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Mathematical Models for Designing the Cultural Center of Tehran with the Approach of Popularity among People

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Abstract. The ever-increasing popularity of machine life among human beings, over-utilization of vehicles, avoiding urban public areas as well as neglecting social, cultural and identity values embedded in such public areas have all caused the loss of importance and real role of some of such public areas in terms of a variety of urban aspects. Designing public areas in different urban sizes has been a noble effort as a means to meet the social needs of people for public areas. Therefore, the purpose of drawing up this study includes identifying and ranking influential factors on designing cultural center in Tehran City. This study is considered practical and descriptive-surveying in terms of purpose and data collection, respectively. Also questionnaire has been used as the means for data collection, while library and field studies have been conducted to develop such questionnaire. Statistical population of this study included 10,000 pedestrians either passing through or those who were present at a certain area of Tehran City, out of whom, 384 were selected as statistical sample and for which simple random sampling was applied and therefore, five physical, social, operational, economic and environmental factors were used as a means to measure influential factors on designing cultural center. In order to do so, 45 questions were drawn up considering the relevant aspects and were further distributed among members of statistical sample after validity (content validity) and reliability (Cronbach's Alpha). The structural equations modeling application results in LISREL software environment demonstrated the positive and meaningful effect of the aforementioned factors on designing cultural center. On the other hand, of environmental factor was more influential on designing cultural center in comparison to other factors. Later on, fuzzy TOPSIS technique was applied to rank all influential elements on designing cultural center. Considering the results, "adjoining nature and natural elements", "existing green area in enclosure" and "facility of study" were selected as the most important factors.

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1. Introduction

Sociable public area designing as a place for social interactions to develop sustainable urban areas is considered as one of the most important purposes considered during the recent decades by many people involved in urban management. However, for the time being, some of these areas have faced declination in terms of their importance and role in different urban scales due to a variety of reasons, inter alia, tendency of people to machine life, and frequent using vehicles and changed appearance of the cities due to dominance of

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such means on urban areas, increased pace of people traversing, isolation of people from urban public areas, ignoring cultural, social and identity values embedded in urban areas as well as ignoring the protection and promotion of social life during the past decades [16].

Often the urban areas fail to meet one's needs as a sociable person and most people considered urban areas merely as a way to pass through. For the time being, due to absence of citizens, urban areas have lost their social aspect gradually and in fact, these areas only encourage people to pass, instead of attending and establishing social interactions, and now, the feeling of belonging to the society, experiencing interacting with people, face-to-face meetings and eventually, socializing are not occurred correctly. However, evidently, using public urban areas is considered as an important part of people daily routines and public areas act as places where people meet each other [3].

The main performance of urban public areas includes providing a basis for public presence, and therefore, its social and cultural aspects are of special position [18]. On the other hand, human- as the most important factor in dynamism of urban public areas- requires proper basis for effective presence in these areas. Providing necessary opportunities to acquire social experiences and meeting social needs of people require physical area availability and public area is seen as a huge capacity to meet such aspect of people lives in urban societies [5].

Mankind has always met his natural need for socializing through developing certain urban structures; such areas are considered socially active and enable face-to-face interactions for people. Developing and designing public areas in different urban scales available for the public which may meet the needs of all groups of people are included in this group. In this regard, during recent years, urban public areas, as the first place for socializing purposes, have been considered by several sociologists, urban planners and designers. Local public areas in neighborhoods shall be able to provide the people with the opportunity for socializing and therefore, generate the local alignment feeling in them [13].

In our country, several efforts to improve sociability have been specially manifested in the form of designing and developing public areas in different urban scales. Developing local parks and academies, etc. are some examples of these efforts. Apart from defined functions, these areas played a major role in developing and improving sociability of locals and managed to regenerate the missing loop among those people. On the other hand, it has directed people to exit their homes, releases individualism and returns them into the society to some extent. Choosing such places by the people to pass leisure times, socialize, etc. are significantly related to the physical-performance and social features of public areas developed in these scales [20]. Therefore, this study tries to identify and rank the factors affecting sociability-oriented cultural center designing.

Study theoretical literature culture

Generally speaking, culture is referred to as intellectual advances and thinking depth of a group of people, tribe or nation throughout the history and includes a set of values, norms, customs, religion, traditions, literature, social rules, art and architecture, tools and objects related to a certain nation or tribe. Different definitions on culture may be classified into the following groups in terms of certain emphasize originated from their applications: (1) Historical definitions, relying on social heritage throughout the history of a society; (2) Psychological definitions, relying on models and methods to facilitate of adaptation with the environment and society; (3) Structural definition, in which due emphasize is made on those developed by human society; (4) Explanatory definitions also emphasize on culture composing components [11].

Cultural area and its collective nature

Public area territory is defined as all the areas usable and accessible by different persons. Considering the classifications given on physical, social and cultural territories, public areas include: (1) external public areas; (2) internal public areas; and (3) semi-pubic external and internal areas, while cultural areas are classified as internal public areas. Semi-public internal areas are defined as follows: internal public areas of theater of cities, museums, libraries, etc. together with public means of transportation such as bus stops, train stations, airports, etc. [2]. Considering the foregoing definitions and whereas cultural centers are classified as public areas, the social aspects of these areas may be recognized through extending and reviewing theoretical fundamentals addressed in the field of public areas [1].

Public areas are also known as thinking open areas, as these areas have been designed and planned for different, unexpected applications and fulfilling different activities, to meet the citizens' tendencies to achieve their needs and wishes [21]. On the other hand, modern scholars consider public areas as public territories, referred to as socializing premises and environments. These territories act a field for behavior and display a common and neutral basis for social interactions, mixing, connecting as well as a stage for social knowledge, academic progress, and exchanging information. Public buildings and areas shall be studied in terms of sociability as a basis to improve communications and growth of social interactions of people. The conducted studies indicate that public areas may well meet public needs and wishes when proper analyses have been made to complete their designing process [14].

Socializing models and developed architectural area capabilities are of high importance in public urban areas. The main reason for that is the fact that socializing and dependency of people on developed social areas are closely linked. In sociable public areas, meeting is enabled, these are used by different groups, are available to local users directly and therefore, considered as locations belonging to social life and identity [12]. Social life provides an opportunity to be released from daily group tensions, passing leisure times, socializing, and gatherings of people in the society as well as a basis to presence and freely expressing in such areas. Features on generation and continuance of social life in proper public areas include socializing [19], placement of people in different groups, social security and encouraging for increasing tolerance of different groups in the area, increasing sociability [14] and an active and refreshing area. Sociability in public areas is based on people need for the felling of social belonging and interacting with each other, which supports a successful social area [5].

Sociability

Hull (1997) has studied certain concepts such as sociability as a means to investigate area oriented socializing. In his studies, the area has been classified into two groups of sociable and unsociable areas [12]. Sociable areas encourage and motivate social and group behaviors, while unsociable areas limit socializing. Using sociable area, society-oriented areas, "gathering areas", or "unsociable or dispersing areas" expressions indicate the area quality which gathers the people together or separates them from each other [17]. In organizing sociable area, people are enabled for face-to-face contact and distance of interactive areas in motion areas or pausing between social-consultative distances decrease. On the other hand, unsociable organizing results in avoiding socializing; back-to-back benches are examples such unsociable organizing [15].

Mutual connection of all cultures provides people with wide options and an opportunity to be present in different fields, simultaneously. As in scientific researches model, while the phenomena are not separated from each other, and are considered as a part of an extensive collection, there is no choice but to take a diminished sample out of the same as a

means to receive different aspects of a phenomenon in detail. On the other hand, two types of simultaneous operations are made in cultural field. First, the specific culture of one's own is recognized and then in any way possible to embed such culture in an unlimited territory, where all the cultures are mixed together as a means to create group memory, belonging to the entire humanity [6].

Like any other manmade phenomenon, also city totally manifests the human presence and thought and symbolizes values, living traditions and norms seen in the thoughts of people, who both have common cultural principles due to belonging to a certain cultural territory and eventually reached a certain level of correlation and agreement, and therefore, have especially formed their place of common residence. In other words, city in its real meaning, which is defined as where urban society lives, formed and is meaningful through people creating it and through direct relation with culture, values, beliefs and social features of members of a certain society [9].

2. Study methodology

This study may be considered practice and descriptive-surveying in terms of purpose and data collecting, respectively, and whereas a certain society is studied, it is also considered as a case study. The chosen site in Tehran City is located to the northwest corner of Hejab St. and Keshavarz Blvd., introduced as wasteland in comprehensive plan and with urban area application in detailed plan. Whereas this project focuses sociability in cultural centers and urban areas, it appears the chosen site is capable in terms of quality studies in the field of attracting people.

Statistical population of the present study includes pedestrians within the said area. Considering the conducted takings, 10,000 persons passed through and were present at this area within a certain period of time. Evidently, sample size was achieved as 384 persons using Cochran Formula and based on statistical population. The method of filling in the questionnaire was in person, and also sampling was made using simple random method. Library methods (referring to books, articles, archive, the internet, etc.) and field methods (distributing questionnaires) were used in order to collect data. In this study, physical, social, activity, economic and environmental factors were applied to identify factors affecting cultural center designing. Evidently, the relevant questionnaire included 45 items.

Through consolidating all the mentioned procedures, the common items and overlapping were extracted. Therefore, suggested conceptual model is related to designing cultural center and its elements shall be as per the Table 1. In order to determine questionnaire validity, the content validity was used. In order to do so, first of all some elites and professors were consulted and the questions were modified according to their opinions. After that, 20 questionnaires were distributed among the statistical population and all their defects and ambiguities were removed and then the final questionnaires were distributed among all persons.

The following means were used to increase content validity:

- Using the opinions of some professors, professionals and elites;
- Studying similar questionnaires, articles, books and magazines;
- Primary distributing questionnaires among some of the pedestrians and using their opinions for modifying purposes;

Also Cronbach's Alpha method was used to determine reliability of measuring tools. This value for the aforementioned criteria and total questionnaire were obtained as 0.735, 0.781, 0.766, 0.809, 0.792, and 0.775, indicating the high reliability of questionnaires.

Table 1. Study Conceptual Model.

Main Aspects	Sub Criteria	Main Aspects	Sub Criteria
Physical	1.Walking access	Activity	Walking
	2.Accessing walking transport		Facility of study
	3. Manner of physical communication		Watching
	4. Social supervision		Conversation
	5.Comfort in conducting basic activities		Live music
	6.Protection against climatic situation		Painting in area
	7. Separation of pedestrians from vehicles		Restaurant and coffee shop
	8. Bench, edge, kiosk		Selling handicrafts
	9. Enable walking	Economic	Investing
	10. Aesthetic elements in environment		Creating income
	11. flexibility in fulfilling planned and non-planned activities		Creating employment
	12. Obstacles in access path to area (stairs, door, security, etc.)		Cost
Social	13.Daily social interaction		Cultural budget
	14.Suddent social interaction		Increasing job participations
	15.Organized social interaction	Environmental	Energy efficiency
	16.Self-organized social interaction		Cleanness
	17.Area accessible for all age groups		Comfort
	18.Area accessible for all gender groups		Local natural attractions
	19.Area accessible for certain groups		Environmental and health conditions
	20. Protection against crimes		Existing green area in enclosure
	21.Existence of people in groups, different ages and genders		Adjoining nature and natural elements
	22. Quality of people presence (active/ inactive)		Decreased sound pollution

F*uzzy TOPSIS method*

TOPSIS (one of ranking techniques) has always been considered as one of the traditional multi-criteria decision making methods, developed in 1981 by two scholars, namely Hwang & Yoon, as a means to solve multi-criteria decision making problems. Solving

such problems was based on determining ideal points. The chosen alternative distance from positive ideal shall have the shortest distance, and the longest distance from negative ideal [8].

Decision making stages through Fuzzy TOPSIS method include the following:

Stage 1- Calculating w_j weights vector

Stage 2- Normalizing achieved matrix using surveying, which results in a new matrix as follows:

$$\tilde{R} = \left[\tilde{r}_{ij}\right]_{m\times n} \tag{1}$$

$B \subseteq \{1, ..., n\}$ is related to indexes associated to profit (Formula 2) and $C \subseteq \{1, ..., n\}$ is related to certain indexes associated to cost (Formula 3).

$$\tilde{r}_{ij} = \left(\frac{a_{ij}}{d_j^*}, \frac{b_{ij}}{d_j^*}, \frac{c_{jj}}{d_j^*}, \frac{d_{ij}}{d_j^*}\right),\ j \in B \tag{2}$$

$$\tilde{r}_{ij} = \left(\frac{a_j^-}{d_{ij}}, \frac{a_j^-}{c_{ij}}, \frac{a_j^-}{b_{ij}}, \frac{a_j^-}{a_{ij}}\right),\ j \in C \tag{3}$$

Stage 3- Eventually, the weighed matrix is calculated using Formula 4:

$$\tilde{V} = \left[\tilde{v}_{ij}\right]_{m\times n},\ \tilde{v}_{ij} = \tilde{r}_{ij} \otimes \tilde{w}_j,\ \ i = 1,2,\ldots,m,\ \ j = 1,2,\ldots,n \tag{4}$$

Stage 4- Calculating solution for positive ($\tilde{v}_j^*$) and negative ($\tilde{v}_j^-$) phase ideal:

$$\tilde{v}_j^- = \begin{cases} \min\limits_{i=1,\ldots,m} \tilde{v}_{ij};\ j \in B \\ \max\limits_{i=1,\ldots,m} \tilde{v}_{ij};\ j \in C \end{cases} \qquad \tilde{v}_j^* = \begin{cases} \max\limits_{i=1,\ldots,m} \tilde{v}_{ij};\ j \in B \\ \min\limits_{i=1,\ldots,m} \tilde{v}_{ij};\ j \in C \end{cases} \tag{5}$$

$$FNIS = \{\tilde{v}_j^- \mid j = 1, ..., n\}\ \ FPIS = \{\tilde{v}_j^* \mid j = 1, ..., n\} \tag{6}$$

Stage 5- Calculating sizes distances using phase Euclidean distance:

$$D\left(\tilde{a}, \tilde{b}\right) = \sqrt{\frac{1}{4}\left[\left(a_1 - b_1\right)^2 + \left(a_2 - b_2\right)^2 + \left(a_3 - b_3\right)^2 + \left(a_4 - b_4\right)^2\right]} \tag{7}$$

Stage 6- The distance of each alternative from negative and positive ideal points shall be calculated using the following formulas:

$$d_i^- = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_j^-),\ \ i = 1, ..., m \tag{8}$$

$$d_i^* = \sum_{j=1}^{n} d(\tilde{v}_{ij}, \tilde{v}_j^*),\ \ i = 1, ..., m \tag{9}$$

Stage 7- Calculating relative closeness to ideal and ranking (formula 10):

$$c_i = \frac{d_i^-}{d_i^- + d_i^+} \tag{10}$$

Data analysis and hypotheses testing

First of all, Kolmogorov–Smirnov (K-S) Test was used to examine normalizing of data distribution.

Table 2. Results of Using K-S Test.

Variables	Environmental factors	Economic factors	Activity factors	Social factors	Physical factors
Meaningfulness level	0.125	0.103	0.088	0.108	0.079

As observed in Table 2, the meaningfulness level for all study variables is more than study error (0.05), and therefore, data distribution normalizing in statistical population cannot be rejected. Therefore, the initial conditions to use structural equations modeling are provided.

KMO Test

Bartlett's Test is used to study sampling adequacy.

Table 3. Bartlett's Test Result.

KMO Index Value	Bartlett Test		
	Meaningfulness Level	Freedom Level	X^2
0.792	0.000	124	362.725

As seen in Table 3, KMO index coefficient is more than 0.70 and in desirable level, indicating adequacy of sampling for factor analysis.

3. Structural equations modelling and testing hypotheses

In this section, the confirmation results of factor analysis of each of the studies variables have been given separately for each variable using LISREL software. Evidently, in order to decrease variables and considering the same as latent variable, the resulted factor load shall be bigger than 0.3 [7]. In confirmation factor analysis, the scholar knows which question is related to which aspect, i.e. in confirmation factor analysis, the main question is whether these measuring models are suitable? In other words, is study data aligned to the conceptual model?

Generally speaking, there are two types of indexes for model fitness testing:

1. Being good indexes
2. Being bad indexes

Being good indexes, such as AGFI, AGFI, NFI, etc., of which the higher the value, the better it is. The suggested value for such indexes shall be 0.9. On the other hand, also being bad indexes include RMSEA and (df / χ2), the less the value, the better fits the model is. The permitted level of df / χ2 is 3, while the figure for RMSEA is df / χ2. In order respond the model fitness question, being good and being bad indexes (CFI, NFI, AGFI, AGFI, RMSEA, df / χ2) shall also be studied.

Table 4. Indexes and Concepts Guide.

Abbreviation	Full Name of Fitness Index	Concept	Acceptable Range
RMSEA	Root Mean Square Error of Approximation (RMSEA)	Root Mean Square Error of Approximation (RMSEA)	< 0.08
GFI	Goodness of fit	Goodness of fit	>/= 0.90
AGFI	Adjusted Goodness of Fit	Adjusted Goodness of Fit	>/= 0.90
NFI	Normed Fit Index	Normed Fit Index	>/= 0.90
NNFI	Non- Normed Fit Index	Non- Normed Fit Index	>/= 0.90

In order to examine the study hypotheses structural equations modeling or multi-variable analysis testing were used, while multi variable analysis is one of the strongest and most suitable analysis methods in behavioral sciences, as the nature of such subjects is multi variable and cannot be solved using bi-variable method (in which merely one independent variable with a dependent variable is considered each time). Therefore, in this study, structural equation modeling, and especially path analysis have been used to approve/reject hypotheses. Path analysis (structural model) is a technique indicating relations between study's variables (independent, mediating and dependent) are shown simultaneously. Briefly speaking, path analysis method has been applied in order to identify the effects of presented variables in presented study conceptual model and hypotheses testing. Input variables in this model include: physical, social, activity, economic and environmental factors. Figure 1 shows the view of this model.

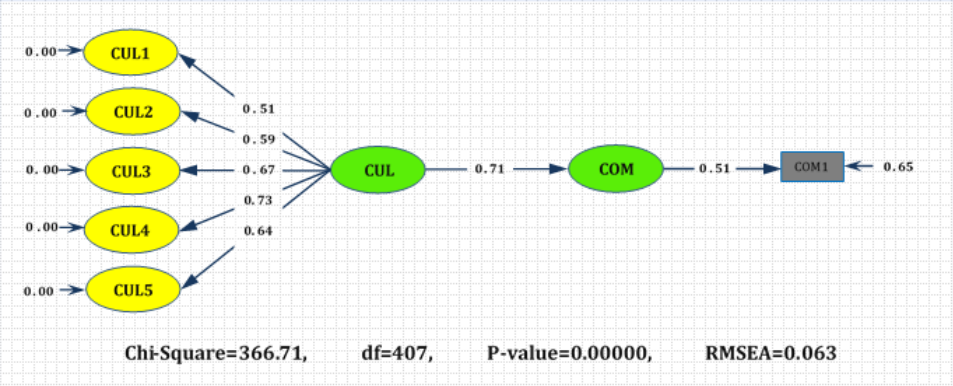

Figure 1. Study structural model under standard estimation state.

Considering LISREL output, the calculated value for χ^2 is equal to 366.71, low value of χ^2 indicates model proper fitness, as the smaller the χ^2 value, the more suitable the presented model is, considering the following results achieved from LISREL software output.

χ^2 =366.71, df=407, χ^2 /df=0.90, P-value=0.000, RMSEA=0.063

Goodness of Fit Index (GFI) = 0.95

Adjusted Goodness of Fit Index (AGFI) = 0.93

Briefing through LISREL output results of model indicates that measuring non-standard estimation part of model is suitable for study conceptual model, as χ^2 and RMSEA values of the same are low and AGFI and GFI values are bigger than 90.

Table 5. Results of LISREL output of model non-standard estimation part.

Index	Result
AGFI	0.93
GFI	0.95
NFI	0.92
RMSEA	0.063

Results of confirmation factor analysis of factor load values, T values and meaningfulness level resulted from variables and questions with factor coefficient and T value are meaningful. Therefore, it may be expressed that this model may be considered as measuring model for study conceptual model. It is observed from model output that physical, social, activity, economic and environmental factors affect cultural center designing.

4. Prioritizing factors affecting cultural center designing using fuzzy TOPSIS method

Due to incomplete or unavailable information in real world, the data is often not final and are usually in fuzzy manner. Therefore, it has been tried here to use TOPSIS method with Fuzzy data, to rank factors affecting cultural center design. Language variables fuzzy variables for acceptability of each of the elements have been given in Table 6 [4].

Table 6. Language variables to weigh each of variables [4].

Very low	VL	(0, 0, 1, 2)
Low	L	(1, 2, 2, 3)
Less than average	ML	(2, 3, 4, 5)
Average	M	(4, 5, 5, 6)
More than average	MH	(5, 6, 7, 8)
High	H	(7, 8, 8, 9)
Very high	VH	(8, 9, 10, 10)

Merely the final table was presented considering the high volume of calculations relating to using Fuzzy TOPSIS technique. As observed, adjoining nature and natural elements, existence of green area, and facility of study were chosen as the most effective factors on cultural center designing.

Table 7. Total positive, negative ideal points, closeness coefficient and final rank of variables.

Final rank	Closeness coefficient	D_i^-	D_i^+	Variables
10	0.407112884	1.411840726	2.056093553	Walking access
8	0.431144765	1.329055299	1.753564289	Accessing walking transport
11	0.402383525	1.254351188	1.862951364	Manner of physical communication
29	0.29494438	0.903512715	2.159819821	Social supervision
24	0.33322939	1.58840515	3.1782967	Comfort in conducting basic activities
31	0.277618899	1.250129148	3.252911369	Protection against climatic situation
19	0.361052363	1.383839527	2.44895502	Separation of pedestrians from vehicles
39	0.209027635	0.999897354	3.783667995	Bench, edge, kiosk
40	0.204576425	0.864928433	3.362970426	Enable walking
6	0.461359233	1.988881034	2.322035262	Aesthetic elements in environment
28	0.298704329	1.263697008	2.966897881	flexibility in fulfilling planned and non-planned activities
32	0.275542146	1.248266523	3.281953405	Obstacles in access path to area (stairs, door, security, etc.)
35	0.22842836	1.009772719	3.410749847	Daily social interaction
43	0.169521078	0.713808889	3.496929382	Sudden social interaction
27	0.310832354	1.345369929	2.982911576	Organized social interaction
15	0.378104057	1.746961028	2.873357097	Self-organized social interaction
9	0.418656393	1.590112459	2.208020055	Area accessible for all age groups
34	0.236201638	1.038945602	3.359608155	Area accessible for all gender groups
36	0.220542568	0.971188437	3.43244415	Area accessible for certain groups
44	0.159763854	0.688544003	3.621216843	Protection against crimes
14	0.379737054	1.176860434	1.922285206	Existence of people in groups, different ages and genders
18	0.366967246	1.1371909	1.961698477	Quality of people presence (active/ inactive)
12	0.399355876	1.227943972	1.846867359	Walking
3	0.478970949	1.877778455	2.042664862	Facility of study
17	0.374917841	1.599859406	2.667367256	Watching
42	0.177903774	0.736947079	3.405444411	Conversation
21	0.355740864	1.100122804	1.992360841	Live music
33	0.251727183	1.119332156	3.327276045	Painting in area
23	0.334875022	1.34975603	2.680870144	Restaurant and coffee shop
29	0.181247721	0.820068893	3.704506031	Selling handicrafts
20	0.358551006	1.542637719	2.759784228	Investing
13	0.389309663	1.746961028	2.740369228	Creating income
4	0.477606179	1.888432928	2.065521211	Creating employment
26	0.311142094	1.316142683	2.913894681	Cost
16	0.376321324	1.648897723	2.732724088	Cultural budget
27	0.287916705	1.171229374	2.896715809	Increasing job participations
37	0.212042615	1.031339403	3.832491399	Energy efficiency
7	0.453509821	1.799454094	2.168385215	Cleanness
38	0.210993686	0.930286724	3.478787031	Comfort
5	0.474277533	1.897974609	2.103848116	Local natural attractions
22	0.344538757	1.329055299	2.528436126	Environmental and health conditions
2	0.553092263	1.729634736	1.397573602	Existing green area in enclosure
1	0.569222008	1.761926821	1.33339767	Adjoining nature and natural elements
25	0.32791681	1.013072152	2.076346019	Decreased sound pollution

5. Conclusion and Suggestions

Today people daily social life is mainly composed of their mutual actions and reactions. In this regard, recognition of sociability concept and analyzing its different aspects indicates that manmade environment affect users socializing in terms of physical, social, activity, economic and environmental components. On the other hand, in this study the effect of foregoing factors was cultural center designing was approved. Meaningful effect of physical, social, activity, economic and environmental components on cultural center designing demonstrates that developing cultural center is not based on a sole principle and basis and the designers of such centers shall always consider various variables. In [9,11,20], the physical and activity factors were affecting cultural center design. Additionally, in [20], activity factors were also affecting. On the other hand, in [15], the effect of physical and activity variables on designing cultural centers were confirmed. On the other hand, in [10] economic and environmental factors affected cultural centers designing.

Evidently, cultural premises shall be designed so that people do attend them not merely for their cultural aspect, but existence of various capabilities of such centers provides several opportunities for public presence in such places. Whereas different areas elements and physics affect people, also cultural premises area shall be designed suitably for the users' needs and be attractive for them, so that people are highly interested in go to such places, again.

As per study results, the existence of green area and the relation with natural elements may generate a high tendency in persons to refer to such centers. Therefore, it is suggested that the designers of such centers increase users satisfaction through providing trees, flower planted area, fountain, etc.

On the other hand, facility of study was selected as the third important factor, indicating the importance of this variable for cultural centers. Designing a peaceful environment away from sound pollutions and even availability of a library, even small, with limited number of books, may especially be good and pleasant for elderly.

It should also be noted that environmental factors were chosen as the most effective aspect on cultural center designing, which indicates high importance of green area, nature and interest of people on health in machine world and polluted air of Tehran City. Planting trees, using fountain, pool, planting grass and flowers, frequent cleaning the area as well as considering a relatively vast area for walking purposes away from the street may be considered as another solution for cultural premises proper designing.

References

[1] M. Carmona, Public Area, Urban Areas, Various Aspects of Urban Design, Translated by Zahra Ahari et al., Tehran University of Art, Tehran, (2011).
[2] M. Carmona and T. Tim, Public Area, Urban Areas, Various Aspects of Urban Design, Translated by Gharaei at al., Tehran University of Art, Tehran, (2012).
[3] M. Charkhchian, An analytical study concerning factors influencing increasing dependency on urban areas, emphasizing on variable activities; PhD thesis, Iran University of Science and Technology: Faculty of Architecture and Urban Development, (2009).
[4] C. T. Chen, Extension of the TOPSIS for group decision-making under fuzzy environment, Fuzzy Sets and Systems, **114** (2009) 1-9.
[5] S. A. Daneshpour and M. Chrkhachian, Public areas and factors affecting social life, Bagh-e Nazar quarterly magazine, **7(4)** (2007) 19-28
[6] F. Habib, An analysis on culture and city physical interaction, Hoviate Shahr, **4** (2009).
[7] H. Houman, Structural Equation Modeling Using Lisrel Software (training and practical), Mehrban Nashr Book Institute Publications, Tehran, (2016).
[8] C. L. Hwang and K. Yoon, Multiple Attribute Decision Making Methods and Applications: a state-of-the-art survey, Springer, Berlin, (1981).
[9] K. Isazadeh, 2016, An analysis on recognition of effect of culture and physical aspect and design of cities emphasizing on cultural theories of designing living complexes, Modiriat Shahri quarterlay magazine, **46** (2016) 71-96.

[10] M. Izadi and J. Mohammadi, Identifying and assessing quality of cultural-social areas (case study: Esfahan metropolis), urban planning quarterly magazine, **12** (2015) 11-33.
[11] M. Javadi et al., An introduction to concept of manmade environment identity emphasizing on location, area, and physic components, Modiriat Shahri, **44** (2015).
[12] J. Lang, Creating Architectural Theory, Translated by Alireza Einifar, Tehran University Press, Tehran, (2002).
[13] A. Madanipour, Public and private urban areas, Tehran: Urban processing and planning company, (1999).
[14] T. A. Markus, Building as classifying devices, Environment and planning and design, **14** (1987) 467-484.
[15] M. Mohammadi ant M. Ayatollahi, Factors affecting promotion of cultural premises sociability; case study: Esfahan Farshchian Academy, semi-annual magazine of Art University, Architecture and Urban Development Letter, **81** (2015) 79-96.
[16] P. Partovi, Public area and women, seminar on women and urban issues, Tehran Municipality Publications, Tehran, (2012).
[17] H. Osmand, Function as the basis of psychiatric ward design, Holt Rinehart and Winston, New York, (1957).
[18] M. Rafieian and Z. Khodaei, A study on indexes and criteria affecting citizens satisfaction on urban public areas, Rahbord, **53** (2009) 227-248.
[19] R. Sennet, The fall of Public Man, WW Norton and Company, New York, (1974).
[20] D. Shojaei and P. Partovi, Factors affecting generation and promotion of sociability in public areas with different scales of Tehran city (case study: public areas of two neighborhoods and a district in Region 7 of Tehran), **34** (2015) 93-108.
[21] M. Walzer, Pleasures and costs of urbanity, Dissent Magazine, **33** (1986) 470-475.