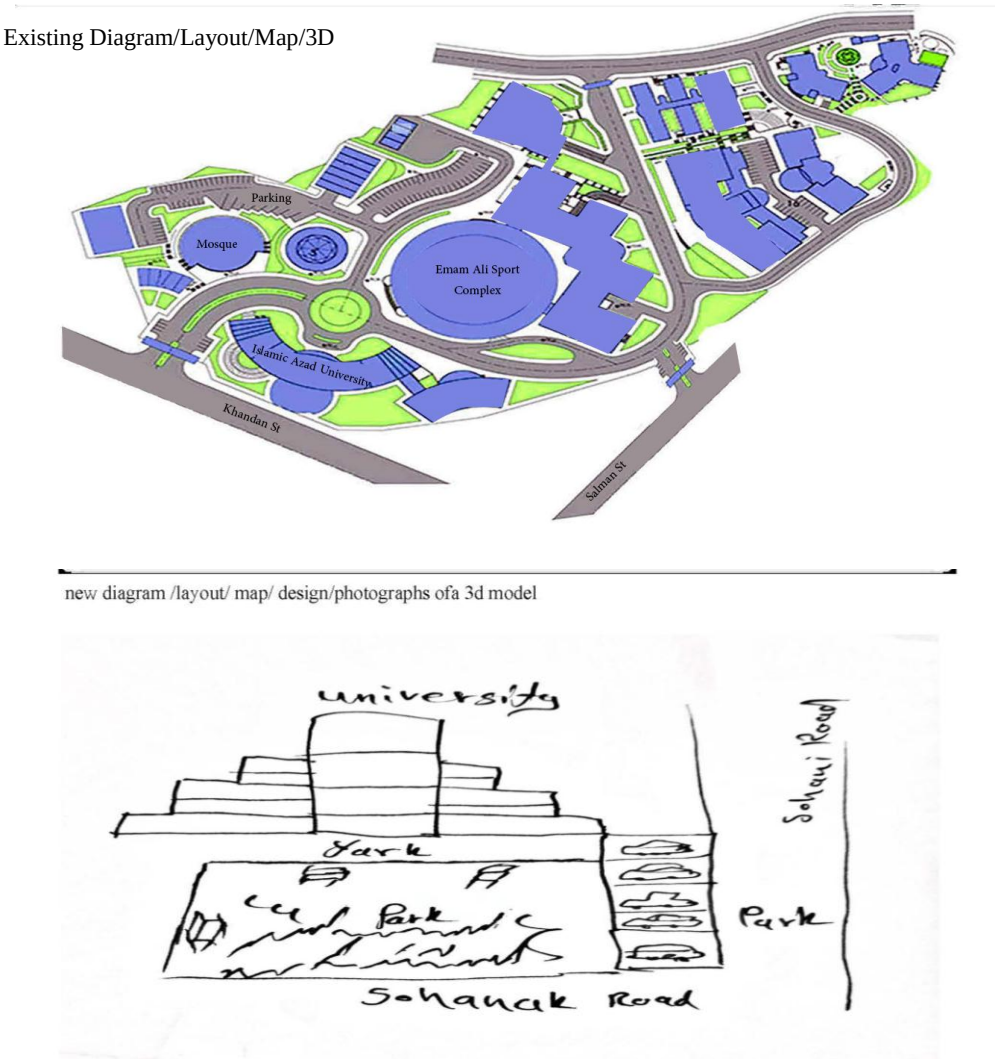


Fig. 5. Cognitive mapping form that filled by people based on their mental imagery of the area one of Tehran contemporary and arranges by the groups that gathered the information. (Source: Authors)

After collecting data and analyzing research qualitative findings, in the analysis section, the physical, functional and perceptual aspects of the GIS map of the area one has been evaluated.

6. Data Analysis Method

As mentioned, the current research has two dimensions of the research method, qualitative and quantitative dimensions. Qualitative findings belong to mental and semantic popular maps, based on face to face interviews, sketch maps drawn by them and pattern analysis format for submitting living patterns, in order to analyze this part of data, AHP method is used and based on importance coefficients, each district has been analyzed and it is determined that among the elements of urban perceptual organization pattern (that consists of squares, streets, urban uses and urban elements), which of popular point of views are more important. Then, after the study of the importance of perceptual organization patterns, in order to provide a more detailed analysis, the quantitative method will be used. In the study of quantitative data, an analysis of the physical, functional and spatial structure of Tehran area one is carried out based on GIS map and in order to provide accurate results, perceptual syntax analysis method and UNA (Urban Network Analyze) has been used and in this method, five main functions are analyzed. These factors consist of:

1-Reach: This function is relevant to the accessibility radius and functional radius and shows which blocks have better access rates.

2-Gravity: In this function, we have a kind of screening in the way that nodes with fewer distances will have more gravity to our location. Generally, blocks that have more gravitation, have more gravity too.

3-Betweenness: In this function, we want to know which blocks have higher traffic probabilities to the other blocks.

4-Closeness: In this function, we show which blocks are closer to other blocks and which blocks are less close (The shortest path is the criterion of the action).
5-Straightness: This function is the ratio of Euclidean distance to the network distance and it shows that if the number of direct paths leads to a block are further, it's permeability will be higher.

6.1.Appropriate Indicators

1-Control Value (CY): By default, this software considers the control value of each node as 1 and this component, counts the share that each of these nodes gets, through the number of connecting edges. For Example: If the node has 4 edges or a communication path, its control value equals 0.25.
2-Total Depth (TDs): The total depth of the node "n" is the shortest distance from the node n to the other nodes in the system, in fact, starting with the desired node and beginning with the sum of the shortest intervals and edges, which ultimately gives us the total depth.
3-Mean Depth (MDs): For the node "n", the mean depth is the mean of the total depth or the mean of the shortest distance from node n to all other nodes. (MDs=TDs/K-1) that in this relation, K is the total number of nodes in the analysis.
4-Relative Asymmetry (RA): The software gives a number between 0 and 1, that if this number is closer to zero, we have an aggregation of nodes that means we have more integration value and if it is closer to 1, we have no aggregation. "RA=2*(MDs-1)/K-2"
5-Integration Value (i): Integration Value is equal to The mean depth that goes through the node to reach all the nodes in the system. Naturally, the lower the mean depth is, the greater the integration value is and vice versa. The integration value also has an inverse relation with relative asymmetry. "I=1/RA"
In the following maps (Figure 6 and 7) based on the UNA analyze system, the red color indicates that the function's size is greater. In this part, some studies have been carried out without weight and some studies have been analyzed due to the availability of the necessary data by weighting the population and area. Then, in order to study the relationships between the nodes and type of integration value more accurately, the AGRAPH program is used as a complementary software (Figure 8), which is capable of identifying the relations between nodes and axes as whole area one. After analyzing the GIS maps for analyzing people's mental Imagery, this article used the AHP technique (Figure 9) for gathering more analyzed information about people's mental imagery based on the EL SAATI coefficient.

Fig. 6. Geographic Information System Analyse by UNA (Urban Network Analysis). (Source: Authors)

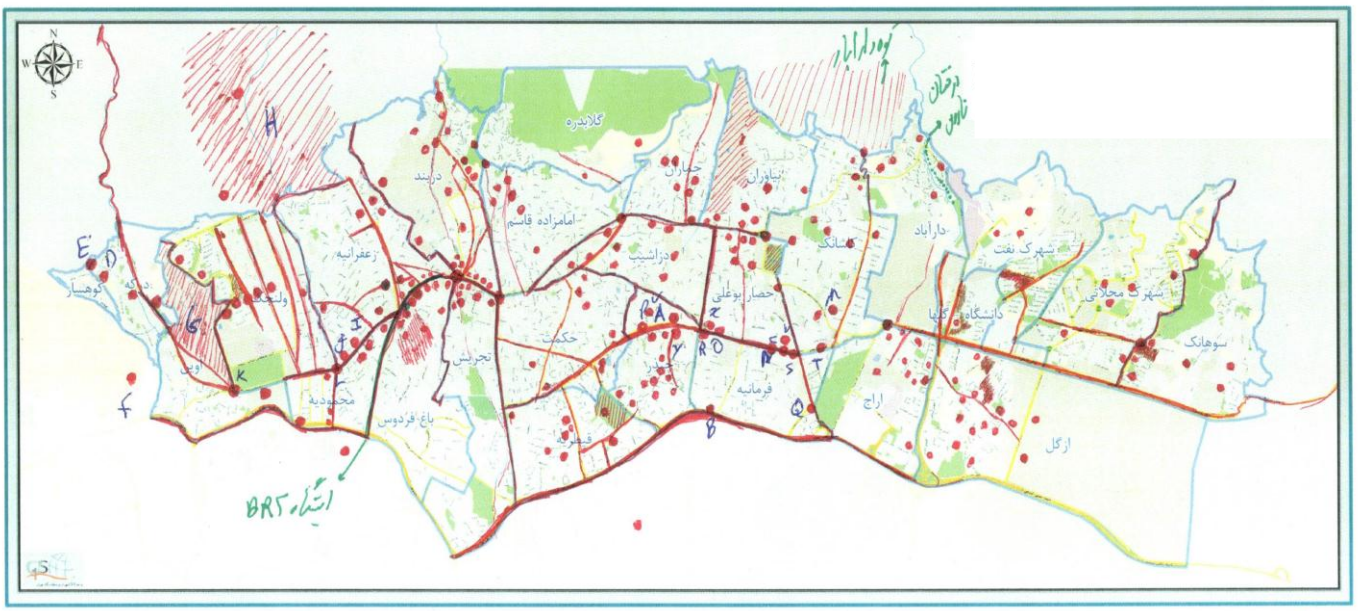


Fig. 7. Mental Imagery nodes Analysis on Neighborhood Boundaries. (Source: Authors)

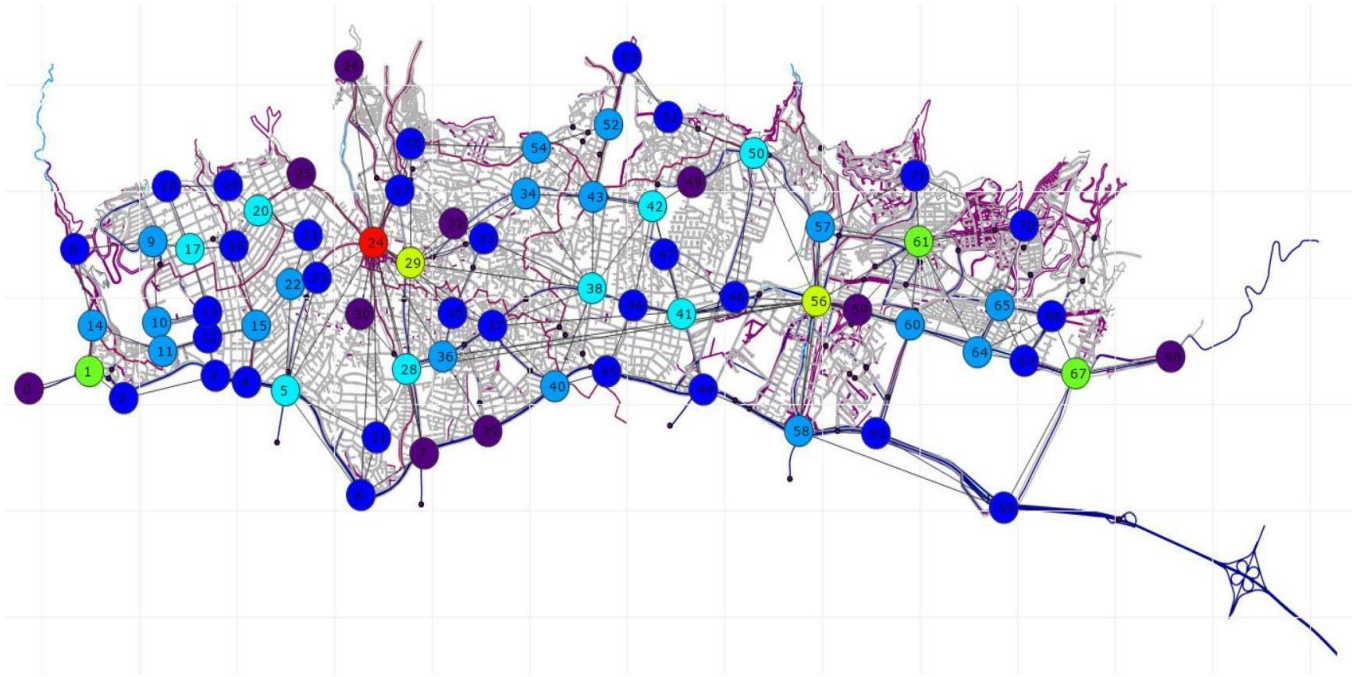


Fig. 8. AGRAPH Analyze (Source: Authors)

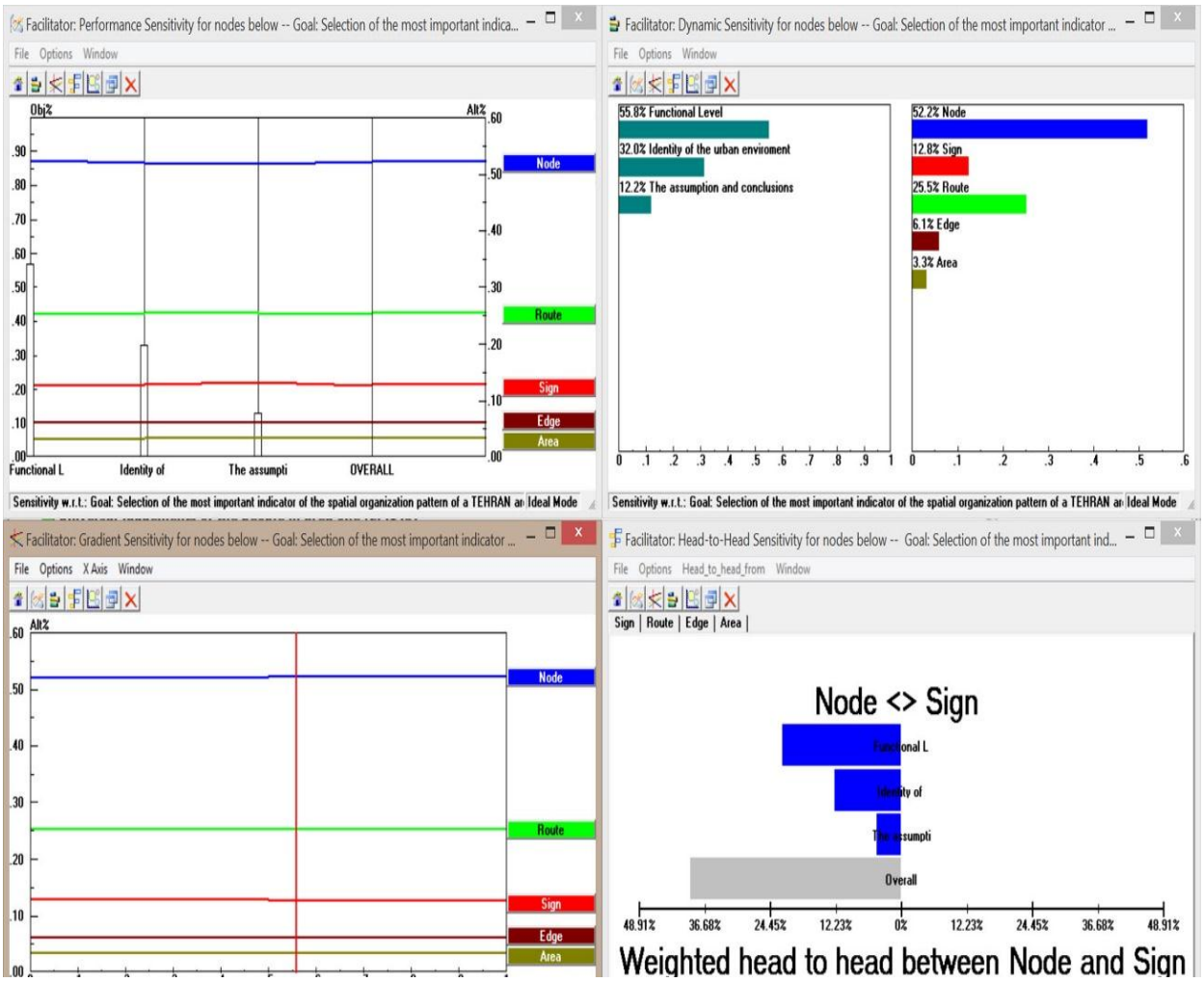


Fig. 9. AHP Results Diagram

7. Conclusions and Suggestions

Nowadays, in Iranian contemporary cities, the issue of paying attention to the mentality of citizens, who are the owners and main residents of cities, has been neglected, most of these cities, without considering the social, political and economic pattern fundamentals of society, explain the pattern of the perceptual organization, which has nothing to do with the reality of society, consequently, urban planning, regardless of the climate and foundations, causes unreasonable and meaningless phenomena in the urban environment. Tehran as the capital of Iran has undergone many changes in the urban planning and management systems in the last few decades, which has caused a lot of disruptions to the pattern of the urban perceptual organization, many contemporary modernists emphasize new ideas and logic on the present and the future and call the past and the history of the identity of Iranian urbanism as absurd. This growing trend, which has become even customary with personal interests and anti-urbanism, has been targeted by the visual beauty and popular affiliation and has caused a lot of disruptions to social and two-sided interactions of human with environment and environment with a human. The present study, with consideration of one of the most important samples of this city, that is, Tehran area one, by studying the existing perceptual organization pattern and theories and critiques of this problem, find the solution of problem in the theory of pattern language structure by Christopher Alexander and after studying data on the field findings and Geographic Information System, he explained the pattern structure of the language in accordance with the mental images of the people. Based on studies, among indicators of urban perceptual organization pattern mentioned by Kevin Lynch (nodes, signs, path, areas, and edges), the desired popular indicator in mental images is nodes, that is, by overlapping GIS maps and indicators mentioned by people, the points are shown in red (nodes) have the highest amount of range of access, gravity, intersection, proximity and direct paths to your own. Also,

in the analysis of Agraph, Tajrish Square of Tehran has been introduced as the highest value of integration, in fact, it is not located in the path index section but it is located as a node by popular mental images mentioned in sketch maps. Since, pattern language structure should be explained based on the public participation and their sense of beauty in the urban environment, for this reason, they have been filled by interviewers after sketch maps and mentioned patterns are obtained after the analysis of the above-mentioned formats. Patterns mentioned by Alexander, since they are explained based on culture and social, political and economic patterns of Oregon city of the US, in order to operate in Iran, need to be formed based on the Iranian patterns, according to which the pattern structure language of this area has been formed. The current research has shown the way for other research in other areas. Since the results are not just verbal theories, it also has an operational aspect that can be used by research teams in other parts of Iran as well.

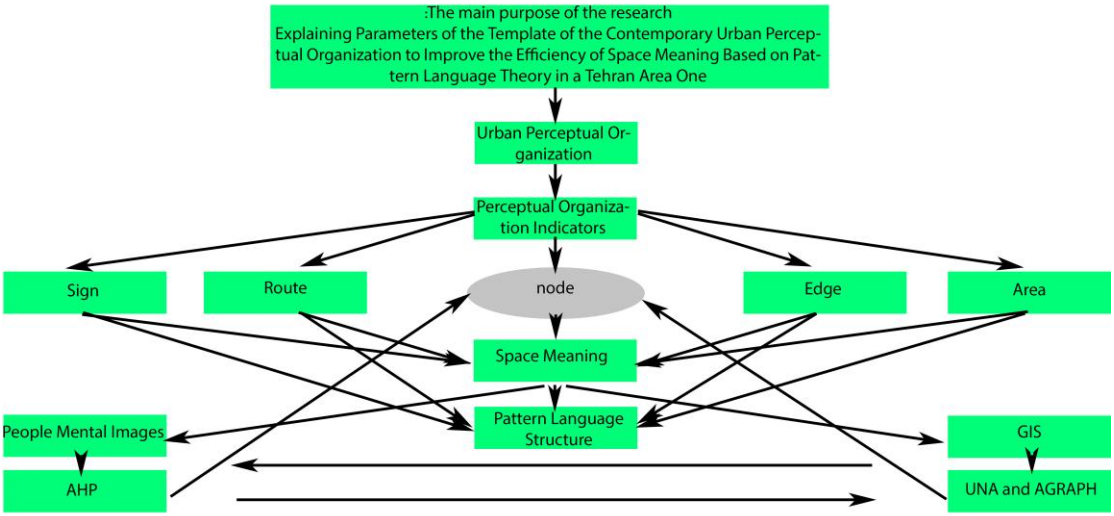


Fig. 10. Research Conclusion

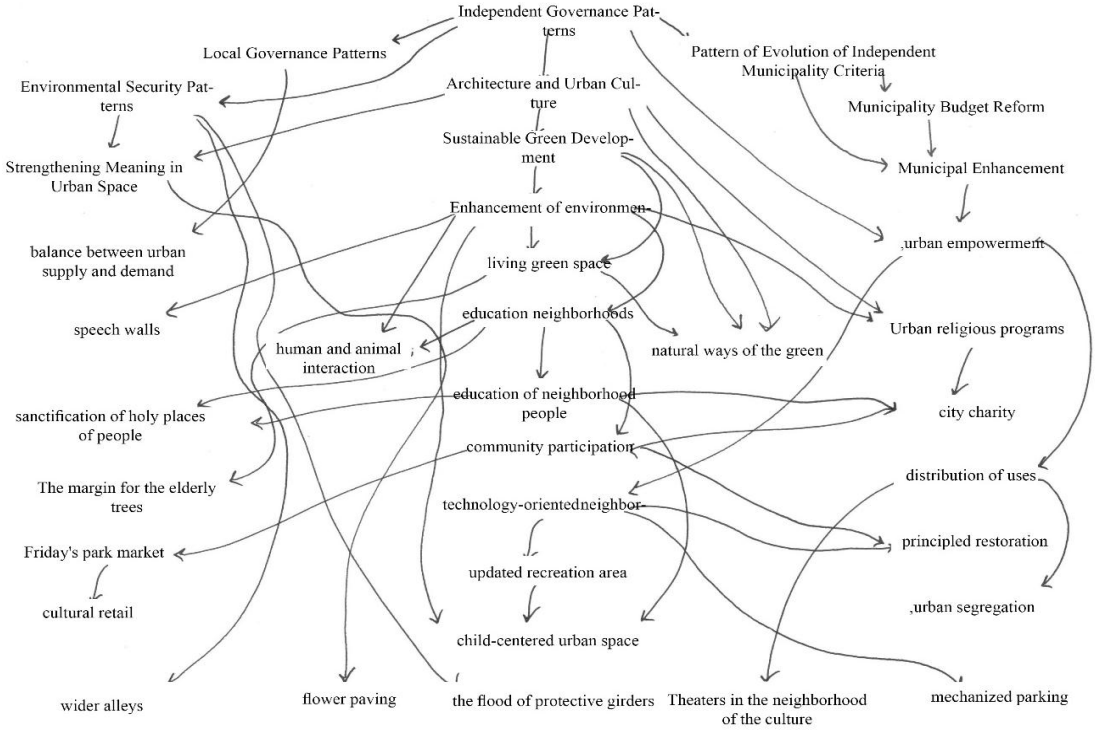


Fig. 11. Summary of the pattern language structure of district 1 of Tehran that results from people's mental imagery in hierarchy format based on the information that concluded from cognitive mapping forms

In Figure 11, the mental imagery of the people based on a default format of cognitive mapping, are concluded and in the form of a pattern, language structure has been shown below. These patterns are the one that people mentioned it during interviews by 11 groups in 27 districts and are organized by the author in the hierarchy structure. What is Alexander mentioned in Pattern Language Book, he concluded over hundred of patterns based on a research on Oregon City in the USA but based on dataset that gathered during the field studies in area one of Tehran, these structure of pattern language mixed with Iranian beliefs and thoughts and then reconsidered and become the structure in Figure 11.

So as the Figure 11 on top shows some of the patterns that are been mentioned in Alexander's book can be considered for area one but the main important issue was the new patterns that are unique and pure for this area cause the beliefs and thoughts that are different with the west.

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