Model of Perceptual Concepts and Related Physical Principles for Participatory Local Center: Chizar local community in Tehran as a case study

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Abstract

Local participation is a solution for getting decreased the social relationship that is presented by the recent urbanism paradigms and sustainable development. The main standpoint of this paper was to analyze the citizen's perceptual concepts as a missing link between the physical principles of local center and public participation. The selected perceptual concepts were territory, legibility, security and etc. This paper chose one of the regions of "Tehran" as its case study. The methodology of this paper is factor analysis via questionnaire. The paper concluded the perceptual concepts with their similar physical principles that more effectively relate to the participation.

Keywords: Public Participation; local centre; perceptual concepts; sustainable development

1. Introduction

Public participation is today’s main issue in urban planning that specialists like Oosthuizen, Arnstein and Cao Tri considered theoretical and philosophical dimension of it before the year 2000. On the other hand, Sustainable development is a 21st century paradigm which plays a significant role in urban planning and has introduced new aspects in urban spaces and public participation. A community-based planning is one of the derived aspects of this approach that emphasizes both on the public participation and local scale. Combination of these two main principles; local community and participation; turns into local...
participation. Furthermore, the reasons of selecting local scale for this study will be described. The first reason derives from suitability and second reason is related to localization of participation. Considering the history of Iranian culture in participation is necessary for localization of participation. Survey demonstrates that participation in local scale is compatible with Iranian culture. To improve local participation considering local center is essential.

In sections 5, appropriate physical principle which could encourage people to participate need to be determined. Thus, people perception of spaces and their behavior with environment should be considered. Moreover, role of perception in participatory local center, the perception process respectably will be described. To assess people’s perception; considering literature review; the author will selects perceptional concepts such as territory, security, socio-petal and memorabilia.

Based on the literature review, many studies focused on spatial issues that could improve public participation. Besides, many studies indicate that some perceptional concepts like security and others could improve the social interaction. The gap in the literature review that found is the relation between the perceptional concepts with participation. The new idea in this paper is considering all these perceptual concepts holistically in one package in relation with participation. This idea refers to this fact that a person percepts all these perceptual concept simultaneously, and his behavior based on all in one pack. Furthermore, this study has not done in Iran and especially in selected case study. Therefore, the paper's basic objective is to show the model of those local centers that positively impact the perceptional concepts of Iranian citizen and finally improve their social participation. In other word, purpose of the study is finding the spatial principles that could improve the selected perceptional concept (including legibility, sociopetal, etc.). Therefore, the participation will increase by these intermediate variables. The hypothesis of the paper is that some of these perceptional concepts have more importance to improve social participation.

After that, the site will be introduced. In the fourth section, author will explains the methodology of the paper that is factor analysis. The survey instrument utilized in this study will be a structured questionnaire; thus, the result of the analysis considering four perceptional concepts will be represented in the fifth section. In the end, the main conclusion of this article will be mainly focused on preference of those physical principles that more effectively relate to the selected perceptional concepts.

2. Public Participation

Participation in urbanism, established as a new approach after failure of imperial planning approach at 1960s (Oosthuzen, 1984). The most important part of participation issue referred to theoretical and philosophical dimension of planning such as social democracy, democratic planning and sustainable development, rather than urban planning and design (Cao Tri, 1988). The public has the right to know and participate in making decisions, particularly those which potentially affect the communities in which they live and work (Mohamed Ikhwan, 2013, 90). As a key code, citizen participation has given a way to obtain success in the decision-making process. Researchers like Arnstein (1996) have appropriately illustrated that programs have succeeded in which more people are involved in the planning process (Sarvarzadeh, 2012, 215). Social participation has been defined by Gamble & Well as the active, voluntary involvement of individuals and groups aimed at changing problematic conditions in poor communities (Okunola & Amole, 2013, 48).

A community-based planning is derived from sustainable development. In community-based planning, two keywords of the paper such as local-level and public participation have an explicit role. This approach emphasizes on bottom-up planning and community and decision making based upon local communities (Fridman, 1993, 482). This approach advised participation in the decision making process and cooperation among actors such as people and community involved in the process, de-emphasized the control function of government as traditionally (Mabogaunje, 1996). The community-based program is
not a short term intervention program. It has been conducted for more than seven years (Laurens, Joyce Marcella, 2012, 373).

3. Selection of Local Scale

Selecting local scale in this paper has two reasons. The first reason relates to sustainable development that is the fundamental theory of this paper. This approach includes community-based planning and emphasizes that uniqueness of each rating system is distinguishable from the aspects of local context (Abu Bakar, 2013, 490). The second reason relates to localization of participation. A Review of Iranian historical culture about local participation shows that local scale is the best scale to adapt with Iranian culture. A traditional Iranian didn’t believe in over local space as a public space and seen it as an administrative space. From an Iranian aspect, spaces which belong to the whole of the tribe are public property, and it differs from official space. Although, he respected public properties in local scale and tried to conserve it, he didn’t have a sense of community to over local space because he perceived it as an administrative space (Pakzad, 2003, 35). Nowadays, central squares also have the potential to involve with public participation, but because of historical –cultural support about local community centers, this scale is selected in this paper.

3.1. Local public space

Many studies indicate that public open space is one of essential urban environment elements which give the positive contribution to the quality of life (Nasution; 2012, 59). The role of public space in integrating and unifying of urban space is visible, but the task of encouraging people to have social interaction and high quality of life is vital. Loosing public space resulted in social problems which its’ name is up to down movement and decay of social interactions (Atkison & Blandy, 2005, 179). Public spaces in local level should have potential to make opportunities for people to have social interaction, so create local community sense (Madanipour, 2008, 166). Public local space especially in traditional Iranian cities has an important role and specific definition. It should support the daily and short-term needs of local citizen and provide economical installations such as some small shops, mosque, public bath and reservoir. This local center is a place for social interaction and appearance of cultural values (Parsi, 2006, 75-77). The participatory local center is an issue for current research derived from the literature review. On the other hands, a local public place is a reference issue; in order to involve the local community in the decision of particular local key issues and define the appropriate priorities within the goals and strategies previously settled (Amado, 2003, 601).

4. Role of Environment and Behavior in Participatory Local Center

Environment perception has a principal role in analyzing activity systems in physical spaces. The physical appearance and users’ behavioral and perceptual response can provide a data in the area of design (Sahachaisaeree, 2012, 48). The manner of perception effects on his behavior, so it has a relationship with the level of social interaction. In the end, based on co relational argument, understanding of citizen has a meaningful relation with his participation. Thus, this paper takes a perceptual approach for participation topic.

The perception process could help to find how we could analyze perception. Many phenomena that are named reality occupy our environment. A person could perceive a part of it depends on his physical position and mental situation. These perceptible phenomena which have external existence are exactness. The person brings reality with his sense into his brain, during the perception process and changes it to exactness. Then, the person assesses this exactness and makes an imaginary from these phenomena. After that, the person doesn’t react based on the reality and exactness but based on imaginary and experiences.
(Pakzad, 2010, 47). The notable point is that people reach imaginary based on their past experience and therefore they don’t communicate the same with their surrounded environment. These differences are more in a different culture (Hall, 1969). Thus, when the participatory prescription for Iran is localized, paying attention to Iranian’s perception is necessary.

5. Perceptional Concepts

Thoughts, concepts and human ideas enriched a built environment. We predicate concepts, meanings and symbols to represent exactness (Bartuska, 2007, 33). Canter believed that when we could abstract a perception of space into recognized component, perception considered as a reference for behavior (Canter, 1983, 659-98). In this study, perceptional concepts are applied for measuring public opinion. This approach is set to make sense of public space and to create participatory local community center. So at the first the perceptual concepts which have existence in the collective unconscious and their culture are involved in that were found. Although it has the same index in different cultures, but the priority at these could be different. In this paper citizen’s perceptional concept are collective via questionnaire and we measure and priories concepts indirectly.

5.1. Legibility and similar physical principles

Lynch in his book “The Image of City “argues that how people orient themselves in cities. A legible mental picture gives people an important sense of emotional security; it is the agenda for communication and conceptual association and increases the deepness and intensity of everyday human experience (De Lange, 2009, 1). Lynch in his other books “A Theory of Good City Form” mentioned that legibility is one of the elements of meaning, which has a definite relationship between form of the habitat and nonspatial values and concept. Legibility is the criteria for identification and sustainability of the local community (Chapman, 1996, 178) landmark is another similar principle which could help people for orientation.

5.2. Territory concept and similar physical principles

The physical distinctiveness from surrounded area defines Territory concept in architecture and urban plans (Carmona, 2008). Some expert like Twigger Ross and Uzzell develop Relf theories and emphasize on territory by the place distinctiveness. One of the similar physical principles with territory is hierarchy which could help to locate territory correctly (Bahrain, 1999, 20). Private and public spaces hierarchy could categorize in public, semi-public, semi-private, private spaces (Chermayeff et al., 1996). A neighborhood is a transitional space between city and home, as a public-private relationship in the city. Another physical principle is access hierarchy that means access in the local community is not just commute, but also is a multifunctional space (Chapman, 1996, 112-114). Considering different functions
in access including access to transportation network, access to a different type of facilities and activities and access to open space could increase enrichment of the urban environment. The level of accessibility and circulation correspond with visibility of space, and its name is physical and visual permeability (Tibbalds, 2001). Another similar physical principle is threshold. Always, there is a transition space from one territory to another territory that is often an attractive place and this concept name threshold. The form of entries in all places and spaces has an important role. Therefore, an element with name of the gate is presented which has the appearance of physical, religious, ethnic territory (Bahrain, 1999, 20).

5.3. Security concept and similar physical principles

A careful study of relevant literature indicates that some factors have been associated with perception of safety in residential neighborhoods. These are social participation and sense of community (Okunola & Amole, 2013, 48). The level of security and social control on space is a factor that effects directly on increasing sense of community and active use of space (Bahrain, 1999, 26). With a sense of community and place, there was a wish to take responsibility for more than their immediate homes. (Laurens, 2012, 381).

The similar principles with security concept include visibility (Crowe, 2000), transparency, defining territory, form, good combination of different uses, Aesthetic values, proper lighting and evening activities. Another principle that could help to security is mixed-Use, because it creates safe and productive environment in streets and individual buildings. The reason of interest and safety of public realms is that it could invite different people in different time for different aims. This affair provides the informal control on public space (Tibbalds, 2001, 54).

5.4. Sociopetaloid concept and similar physical principles

Hall categorized environments in socio-petal and Socio-fugal Environments. Socio-petal environments encourage social interaction and Socio-fugal environments decrease it (Hall, 1982). Environmental psychology researches show that a good organization of space and proper spatial arrangement could increase social communication (Lang, 1987).

One of the similar principles with sociopetal concept is creating centers for gathering. An area or center that is around a fountain, artwork or historic buildings is needed for creating a place that has potential for gathering people. These gathering centers possibly have developed Local community centers are social central points. Another similar principle is creating a place for stay. Stay does not mean complete elimination of movement; however, it decreases the dominance of trough traffic (Pakzad, 2010, 118). For encouraging people to stay specified elements including facilities for resting, considering various and multifunction areas for sitting are needed (Gehl, 2002, 81).

Integration is one of the similar principles that provide a unique mental map of the whole space for citizens. This integration needs connectivity of space and avoidance of extra cutting down of space. In this regard, connectivity of physical elements and activities should be considered (Pakzad, 2010, 119). Pedestrianism is a fundamental for creating sociopetal, and safe public spaces. Another principle is diversity; because it helps people with different characteristic and dissimilar circumstances to select a suitable place for resting.

5.5. Memorabilia concept and similar physical principles

If space is memorable, it becomes a place. The mental image is a product of both immediate sensation and the memory of experience, and it is used to interpret information and to guide action (Lynch, 1972, 4). Adopt with tradition and recognizing the root that constitute our identification is necessary for having memorable space. This approach to tradition derived from this definition: Tradition is effects from past
that flow in our today’s public life (Pakzad, 2010, 61). In addition, memorable places in the local community like different path with diversity of activities and spaces for the religious ceremony could develop a sense of community.

6. Chizar Community as Selected Site

Chizar local community locates in the northern districts of Tehran. From the beginning, the border around this local community has formed the triangular shape. Chizar is among other old local communities of Tehran; however, it has a high religious privilege, as two famous shrines are attracting pilgrim and gives a particular identity to Chizar community. Fertile soil and two aqueducts are other reasons of forming this community.

6.1. The Survey Instrument and Data Analysis

The survey instrument utilized in this study was a structured questionnaire with rating scale. The people who attend in Chizar local community center and also they are familiar with it; answered questionnaires. 60 persons answered the questionnaires. The questionnaire includes two sections. The first section contained questions relating to the demographic characteristics of the respondent. The second part was related to perceptional concepts of citizen that divided to five parts. Each part related to one of the perceptional concepts included legibility, territory, security, sociopetal and memorabilia concept. Each part has questions that related to similar physical principles. These items were determined based on literature review and observation of Chizar local center. Data analysis was conducted using the SPSS Version 18.0. For testing reliability of the questionnaire, Cronbach's Alpha is calculated .796 by SPSS. Thus, the reliability of the questionnaire is approved because it is over .7.

6.2. Methodology: Factor analysis method

When we face a high number of variables, the method of factor analysis is used. Factor analysis is a class of procedures used for data reduction and summarization to identify new, smaller uncorrelated variables. In this method, factors are identified through rotating component matrixes that explain the correlations among a set of variables. Each factor has Factor loadings that mean Correlations between the variables and the factors. In this paper, the models of each five perceptional concepts are derived via factor analysis. The limitation of this method is that the variables should have correlations with each other. So,
if it isn’t approved, this method is not suitable for research. The examination of this is Bartlett's test. Another test is the Kaiser-Meyer-Olkin (KMO). If the measure of sampling adequacy is small, then the correlations between pairs of variables cannot be explained by other variables and factor analysis may not be appropriate.

7. Results and Discussions

7.1. Legibility Perceptual concept

Among 6 criteria that are considered in the questionnaire for legibility perceptual concept, three factors are derived from Rotated Component Matrix. The first factor includes orientation, landmark and visibility. The factor loadings of every variable are similar to the mean. The presence of these three variables in one factor shows that these Physical principles perceive as one factor in legibility concept. The second factor includes particular building and graphical signs. Being correlated these two factors shows that detailed physical variables categorize in one factor. The third factor relates to the variable that measures legibility itself in a simple way from people. It has the highest factor loading .927 that It means people completely perceived this variable as one factor and has priority.

Table 1. Factor Analysis of legibility for Chizar local community center

<table>
<thead>
<tr>
<th>Physical principles</th>
<th>Rotated Component Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>legibility</td>
<td>.142</td>
</tr>
<tr>
<td>orientation</td>
<td>-.763</td>
</tr>
<tr>
<td>Landmark</td>
<td>-.753</td>
</tr>
<tr>
<td>Visibility</td>
<td>.697</td>
</tr>
<tr>
<td>Special building</td>
<td>.330</td>
</tr>
<tr>
<td>Graphical signs</td>
<td>.451</td>
</tr>
</tbody>
</table>

7.2. Territory Perceptual concept

three factors are derived from Rotated Component Matrix, which relates to territory. The first factor includes hierarchy of spheres, threshold, and connectivity of realms and Distinctiveness via fence, sign and etc. We could name it understanding the different realms by architectural plans, because all including variables in this factor relate to architectural designs that could help to distinct public and private realms from each other. Distinctiveness via fence, sign... has the highest factor loading in this factor. The author believes that the reason is that it is the easiest factor to perceive. Threshold and two variables about private space for resting are included in the second factor. Finally, the third factor includes just distinctiveness of private and public. This variable measures territory itself in a simple way from people. It has the highest factor loading .927 that means people completely perceive this variable as one factor and has priority.
7.3. Security Perceptual concept

The variables of security are 17 items, and the factors are 6. The first factor includes pedestrianism via 2 variables and similar factor loadings (factor loading .856 and .884), lighting and Attractive street frontages. The central issue of this factor is pedestrianism, so we called it “pedestrianism.” The other two factors are some detailed architectural plan as lighting and Attractive street frontages. Because of being correlated these variables with pedestrianism variables and existence in one factor, we derive that they could improve pedestrianism. The second factor measures security via 4 questions that indirectly ask from people. It could be named “measuring security.” The third factor includes Connection other way to Main Street to improve security of bystreet, scale, and form and Attractive Street frontages. The fourth factor includes Visibility from building and open space or the ground floor of buildings. These variables called “Eshraf,” in Persian culture. So we name it “Eshraf.” The fifth factor includes Connection to Main Street, define territory to reduce the presence of criminals, visibility. These are some physical principles that could decrease criminals; therefore we name this factor “Physical principles to reduce criminals.” The sixth factor includes Diversity in function and Diversity in access. We name this factor “diversity” as it is a primary principle in architecture to increase the number of people and consequently improve security. The highest factor loading with score .937 in security concept belongs to Diversity in function. It means that this variable has priority to improve security.
7.4. Socio petal Perceptual concept

Six factors relate to sociopetal concept. The first factor includes two questions about measuring sociopetal indirectly from people, number of people, Active use and Diversity in function. We could name this factor “measuring sociopetal,” because we could interpret the meaning of sociopetal from these variables. The second factor includes flexibility with two different questions, diversity and flexibility. It could name physical principles. The third factor relates to pedestrianism by means of three questions. The precisely accompanied these three with each other shows that this factor is correct. The factor loading of these is also similar. The fourth factor includes various groups of user, Event ability and gathering centre. Its name is a social dimension of sociopetal. Presence of gathering centre in this factor shows that although, gathering centre has physical meaning, but people perceive it as a social dimension. Maybe the social dimension of this is more perceptible than the physical dimension. The fifth factor relates to facilities for stay. The highest factor loading with score .925 belongs to stay. It means that facilities for stay have priority in Chizad local centre.

Table 4. Factor Analysis of sociopetal for Chizar local community center

<table>
<thead>
<tr>
<th>Perceptual Concept</th>
<th>Physical principles</th>
<th>Rotated Component Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Socio petaloid</td>
<td>.532 .292 -.303 -.032 .026</td>
<td></td>
</tr>
<tr>
<td>Socio petaloid</td>
<td>.605 -.030 -.123 -.342 .271</td>
<td></td>
</tr>
<tr>
<td>Number of people</td>
<td>.756 .094 .339 .029 .006</td>
<td></td>
</tr>
<tr>
<td>Active use</td>
<td>.848 -.035 -.043 .032 .022</td>
<td></td>
</tr>
<tr>
<td>Various group</td>
<td>.084 .190 .442 .536 .425</td>
<td></td>
</tr>
<tr>
<td>Diversity in function</td>
<td>.764 .102 .137 .222 .060</td>
<td></td>
</tr>
<tr>
<td>Event ability</td>
<td>.070 -.034 .144 -.840 .219</td>
<td></td>
</tr>
<tr>
<td>flexibility</td>
<td>-.106 .643 -.089 -.339 .360</td>
<td></td>
</tr>
<tr>
<td>Stay</td>
<td>.095 .057 .085 .003 .925</td>
<td></td>
</tr>
<tr>
<td>pedestrianism</td>
<td>.153 .054 .777 -.144 .120</td>
<td></td>
</tr>
<tr>
<td>pedestrianism</td>
<td>-.007 .069 .770 .022 .389</td>
<td></td>
</tr>
<tr>
<td>pedestrianism</td>
<td>-.010 -.119 .700 -.025 .008</td>
<td></td>
</tr>
<tr>
<td>Gathering center</td>
<td>.251 .034 -.109 .678 .347</td>
<td></td>
</tr>
<tr>
<td>diversity</td>
<td>.034 .887 -.028 .005 -.048</td>
<td></td>
</tr>
<tr>
<td>flexibility</td>
<td>-.046 .774 .087 .092 .048</td>
<td></td>
</tr>
</tbody>
</table>

7.5. Memorabilia Perceptual concept

The factor analysis method derives three factors for memorabilia concept. The first factor measures the level of memorabilia in place with various questions including familiarity, being memorable and Past and today memory. We could name it “measuring memorabilia.” The highest factor relates to being a memorable place. It means that this place is memorable. The second factor includes just one variable that is Adaption with tradition. The third factor also includes just one variable that is Diversity in use. The second and third factors are Physical principles that could improve memorabilia concept.
8. Conclusion

Local Public space is a social capital that could increase local participation, specifically if architectural principles of it is adapt with people perception. Therefore, Perceptual approach is chosen to find suitable physical principles that promote participation, because people’s behaviour and their participation relate to their environmental perception. Besides This paper focused on four selected perceptual concepts that promote social interactions, finding related physical principles to these concepts is another purpose of the study. Analyzing data that is collected from the questionnaire via Factor Analysis conclude that the territory, security, sociopetal and legibility concept based on citizen understanding have distinct factors. Each of these factors constitutes from equal indices. Related factors to legibility are “physical principles”, “cognition of different realms by architectural planning” and “threshold.” Although the loading factor score of measurement legibility shows that it perceives in Chizar, but some physical principles such as visibility could improve legibility. Due to the higher amount of variables of security than other concepts, the number of relevant factors to security is higher. Related factors to security are named “pedestrianism and related physical principles,” “measuring security,” “visibility” or “Eshraf, Physical principles to decrease criminals, diversity and significant physical principles. In the end, related factors to sociopetal include “measuring sociopetal,” “pedestrianism,” “social dimension of sociopetal,” “stay,” “significant physical principles.” The relevant factors to memorabilia concept include “measuring memorabilia,” “Adaption with tradition” and “Diversity in use.”

These data analysis conclude suggestions about the appropriate architectural solution for the case study. It is recommended that focusing on visibility, pedestrianism, diversity in use and facilities for stay could improve the current situation, and consequently, it could increase participation. These are interfaces between the perceptual concepts and have priority. It is suggested that the most places in public local center should have the potential to be seen from any place such as buildings, streets, pathways and... The form of space, depth of space and vicinity to the busy place is important for the implementation of this. In spite of the fact that many architectural solutions are available for improving pedestrianism, but lighting and Attractive street frontages are the best factors in this case study via data analysis. Creating different places for shopping, eating, resting and playing could improve diversity in use, therefore, this factor causes both security and sociopetal is percept better by people. The facilities for stay are the best solution for improving sociopetal in this case study. As it mentioned before in the literature review, facilities for stay include facilities for resting, considering various and multifunction areas for sitting(Gehl, 2002, 81) and also places with good scenery or around a fountain or sculpture. Further studied could research on another local community in Tehran that assume the participation is not acceptable in it. Therefore, it is possible to compare these two case studies. Another suggestion is to
select more concepts like privacy, liveability, meaning, identity and, etc. Another suggestion that is very close to this paper refers to rating the factors that found here.

References


Bahraini, H, & Tajbakhsh, G, (1999), Concept of Territory in urban space and the role of urban design on it, Journal of fine art, Tehran University Publication, Tehran, 6, 18-31


Gehl, J, (2002), Public Spaces and Public Life, City of Adelaide Planning SA, Central business districts


Lang, J, (1987), Creating Architectural Theory: The role of behavioral sciences in environmental design. :


Lynch, K. (1972), the openness of open space, Arts of environment. Aidan Ellis.


Oosthuizen, Andries J G, (1984), public participation in the planning and development of urban area, from cities, communities and planning in the 1960 England Gower publishing


Pakzad, J, (2010), architecture & urban design terms, proceedings, book 2, Armanshahr Publisher

arsi, (2006), The social meaning of local community in Qajar period, journal of architect, Tehran, No 37


Sarvarzadeh, Seyed Koorosh; Abidin, Syed Zainol, (2012), Problematic Issues of Citizens’ Participation on Urban Heritage Conservation in the Historic Cities of Iran, Procedia - Social and Behavioral Sciences, no.50, 214 – 225