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IS THERE ANY ROOM FOR PUBLIC? DEMOCRATIC EVALUATION OF PUBLICNESS OF PUBLIC PLACES

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Abstract: This study aims to evaluate the level of publicness of public places. For fulfillment of its primary goal, this paper firstly searches deeply in existence publicness literatures. In the second part, with aim of finding appropriate model, this paper debates on previous models of publicness and represents a democratic evaluation through a multi-criteria decision making model. Evaluating by people has an undeniable advantage due to good experience and better knowledge of folks about their living environment. This study assesses the level of publicness by using the proposed methodology based on management, access and users dimensions. The findings of this paper shows that regardless of public places ownership, the level of publicness of Tehran cases are in the middle of a hypothetical fully public place.

Keywords: Publicness, Evaluation, Public places, VIKOR

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INTRODUCTION

In recent decades, creating and managing public places has been argued in many urban design researches. This abundant of interests has a vast domain of subjects from some concerns about increasing privatization of places (Hemming & Mansoor, 1987; Kamat, 2004; Kohn, 2004; Loukaitou-Sideris, 1993; Punter, 1990) and some worries about the ending of public places (Mitchell, 1995; Paddison & Sharp, 2007; Sorkin, 1992; Zukin, 1995) to assessing the publicness of public space in fuzziness logic (Ekdi & Çıracı, 2015). Public places such as streets, plazas, parks, etc. are the ultimate stage of humanity social life (Mean & Tims, 2005; Nemeth & Schmidt, 2011b; Worpole & Knox, 2008) and fostering interpersonal communication, which can lead to social cohesion (Madanipour, 2003, 2004). Alongside with public place contribution to creating a more environmentally-friendly urban settlement, it also has an active influence on urban economic growth by promoting the city image which could attractive flows of financial and skilled workers to its city (Luther, 2001; Varna, 2011; Woolley & Rose, 2003). These three social, environmental and economic roles of public place clarify its essential part in achieving a sustainable urban life and the need of more attention to its existence quality.

Notwithstanding of public place exigency to produce a more sustainable urban setting, many commentators debate on specific attention that leads to create public places more public (Banerjee, 2001; Carr, Francis, Rivlin, & Stone, 1992; Kohn, 2004). For instance, Lefebvre (1991) argued that the city is a work in which all its citizens participate, and Vidler (2001) illustrates the picture of public space as a site of interaction and encounter of strangers. The research of Mitchell (2003) - based on normative argument of Lefebvre, which is called "the right to the city"- is an effort to find a way of reconciliation between people and public spaces and Madanipour (2010) believes that urban designers and managers should struggle to create a greater Publicness in spaces. These numbers of researches specifically demonstrate the need of rethinking about the reality of the public realm through a new way with both designing and managing aspects that could lead to improve the publicness and inclusion in public places.

Based on previous studies, assessing publicness is a useful method for specifying how (much) public is a place and also can help to find weakness and strength of public place design in order to discovering solutions, which can increase accessibility and inclusion of a public place. Studies on the publicness of public places, mostly accomplished in western countries, focused on the dichotomy between public and private partnership of owning or managing places with a public function (Banerjee, 2001; London Assembly, 2011; Loukaitou-Sideris, 1993; Madden, 2010; Paddison & Sharp, 2007; Voyce, 2006). In the case of Iran, cities' council generally owns public places and thereby there should be no concerns of growing privatization of public places, which could be applied by private sectors; but some evidence shows overt control over Iranian public places could lead to fewer public domain and freedom. For instance, based on Iranian urban policies -which are part of the constitution law buy/sell or drinking any alcoholic beverages is prohibited in public places (LACICA, 2013) and for another example walking dog in any public space is also forbidden in Iran (Kamali Dehghan, 2014). This study questions the level of publicness of public places that are distinct from their western counterparts and completely owned and managed by the city council in Iran.

Besides of the introduction, this paper contains a literature review with aim of finding public place definition, the need of evaluating publicness of public places, which are owned by public organization and finding what parameters define the boundary between a public and a private space. This paper then continues in order to review previous models of assessing publicness and describing a model, which this paper will use to calculate the level of publicness with people participation. After that, methodology and empirical studies will be described and finally, results and discussion of the findings of this paper will be represented in the very last parts of this study.

Literature Review

The combination of two words 'public' and 'place' defines a social place, which is generally open to and accessible for all citizens regardless of financial or social variances. Madanipour (2010) argued that public spaces should have two broad features that are accessibility and inclusion. In addition, Parkinson (2013) defined public space is freely accessible and democratic space with a provision of opportunities for strangers to meet and interact with each other. Atkinson (2003) analyzed control and empowerment in the management of public spaces and he claimed public space is a 'space which normally people have unrestricted access and right of way'.

Despite such an emphasis on accessibility and free use for all populations, some scholars believed that there are few fully public places in cities around the world. For example, Norris, McCahill, and Wood (2002) debated that use of Closed-Circuit Television (CCTV) in public space for controlling interaction and behavior of users could decrease universality of a place or fencing a public space in order to access control or maintaining a specific area could increase the sense of privatization of the public space. These control elements applied in many

public spaces can change the level of publicness of public space (Allen, 2006; S Flusty, 1997; Kohn, 2004; Van Melik, Van Aalst, & Van Weesep, 2007), thus recognizing factors that make a place more public or more private, has significant role to evaluate or create a public space. Most of researchers define four dimensions including 'Ownership', 'Management', 'Access' and 'Use/Users' (**Fig. 1**) as the primary factors which expose the boundaries between a public and private places (Ekdi & Çıracı, 2015; Langstraat & Van Melik, 2013; Nemeth & Schmidt, 2011a; Van Melik *et al.*, 2007; Varna & Tiesdell, 2010).

One of the powerful tools in the context of the regulation of space is property ownership, which generally divided in two distinguish types known as public or private property. As Madanipour (2003) argued that this dimension controls movements between urban places in a way that some places have restricted access with limited activities and some of them are open to people, and they can move freely. Furthermore, that public-private distinction has a significant role in shaping the physical space of the cities (Madanipour, 2010). Low and Smith (2006) believed that definition of public space is extremely bound up with the dichotomy between public and private space. In the literature of American and western European about public-private spaces, there is a growing concern commonly called the privatization of public place (Punter, 1990). This uprising phenomenon contains examples such as the replacement of the old town centers by malls and franchises shop centers or the regeneration of old derelict industrial waterfronts changing into spaces of consumption and scripted spectacle (Dovey, 2005; Kohn, 2004; Van Melik *et al.*, 2007). Nevertheless, in Iran's public places such as squares, parks, open and recreation spaces, etc. are cities councils' properties, and private sector has no share in designing, forming and managing those public places. If this dimension be used in evaluating the level of publicness in case of Tehran, then all scores related to this dimension will be as high as possible and can modify the result inappropriately. Thereby, this dimension has a diverse effect on evaluating the publicness, makes the result far from the reality of Tehran public places, and will be eliminated from the list of this paper dimensions.

Management as second dimension of this study includes 'Civility', 'Control' and 'Animation', which are represented as criteria and each of criteria, contains numbers of indicators. Civility is maintaining and caring for public spaces in which increase attractiveness and welcoming of urban public places. As Bannister, Fyfe, and Kearns (2006) wrote incivility or improper uses of space have negative and cumulative effects, which reduce the number of users in public place in the short and medium terms. Madanipour (2004) also points out

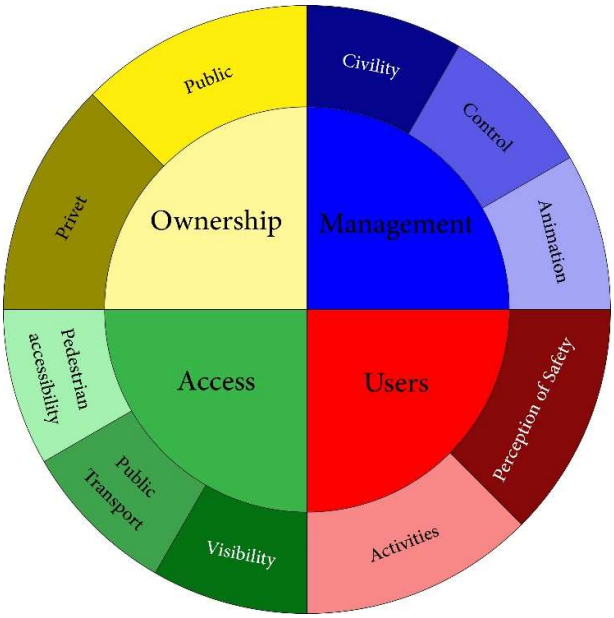

Fig 1. The frequented dimensions and criteria used in existing literatures of evaluating publicness.

that lack of attention to civility has an adverse impact on the image of a public space. Thereby, incivility as a result of urban managers' disinclination to be well-kept of public space "… degrades the quality of life in the neighborhood, contributes to the negative image of an area and undermines the chances of social and economic improvement (Madanipour, 2004)." Civility includes providing facilities such as physical maintenance and cleaning hard landscape area and urban furniture, physical maintenance and provision of green space, physical maintenance and provision of public toilets and provision of lightning (Boyld, 2006; Kohn, 2004; Teir, 1993; Varna, 2011).

Control as a criterion of management has direct relation with urban policies and basic human rights. Issues of individual freedom and human rights give people permission to act freely in public space but this matter as Atkinson (2003) wrote concludes to the contradiction between the political realm and the public space. In many countries with different policies, there are some overt and oppressive control presences human and electronic surveillance in public spaces (Coleman, 2004; Flusty, 2002; Patton, 2000; Yeoh, 1998). In practice, Control over public space can be performed through two distinguished ways, which includes managing public space and designing public space. Managing public space contains zero-tolerance policy, using CCTV cameras, Police force and security guards. Control via designing public space comprises Sadistic street furniture, Gates, etc. For evaluating control in this research, four elements were decided upon: Control technology -CCTV cameras,

Control presence- police/private guards, Control by design – Sadistic street furniture and Control signage.

Animation. In recent decades, many scholars around the world argue that public place is in service of basic human needs and its utility is an important part of humans' social life. This social part of human life creates public spaces, streets and plazas. As Lefebvre (1991) once wrote that social needs have an anthropological foundation and should be considered at the top of priorities by government and urban managers so living in cities can be enjoyable for citizens. Carr *et al.* (1992) identified human needs (related to public spaces) as comfort, relaxation, passive engagement, active engagement, and discovery. Therefore, providing sitting opportunities, providing infrastructure and facilities for cycling and jogging, food vendors, opportunities for active engagement and discovery, and active frontage are indicators for evaluating animation in this research.

For measuring the level of access, the third dimension of publicness which is called 'Access' contains three criteria 'Visibility', 'Public Transport' and 'Pedestrian Accessibility'. Providing public places in cities is essential for humans' social life and one of the important citizen rights thus access to public space should be guaranteed for all citizens regardless of their financial capability. One of the most important parameters of access to public space is its visibility from the street and urban routes. Designing Specify and multiple entrances for a public place make citizens -especially those who are not familiar with the area- be able to easily access the space and top of that designing an inviting, distinctive and unique entrance can attract more users and even wanders those who just walking in a space without any particular purposes. However, the visibility of a public place without the support of public transportation has not been satisfactory performance in improving accessibility. Increased transportation options makes more diversified people use public spaces. Public transportation, including bus stations, metro stations, and tramway allows people with different financial capabilities can easily have access to public space. In recent years the use of bicycles or walking in public space has also grown fast therefore in addition to providing appropriate public transportation options, there should be suitable infrastructure for cycling and walking to/in public spaces.

Without the presence of citizens in public places, these urban spaces remain impractical and useless. Therefore, all efforts for rational and attractive designing of public places have a primary goal, which is attracting more people to the space. The last dimension 'Users' is a try to measuring perception of safety and varieties of activities citizens do in public places. At one hand, the public space users should feel safe and secure in their use of space and on the other hand, they should be able to do a wide range of leisure activities within the space. At first by increasing feel of safety and security in public space, the number of users can be increased and then a public space by creating opportunities of a variety of activities can attract a broader range of people to its space.

Method

For evaluating the publicness of public places -to the authors' knowledge-, at least five models have been developed until 2015. These five models are "Cobweb" (Van Melik *et al.*, 2007), "Tri-axial" (Nemeth & Schmidt, 2011a), "Five-star model" (Varna & Tiesdell, 2010), "Ownership, Management, Access and Inclusion (OMAI) model" (Langstraat & Van Melik, 2013), and "Fuzzy Inference System (FIS)" (Ekdi & Çıracı, 2015) and four of them grounded on pictorial juxtaposition of publicness dimensions, and the last one (FIS) was a try to measure the level of publicness in one solid score. Each model has some advantages and disadvantages, which described as much as possible in the next statements.

According to some researchers, the first attempt to model publicness in public places created by Van Melik *et al.* in 2007. Although that research evaluates fear and fantasy in public spaces and not the level of publicness directly but the model used in that article deals with assessing of relevant issues and can be employed to evaluate the publicness of public places; Thereby, it has inevitable importance. Van Melik *et al.* (2007) identified three dimensions (Surveillance, Restraints on loitering and Regulation) for evaluating the level of security in public space and three dimensions including Events, Fun-shopping and Pavement Cafes related to themed public space. The proposed model for assessing Fear and Fantasy in public spaces, which is called Cobweb, contains three axes and each axis related to two different dimensions (**Fig. 2a**). The scale used in cobweb model divided into three levels (Low, Medium and High) and rate of each dimension was decided by authors' judgments. The model illustrates three circle which inner circle (small one) represents low level, and the outer ring (bigger circle) signifies High level of rating scale. Although this model works properly in the context of that study but using these models for assessing publicness has two weaknesses. First, this model used three levels of intensity with a limited number of criteria, which has no flexibility, and comprehensiveness for assessing the publicness in public spaces, secondly by devoting two dimensions for each axis, there is a confusing in pictorially representing its concept, for example, dimension 1 and 4 may see as the opposite side for each other.

Table 1. Dimensions, criteria and indicators for evaluating the publicness of public places.

Dimension	Criteria	Indicator
A. Management	A1. Civility	A11. physical maintenance and cleaning hard landscape area and urban furniture
		A12. physical maintenance and provision of green space
		A13. physical maintenance and provision of public toilets
		A14. provision of lightening
	A2. Control	A21. CCTV cameras
		A22. Police/private guards
		A23. Sadistic street furniture
		A24. Control signage
	A3. Animation	A31. Sitting opportunities
		A32. Infrastructure and facilities for cycling and jogging
		A33. Food/street vendors
		A34. Active engagement and Discovery
		A35. Active frontage
B. Access	B1. Visibility	B11. Visibility of site
	B2. Public Transport	B21. Access to Bus Stops, Metro Stations etc.
	B3. Pedestrian accessibility	B31. Pedestrian Walkways and Cycling routs
C. Users	C1. Perception of Safety	C11. Feeling Safe and Secure
	C2. Activities	C21. Variety of Activities

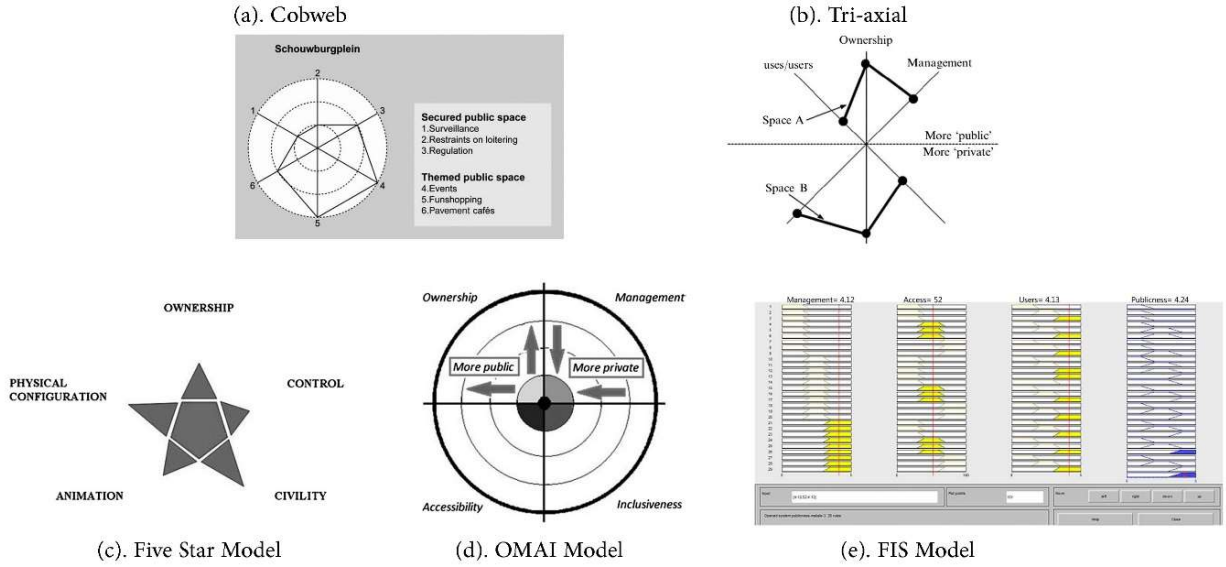

Fig. 2 Five models for evaluating the publicness.

Nemeth and Schmidt (2011a) introduced the tri-axial model to measure publicness based on three dimensions, including Ownership, Management and Uses/Users. This model shows an intersection between three axes each related to a dimension. The upper half of the diagram implies more public, and the bottom half signifies more private. Rating system (more public to more private) in this model has an advantage on the cobweb model (low, Medium and High) but it is also unable to show the degree of publicness for each dimension, for instance, it is not clear how much management has distance to the ideal aspire of publicness and top of that this model cannot demonstrate more than three dimensions based on limitation of drawing on 2D paper (**Fig. 2b**) and by increasing the number of dimensions the whole diagram will be more confusing (Nemeth & Schmidt, 2011a).

Five-star model announced by Varna and Tiesdell (2010) is the third tries for modeling publicness. This model (**Fig. 2c**) has five dimensions, including Ownership, Control, Civility, Physical Configuration and Animation and tries to cover the weaknesses of two previous models. At first, dissimilar to the cobweb model it illustrates five dimension separately from each other and secondly unlike the dimension number limitation of the tri-axial model, star model has five dimensions, which are presented as a limb of star diagram. Like its two previous models, five-star model also unable to show discrete scales and thereby comparisons the level of

publicness between public places may face with difficulties.

Ownership, Management, Accessibility and Inclusiveness model or simply OMAI model presented by Langstraat & Van Melik in 2013. This model is a pie chart (**Fig. 2d**) which consists of four concentric rings and divided to four equal parts (Langstraat & Van Melik, 2013). Each slice related to one dimension, and a bigger slice represented a more public space while smaller one shows a more private space. The scale used to measuring publicness in this model is an ordinal four-point scale ranging from 1 (fully private) to 4 (fully public). By increasing, the number of dimensions this model has better performance in illustrating its results than tri-axial or cobweb models. The distance between private range and public range is clear and understandable. There is a major concern with this model, which is equality between four dimensions. All dimensions used in this model had equal weight and by considering weights for dimensions or giving importance to one dimension upon the others, there will be conflicting on representing results by OMAI model.

The last try to assessing the publicness of public spaces belongs to Ekdi and Çıracı (2015) research. In their article, they believe previous models used Boolean logic, which has an inconsistency with the multidimensional nature of publicness. They used Fuzzy Inference System (FIS) to tackle two major issues, which the former four model contained. First, by using fuzzy logic, their model can evaluate vagueness inherent in linguistic arguments and secondly "it models fuzziness in defining categories which within one entity can fall simultaneously in more than one category (igure 2e)." They mentioned that their model ability of working with both quantitative and qualitative data is another advantage of their proposed model for evaluating publicness. Despite FIS model advantages, there are some concerns about that research. One of the issues in Ekdi and Çıracı study is vagueness of input data, which the score of each dimension is not clear. Another problem relates to 27 rules used in FIS model, which none of them explained in that article and impacts of rules on input data are unknown. This model contrary to previous models is hard to use, and interpretation of results has difficulties (**Fig. 2e**).

Although in all of five described models, measuring dimensions include the basis of observations, literature research, analysis of policy documents and interviewing with users, but most of the dimensions rated or scored based on the researchers' own observations and views. There has been a little attention upon the role of people judgments in evaluating the publicness in public spaces. This will be a democratic way to let users decide how much a public space is successful within the context of publicness. Asking folks to rate or score indicators of publicness increases the reliability of how dimensions or indicators occur and overlap in real-life public spaces. Another missing link in previous models is weighting dimensions. In real situation, dimensions have not been equal importance or weight thus, weighting dimensions also can get results closer to the reality. Weights of dimensions can be calculated by experts' judgments instead of arbitrary opinions of authors. Ability of comparing publicness between at least two public spaces is another important issue, which is not easily possible by using five explained models. Finding gaps between the existing level of publicness of a public space and the most public/private scenarios can be very useful. Regarding to previous model's weaknesses, this study first tries to evaluate the publicness based on citizens' judgments and then for calculating the level of publicness through a stable and reliable mathematical model a Multi-Criteria Decision Making (MCDM) model, which is also suitable for ranking cases/alternatives, introduced in follow sentences.

The VIKOR (VIseKriterijumska Optimizacija I Kompromisno Resenje) model categorized in MCDM methods, which developed by Serafim Opricovic in 1998. This model ranks alternatives in order to find the closest alternative to the ideal scenario. It also can be run when criteria of study have different units. VIKOR model used in many studies with different subjects and its consistency has been proofed by many scholars (Büyüközkan & Görener, 2015; Huang, Tzeng, & Liu, 2009; Ilangkumaran & Kumanan, 2012). Using the VIKOR model for evaluating publicness of public spaces has some advantages against the previous models of assessing publicness.

First, contrary to Cobweb and Tri-axial models, there is no limitation on the number of criteria/indicators as input variables in evaluating by the VIKOR model. Secondly, public place's grades related to indicators can be scored directly by users' judgments. Thirdly, weights of each and every indicator have a critical role in applying the VIKOR model and finally the VIKOR model not only demonstrates the distance between the current situation of a public space and the more public state, but also it shows which criteria or indicator pulls a public space to be a more private space. At the end, VIKOR model ranks alternatives (case studies) in sort of closeness to more public scenario (ideal point) and it clearly shows the distance between each case study. The VIKOR model is also easy to use and contains eight main steps, which is described as follows:

Step 1. Calculating the average of all experts' judgments. Each expert assessment forms an initial matrix Zp that is n×n matrix obtained by pair-wise comparisons in terms of importance between indicators by using five-scale ranging represented as: no importance (1), very low

importance (3), low importance (5), High Importance (7) and very high importance (9). For p experts the average Z_{ij} of all experts' evaluations can be calculated by using **Eq. 1**:

$$Z_{ij} = \frac{Z^1+Z^2+Z^3+\ldots+Z^p}{p} \quad (1)$$

$$\text{where } Z_{ij} = \begin{bmatrix} Z_{11} & Z_{12} & \ldots & Z_{1j} \\ Z_{21} & Z_{22} & \ldots & Z_{2j} \\ \vdots & \vdots & \vdots & \vdots \\ Z_{i1} & Z_{i2} & \ldots & Z_{ij} \end{bmatrix}$$

Step 2. Normalizing the average of all experts' judgment. For acquiring normalized matrix (H_{ij}), each element of matrix *Zij* divided by the sum of its column (N). Therefore sum of each column equals 1.

$$H_{ij} = \begin{bmatrix} H_{11} & H_{12} & \ldots & H_{1j} \\ H_{21} & H_{22} & \ldots & H_{2j} \\ \vdots & \vdots & \vdots & \vdots \\ H_{i1} & H_{i2} & \ldots & H_{ij} \end{bmatrix} = \begin{bmatrix} Z_{11}/r_1 & Z_{12}/r_2 & \ldots & Z_{1j}/r_j \\ Z_{21}/r_1 & Z_{22}/r_2 & \ldots & Z_{2j}/r_j \\ \vdots & \vdots & \vdots & \vdots \\ Z_{i1}/r_1 & Z_{i2}/r_2 & \ldots & Z_{ij}/r_j \end{bmatrix} \quad (2)$$

where $r_j = \sum_{i=1}^{n} Z_{ij}$.

Step 3. Obtaining weights of each indicator. Weights for each indicator can be acquired by calculating Eigen vector. Eigen vector can obtained by averaging across the rows of matrix H_{ij} through using **Eq. 3**. In **Eq. 3** *m* value is the number of indicators and matrix W_i has one-column and m rows.

$$W_i = \begin{bmatrix} W_1 \\ W_2 \\ \vdots \\ W_i \end{bmatrix} = \frac{1}{m} \begin{bmatrix} H_{11}+H_{12}+\cdots+H_{1j} \\ H_{21}+H_{22}+\cdots+H_{2j} \\ \vdots \\ H_{i1}+H_{i2}+\cdots+H_{ij} \end{bmatrix} \quad (3)$$

Step 4. Calculating the average of all users' scores. Score of each indicator will be the average of all users' assessments. For obtaining the average of *k* users scores, **Eq. 4** is used as same as **Eq. 1**. Matrix p_{ij} is calculated based on dividing sum of p^k with the number of users:

$$p_{ij} = \frac{p^1+p^2+p^3+\cdots+p^k}{k} \quad (4)$$

Step 5. Define the more public p_j^+ and the more private p_j^- values of all indicators function. The top and the bottom of scores can be calculated by using follow equation:

i = 1,2,...,n; $p_j^+ = \max(p_{ij}, j=1,\ldots,J)$ and

$p_j^- = \min(p_{ij}, j=1,\ldots,J)$ (5)

Step 6. Compute the values S_i and R_i. These two parameters also known as weighted and normalized Manhattan distance (S_i) and weighted and normalized Chebyshev distance (R_i) which are calculated by using **Eqs. 6–7**:

$$S_i = \sum_{j=1}^{J} \left(W_i \times \left(\frac{(p_j^+ - p_{ij})}{(p_j^+ - p_j^-)} \right) \right) \quad (6)$$

$$R_i = max_j \left(W_i \times \left(\frac{(p_j^+ - p_{ij})}{(p_j^+ - p_j^-)} \right) \right) \quad (7)$$

Step 7. Finding the final value (Q_i). Before calculating the last value for each case study, computing four parameters are necessary to obtain Q_i value. These parameters include S_i^+, S_i^-, R_i^+ and R_i^-, which computes by using follow equations:

$$S_i^+ = \max(S_i; i = 1,2,3,\ldots,I), S_i^- = \min(S_i; i = 1,2,3,\ldots,I) \quad (8)$$

$$R_i^+ = \max(R_i; i = 1,2,3,\ldots,I), R_i^- = \min(R_i; i = 1,2,3,\ldots,I) \quad (9)$$

After that, the final value of Q_i can be computed by the equation number 10:

$$Q_i = v \times \left(\frac{(S_i - S_i^-)}{(S_i^+ - S_i^-)} \right) + (1-v) \times \left(\frac{(R_i - R_i^-)}{R_i^+ - R_i^-} \right) \quad (10)$$

Step 8. Rank the case studies. The result should be sorted by the Values of *S*, *R* and *Q* for each case study and from the minimum value. The lowest value of *Q* represent a public place close to more public and the biggest one shows the closeness to more private. Furthermore, for better interpreting ranking system based on *Q* value of each case study equation 11 employed to calculating the level of publicness (*Q'*) in scale of 0 to 10, which zero represents fully private and 10 shows fully public.

$$Q' = \frac{Q_{worst\ scenario} - Q_i}{Q_{worst\ scenario}} \times 10, (i = 1,2,3,\ldots,n) \quad (11)$$

Testing the proposed model for evaluating publicness in case of Tehran

For analyzing the capability of VIKOR model in the field of assessing publicness, four public spaces selected in Tehran Metropolitan area, which are (1) Enghelab Square, (2) Tajrish Square, (3) Niavaran Park, and (4) Water and Fire Park. These case studies carefully chosen

from a vast list of public spaces in Tehran according to authors' knowledges with regard to their important role in urban life of citizens, their high density of users and their historical or political character. All of four case studies are completely owned by Tehran City Council, thus the ownership dimension excepted from dimensions of evaluating publicness.

The methodology of this research includes:

- Literature review- in order to find suitable dimensions (criteria and indicators) for evaluating publicness and searching for models and methods, which are employed to measuring publicness.
- Observation and Surveys of Case studies due to collecting input data for modeling publicness. This step is including: (a) a questionnaire for experts, (b) a questionnaire for users, (c) personal observation (d) photographing and video shooting.
- Using the proposed model to interpret results and modeling publicness.

In order to calculate weights of each indicator, seven experts consist of four urban designer, and three urban manager are gathered in one meeting and the whole project, including definition of publicness, the dimensions (and their criteria and indicators) of publicness, and case studies were explained to them, and at the end they were asked to fill a questionnaire which shows importance between indicators.

The observation of each case study took seven days and conducted asynchronously in May 2016. The description of each case study show in **Table 2** with the time period of site observation. Based on information of users/visitors per week for each case study and by using Krejcie and Morgan (1970) sample size table, the sample size for all four locations were conducted and showed in **Table 2**.

Table 2. A brief description of four case studies.

Case Study	Period Time (May 2016)	Description	The Sample Size
Enghelab Square	1-7th	Built around the Central Business District of Tehran, Enghelab Square now is one of the most densely visited places among all Tehran's public places. Enghelab Square is a frenzy activity. Countless hords of people stream past on the pavement while the roads are congested with vehicles. One cinema located in north east of the square and another one placed in south west of the space. According to data from Tehran Municipality (2015), the average of visitors per week in Enghelab Square equals to 8800 individuals.	367 users
Tajrish Square	8-14th	Situated in northern edge of Tehran, Tajrish Square is one of the most popular destination to explore and live specially among the wealthy residents, due to its low level of air pollution. This Square contains an old bazaar, a modern mall (Tandis) and a mausoleum called Imam Saleh, which are popular tourist spots and visitor destinations. The number of people who visiting this place for various activities such as work, shop or pleasure is around 8500 person per week.	367 users
Niavaran Park	15-21st	Niavaran Park was built in 1963 AD by order of Mohammadreza Pahlavi on an area of nearly six hectares; according to a plan by English landscape designers and its architecture was Engineer Sardar Afkhami. The green space and facilities of this park are built in different levels that are linked by several stairways. These different levels and stairways are a characteristic feature of this park. It has two entrance gates both opening into Pasdaran Street, one in northern and the other in the southern part of this street. Niavaran Park has various facilities such as a building for Children's Culture Center, a skating ground, a lake, four large pools, etc. and this park could attract many teenagers who gather around to socialize or take a stroll. The number of users per week estimated approximately 4500 individuals.	354 users
Water and Fire Park	22-28th	Water and Fire Park or Abraham garden, is one of the most visited parks in Tehran city, with an area over 24000 square meters. The park has various recreational facilities such as; Abrisham and Nature bridges, light house, cubby hole, fire towers, alcove, ceremony , an area for playing with water, and equipment such as four fire towers, and a tent with 700 meters. The park has two entrances, one from Shahid Haghani highway, and another one from an alley next to eastern side of park. Every day many tourists from Tehran and other cities visit this place (approximately 6400 visitor per week).	361 users

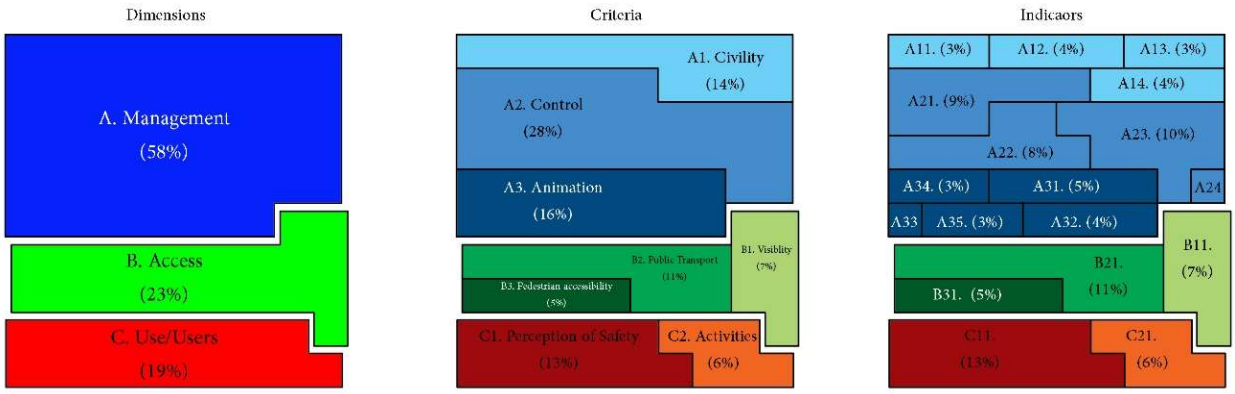

Fig. 3 Visual representation of weights in format of percentage

The questionnaire of users carried out by the authors with assists of 15 undergraduate students in May 2016, and Excel Microsoft Office 2013 and IBM SPSS Statistic 22 software were employed to analysis input data and running the VIKOR model.

RESULTS

Stage 1

In order to evaluating the publicness at first weights of each indicator identified by seven experts judgment. Indicators' weights calculated by the average of all expert's assessments through equation 1 to 3 and showed in **Table 3**. The highest weight relates to "Feeling Safe and Secure" indicator as scored 0.13, then with 0.11 weight score, "Access to Bus Stops, Metro Stations, etc." is the second important and high weighted indicator among all. Two less important indicators are "Control signage" and "food/street Vendors," and both had scored as 0.01. For clearly expressing the concept of the weighting performance, **Fig. 3** is visual representing of dimensions, criteria and indicators' weights in the format of percentage. According to the **Fig. 3**, although "Feeling Safe and Secure" has the highest weight among all indicators but "Control" and "Management" had the highest weights among all criteria and dimensions.

Stage 2

At this stage, for obtaining performances of case studies related to each indicator, a questionnaire designed and distributed to users of all four case studies.

In the first case study, 367 users of Enghelab square were covered by the statistical survey (188 male and 179 female) during one week. Near the half of interviewed users (48.5%) arrived to Enghelab Square by using public transportation, and the survey shows that none of the respondents cycled to Enghelab Square. Based on the respondents' views, it was found that the lowest score relates to "Infrastructure and facilities for cycling and jogging" indicator as scored 2.9 (**Fig. 4**). It can be seen from the survey that Enghelab Square is not suitable for cycling or jogging. Furthermore, Enghelab Square was unable to provide people with sitting multi-opportunities and scored 3.7 from the average of all users' assessments. The transportation modes of Enghelab Square included a metro station, Bus Rapid Transition (BRT) lines and ordinary bus stops, thus from the respondents, "Access to Bus Stops, Metro Stations, etc." indicator had the highest score as 7.1.

Three hundred and sixty-seven individuals responded to the users' questionnaire in Tajrish square throughout seven days. A little more than half were female (51.5%) and 178 users were male. As it can be seen from the responses to a question about which type of transportation, they choose to reach Tajrish square, 35.7 percent selected public transportation and three out of ten (33%) used their own personal vehicles to access Tajrish square. Among the respondents, eight individuals had cycled to the site. Familiar to Enghelab square the poorest scores related to "Infrastructure and facilities for cycling and jogging" and "Sitting opportunities" indicators with 3.9 and 4.2 scores (**Fig. 4**). According to the survey and observation findings, although the walkway was designed on the principles of simplicity, and high-quality paving materials but the population flow does not let people to do jogging or cycling and also there is not a separate route for bicycle and thereby cycling to/in Tajrish Square has some difficulties. Regarding to opportunities for sitting, there are a few benches located in the south and east sides of the site but in all over the place, there are some informal sitting opportunities and also there are seats and chairs in the east side of the Tajrish Square but those possessed by the private sector and belongs to restaurants' customers only. Like Enghelab Square, access to the Tajrish Square provided with a metro station, BRTs' lines and a bus terminal, thereby "Access to Bus Stops, Metro Stations, etc."

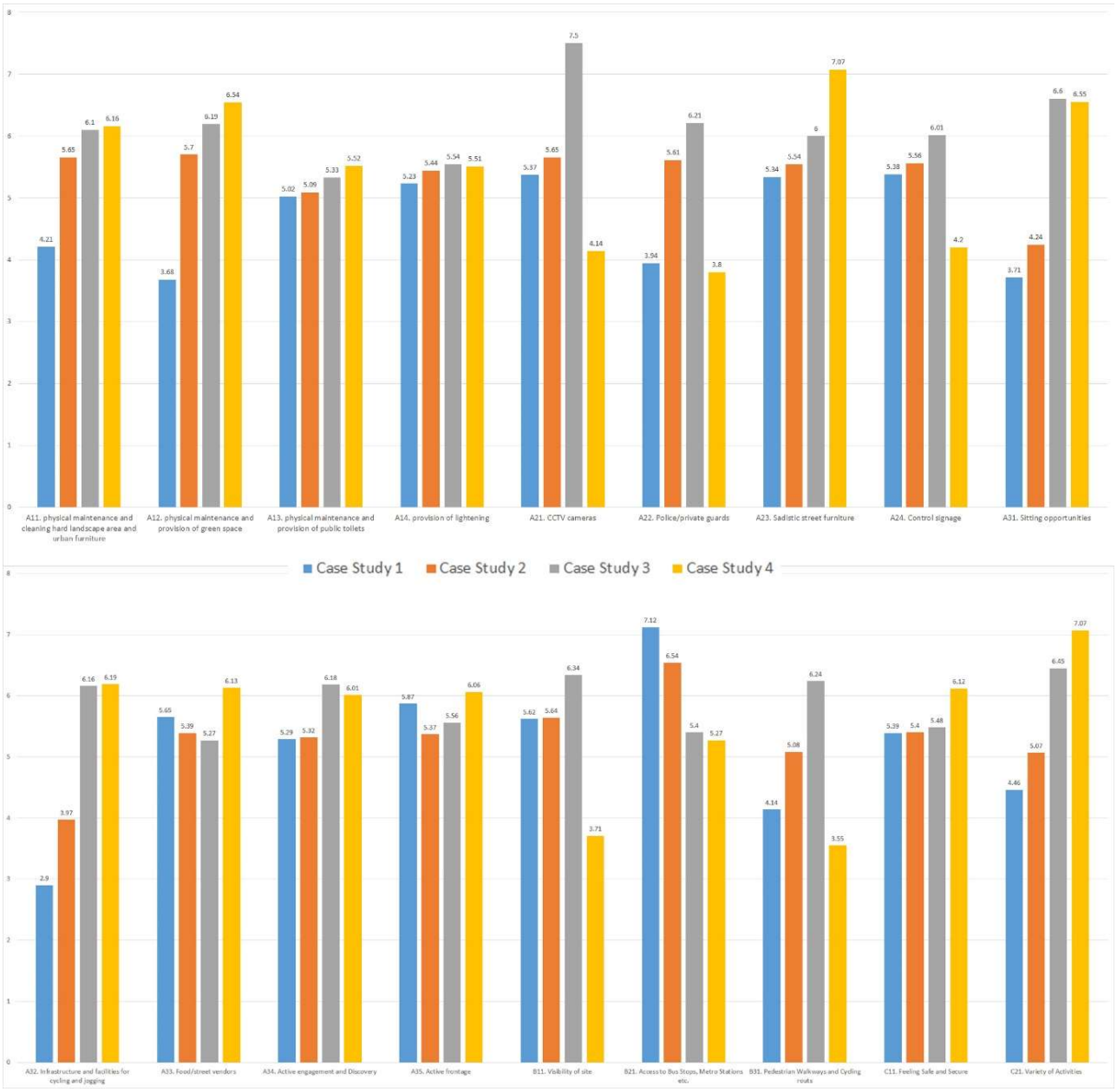

Fig. 4 Average of all citizens' judgments related to indicators in four case studies

indicator with 6.5 score was the best score, which Tajrish square received from its users' judgments. It should be noted that the Tajrish Metro Station is not in the site of the square, and it is located in 500 meters from the east side of Tajrish Square; therefore, folks should walk 0.5km between the metro entrance and the square. This might be a cause for the differences between scores of the relevant indicator between Enghelab and Tajrish Squares.

Approximately 6000 citizens have visited Niavaran Park as the third case study during a week. Three hundred and fifty four surveys distributed among the users of Niavaran Park including 188 male and 166 female individuals. Ten people used bicycle to reach the site and thirty-six percent of users accessed to Niavaran Park by public transportation. The best score of Niavaran Park relates to "CCTV Surveillance" indicator as 7.5, which from survey and observation of the case study, it can be seen that there isn't any CCTV around and inside of Niavaran Park. Based on the average of respondents' scores, the second high score relates to "Sitting Opportunities" indicator, which has been scored as 6.6.

This finding illustrates that there are many benches and alcoves with a full range of qualities from low to very high and suitable seats on site, which clustered across the inner-ways of walking and although besides of Multi opportunities offered with benches and alcoves, there are several informal sitting opportunities observed such as

Fig. 5 Control elements in Enghelab Square

Fig. 6 Street vendors in Tajrish Square

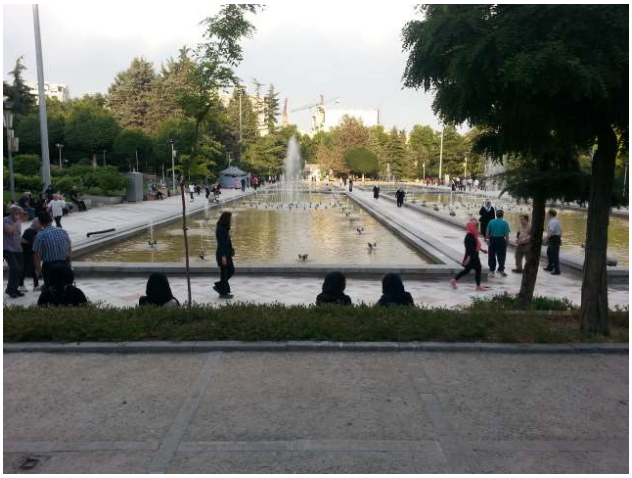

Fig. 7 Niavaran Park a good place for jogging and walking

the grass beds and the edges from stairs. The survey shows that the lowest scores in case of Niavaran Park related to "food/street vendors" and "physical maintenance and provision of public toilets" which scores of both are above the average (5.3) and it can be seen that Niavaran Park has been well kept and well managed from the prospect of its users.

In the last case study, Water and Fire Park, three hundred and sixty-one people were randomly selected to participate in the survey with 54% respondents reporting male and 46% reporting female. Among the respondents, 116 persons used their own vehicle, 118 people walked, 119 users choose public transportation, and eight individuals used bicycle to reach the site. The survey shows that "Pedestrian Walkways and Cycling routes", "Visibility of site" and presence of "Police/private guards" indicators had the lowest scores (3.5, 3.7 and 3.8) from the view of respondents. Regarding to Pedestrian Walkways and Cycling routs indicator, there are three cardinal directions continue the site from west, which is a sidewalk for walkers and in north, there is a sidewalk across the Haqqani Hwy which comes from Vanak Square continue the site and there is east access from Underground Metro Haqqani station, which connected with a footbridge called Nature Bridge. However, there is no crossing point and as such, no walkway is possible from south side of the site plan and along the east side of the Water and Fire Park, there is no such sidewalk for walk access. Moreover, top of that there is no special route for cycling to the site. At the same time, inside the site, there are routes, which designed for cycling but for those who wish to cycle to the Water and Fire Park, they should either carry their bicycles with their own cars or take a risk and join the vehicles' traffic flow. Furthermore, regarding to Police or private guard's presence, the findings show there were private guards observed in the public place in all the observation days and additionally police patrols seeing on Friday

(weekend) which seven out of ten users complain that police presence makes them anxious and that presence has questioned their freedom. According to the respondents, the two highest scores relate to "Sadistic street furniture" and "Variety of Activities" as scored seven. The findings (from both the survey and observation) indicate that there are no significant elements of sadistic street furniture and the most common uses of the public place under observation were Strolling, Cycling, Jogging, Sitting, Watching, Taking Pictures and eating, which account for more than two-thirds of the total number of users. The highest number of activities was recorded on Friday and the lowest on Sunday, which shows that Water and Fire Park is particularly a weekend destination.

Stage 3

The last stage is calculating the level of publicness based on the Q value in the VIKOR model. According to the result of the model, which represented in **Table 3**, the Niavaran Park has the highest level of publicness among four case studies. As said before, the Q value suitability should be sorted descending, thereby ranking of case studies based on the Q value will be: 1.Niavaran Park, 2.Water and Fire Park, 3.Tajrish Square and 4.Enghelab Square. Furthermore, by using the equation number (11) the level of publicness can easily calculate in scale of 0 to 10 which 0 represents the worst level of publicness (fully private) and 10 represents the best level of the publicness (fully public) which in this study represented as Q' value. Based on the value of Q', Niavaran Park scored 5.3 of 10 (the highest level of the publicness) and Enghelab Square with the score of 4.7 has the lowest level of publicness. Finally, **Fig. 9** shows levels of publicness of each case study.

DISCUSSION

This study, similarly to its triple stages has three privileges to late efforts to assess the publicness of public places. Weighting indicators, assessing public places by people and using a simple and efficient model (VIKOR) are these three advantages of this study.

The purpose of weighting indicators in this study is to determine the importance of each indicator in the context of case studies. The result of this stage outlines two advantages. First, it shows the most important/weighted indicator, which helps urban designers/managers easily find by changing which indicator in public place, they can expect significant modification in the level of publicly or privacy of a place. Secondly, assessing the publicness based on weighted indicators makes the result much closer to reality. For example, citizens could feel a public place with different street vendors less public than a same place with the provision of infrastructure for

Fig. 8 Children active engagement with Water element in Water and Fire Park

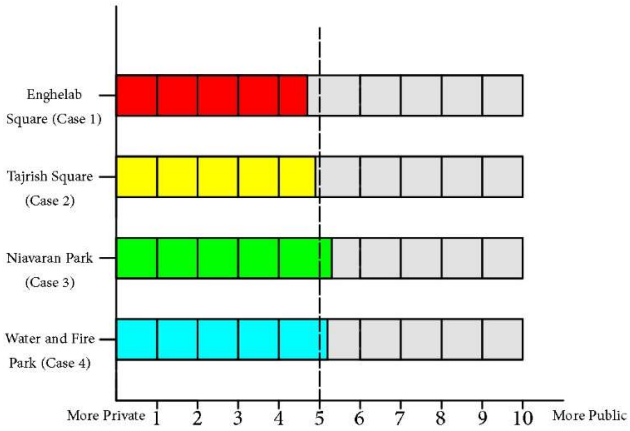

Fig. 9 The level of publicness of four case studies in Tehran

doing various activities. It means if there is a weighted system, which shows the effect of each indicator on creating more public place the result should be more reliable.

Assessing the publicness indicators based on users view has also some advantages. First, citizens as the daily users of public places, have the most precious knowledges about each and every strength and weakness of all case studies. Regarding to previous models, which in those models public places were scored, based on the final judgment of authors, this study completely relies on peoples' judgments about the level of the publicness of their own public places. Moreover, the result of second stage consists the finding of Ekdi and Çıracı (2015) Study, which is about the relations between indicators, but the nature of those relations is still unknown. For example, the presence of police forces in Niavaran Park increased users' perception of safety, but in Water and Fire Park, that presence makes folks anxious, and it limits their freedom. In addition, despite the ownership of public places in Tehran which are completely owned by the city council, but none of these four case studies are near to fully public places. Furthermore, there are differences between case studies in managing and control. Finally, using peoples' judgment could decrease

Table 3. Calculating the level of publicness of four case studies.

Indicators	Weights	Pi						Si						Final Steps of the VIKOR model					
		More Private	Case 1	Case 2	Case 3	Case 4	More Public	More Private	Case 1	Case 2	Case 3	Case 4	More Public	More Private	Case 1	Case 2	Case 3	Case 4	More Public
A11	0.03	1	4.21	5.65	6.1	6.16	10	0.03	0.02	0.02	0.01	0.01	0.00	**Ri**	**Ri**	**Ri**	**Ri**	**Ri**	**Ri**
A12	0.04	1	3.68	5.7	6.19	6.54	10	0.04	0.03	0.02	0.02	0.02	0.00	0.13	0.07	0.07	0.06	0.06	0.00
A13	0.03	1	5.02	5.09	5.33	5.52	10	0.03	0.02	0.02	0.02	0.01	0.00	**St**	**St**	**St**	**St**	**St**	**St**
A14	0.04	1	5.23	5.44	5.54	5.51	10	0.04	0.02	0.02	0.02	0.02	0.00	1.00	0.55	0.50	0.44	0.50	0.00
A21	0.09	1	5.37	5.65	7.5	4.14	10	0.09	0.05	0.04	0.03	0.06	0.00	**S-**	**S-**	**S-**	**S-**	**S-**	**S-**
A22	0.08	1	3.94	5.61	6.21	3.8	10	0.08	0.05	0.04	0.03	0.05	0.00	0	0	0	0	0	0
A23	0.10	1	5.34	5.54	6	7.07	10	0.10	0.05	0.05	0.04	0.03	0.00	**S+**	**S+**	**S+**	**S+**	**S+**	**S+**
A24	0.01	1	5.38	5.56	6.01	4.2	10	0.01	0.01	0.01	0.00	0.01	0.00	1	1	1	1	1	1
A31	0.05	1	3.71	4.24	6.6	6.55	10	0.05	0.03	0.03	0.02	0.02	0.00	**R+**	**R+**	**R+**	**R+**	**R+**	**R+**
A32	0.04	1	2.9	3.97	6.16	6.19	10	0.04	0.03	0.03	0.02	0.02	0.00	0.13	0.13	0.13	0.13	0.13	0.13
A33	0.01	1	5.65	5.39	5.27	6.13	10	0.01	0.01	0.01	0.01	0.01	0.00	**R-**	**R-**	**R-**	**R-**	**R-**	**R-**
A34	0.03	1	5.29	5.32	6.18	6.01	10	0.03	0.02	0.02	0.01	0.01	0.00	0	0	0	0	0	0
A35	0.03	1	5.87	5.37	5.56	6.06	10	0.03	0.02	0.02	0.02	0.01	0.00	**Q**	**Q**	**Q**	**Q**	**Q**	**Q**
B11	0.07	1	5.62	5.64	6.34	3.71	10	0.07	0.03	0.03	0.03	0.05	0.00	1.00	0.53	0.51	0.47	0.48	0.00
B21	0.11	1	7.12	6.54	5.4	5.27	10	0.11	0.04	0.04	0.06	0.06	0.00	**Q'**	**Q'**	**Q'**	**Q'**	**Q'**	**Q'**
B31	0.05	1	4.14	5.08	6.24	3.55	10	0.05	0.03	0.03	0.02	0.04	0.00	0	4.7	4.9	5.3	5.2	10
C11	0.13	1	5.39	5.4	5.48	6.12	10	0.13	0.07	0.07	0.06	0.05	0.00						
C12	0.06	1	4.46	5.07	6.45	7.07	10	0.06	0.03	0.03	0.02	0.02	0.00						

self-errors or based on biases and represents more stable and reliable results than assessing by authors/experts whom they may have different views and therefore, by substitution them the level of publicness of same case studies may be changed.

Finally, the proposed model for evaluating the publicness is efficient and easy to use. Unlike Ekdi and Çıracı (2015) proposed model, this model can be easily applied, and its consistency has been tested in many late researches. Final result as it represent in **Fig. 9** shows the model ability to visualizing the level of publicness and makes easy comparison the level of publicness between each case study.

To sum up, this study attempted to clear a pass for assessing by people and fill the gaps of previous models, which made the final result closer to the reality.

CONCLUSION

This paper was conducted to represent a democratic model for evaluating the publicness of public place. With this aim, the existent body literature about publicness was reviewed and dimensions, criteria and indicators were identified. In this study then four case studies located in Tehran were selected. These case studies owned by Tehran city municipality and unlike the American and western European public places, there are not any concerns about privatization of public places. However, there was a concern due to control's policies, which are enacted by governments and finding of this paper consists that concern. Furthermore, it showed that regardless of ownership of Tehran public places, case studies of this research are in half of the way of being a fully public place. Additionally, in case of Tehran, there are some concerns about other management criteria besides of control elements. The VIKOR model used citizens assessment as input data and final results illustrated that evaluation can be done by people. At the end, it is believed that the proposal model of this paper will be efficient in evaluating the level of publicness and can be a start point for urban designers/managers to analyze related urban issues from perspective of citizens.

APPENDIX

Please see supplement data, which include three folders:

1. Questionnaires designed for both experts and citizens.

2. Case studies folder contains data received respondents and movies shoot in each case study

3. The whole process of modeling publicness by using vikor.

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