Explanation of factors affecting success of public space

Providing a model for assessing this success through its functional dimension

Case study; Imam Khomeini Street, Tabriz, Iran)

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Abstract

The condition that varieties of cities including Iranian cities are confronted makes the creation of successful public space a necessity. It is clear that for creating suitable public space first we should understand the influencing factors on space and simultaneously solve and improve the problems through understanding the environment.

For achieving the factors that influence the success as a main goal of this research, important theories of the successful public space such as White, Montgomery, Jacobs, Gehl, Carr, Oldenburg and the experience of the famous international institutes are reviewed. finally a model for space evaluation based on place game model of PPS institute was presented.

The main method of research because of its experimental-theoric orientation for identifying the most influencing factors on success of space is testing theory Method. In order to verify theory the Correlation Test is used.

At first based on place model, place game checklist of PPS institute and theoretical framework presented in this paper, the factors influencing the success of public space are categorized as comfort-activity-access- socialability dimensions.

By means of deep observation, questionnaire, Llewlyn Davies's scale and field survey techniques data was collected to complete the data requirements of the place evaluation model. In order to spatially analyze the success level at Imam st, interpolation model of GIS software was used. The result showed that Abresan Street is the most successful section, Saat, Mansoor and Golestan sections were followed respectively.

The results of investigation about the theory in our case study (Imam Khomeini street) show that between following factors: comfort-activity-access- socialability, factors of comfort and image are the most important condition for place success.

Key word: successful public space, access and linkage, socialability, uses and activity, image & comfort

Introduction

Pubic space is a mix of physical milieu with various activities whose purpose is to show the social life visible for all (Carr et al. 1992, p.11). All parts of an urban fabric which are accessible physically and visually for all are considered as public space. They are the most important part of towns and cities in which the greatest amount of contact and interaction among people take place (Tibbalds, 1992, p.1).

The development of public spaces will depend on the existence of public life. The forces that shape public life can bring a broader understanding of the factors that influence the vitality of public spaces. These general forces are: (1) the environmental characteristics of the public space (which include climate and topography), (2) socio-cultural characteristics of the community, (3) functional and physical characteristics of public spaces, (4) political and (5) economic (6) recreational and (7) the health needs of society (Kaplan and Kaplan, 1989).

Urban planning and design in variety of scales can have effect on the political, economic and recreational patterns through affecting functional and physical characteristics of public space.

This paper focuses on the functional dimension of urban design, which involves how places work and how urban designer can make better places. The social usage and visual traditions of urban design thought had a functionalist perspective. That of the former concerned the functioning of environment in terms of how people used it, while in the article, the human dimension was often abstracted out and reduced to aesthetic or technical criteria such as traffic follow, access, or circulation (Carmona & Et al, 2003, 165).

In public spaces, existence of users is not the only sign of success, a successful public space attracts different levels of activity, Whyte remind us that: The best-used places are sociable places, with a higher proportion of couples than you find in less-used places, more people in groups, more people meeting people, or exchanging goodbye. A high proportion of people in groups is an index of selectivity. When people go to a place in two or three or rendezvous there, it most often because they have decided to. Nor are these sociable places less congenial to the individual. In absolute numbers, they attract more individuals than do less-used spaces.

The best-used places also tend to have a higher than average proportion of women. If a plaza has a markedly lower than average proportion of women, something is wrong. Where there is a higher than average proportion of women, the plaza is probably a good one and has been chosen as such (Whyte, 1980, 17&18).

 Jan Gehl in his book “Life between buildings “present social activities in public space as the most important factor for successful public space. He believed that something more than architecture and planning is needed for extending these kinds of activities. In fact, physical framework does not have a direct influence on the quality, content, and intensity of social contacts. He mentions that social activities mainly relate to common interest in economy, politics and ideology between users of public space, but architects and planners can have effect on the possibilities for meeting, seeing, and hearing people - possibilities that both take on a quality of their own and become important as background and starting point for other forms of contact (Gehl, 1387, 3-6).

# According to Gehl, Successful space has high range of social activities in different intensities and at least users have eye contact (Gehl, 1385). There is a direct relation between necessary, optional and social activities with quality of outdoor areas, it means when the quality of outdoor areas is good, optional activities occur with increasing frequency. Furthermore, as levels of optional activity rise, the number of social activities usually increases substantially (Gehl, 1387, 3-6).

#  In successful spaces, spectrums of social and optional activities are more predictable. Repetition of use and duration of staying in space has a direct relation to success of space. Increase of staying time and repetition of use of space affect frequency of meeting and speaking and in result increase of social activities (Gehl, 1387, 3-6). Finally as Montgomery said successful urban places must combine quality in three essential elements: physical space, the sensory experience and activity (Montgomery, 1998).

Concepts, theories and theoretical framework

According to Gehl each improvement in quality of city by giving more room to a much wider range of human activities affects the number of user of public spaces passively and actively. Within certain limits - regional, climatic, social - it is possible to influence how many people and events use the public spaces, how long the individual activities last, and which activity types can develop.

On the other hand for Montgomery It is relatively straightforward to think of a successful place, and to experience it at such; it is much more difficult to discern why it is successful, and whether similar success can be generated elsewhere (Montgomery, 1998, p.94).

In his view successful urban places must combine quality in three essential elements: physical space, the sensory experience and activity (ibid, 96). We can make use of the components of place to derive a set of preconditions and principles for the creation of successful urban places (ibid, 97). Successful places typically have animation and vitality. For Montgomery, the key to successful public realm is the 'transition base 'which should be 'as complex as possible', 'without a transition base of economic activity at many different levels and layers, it will not be possible to create a good urban place'. As not all transitions are economic, urban areas and cities must also provide space for social and cultural transactions (Montgomery, 1998, p.99)

The essential condition for achieving urbanity is to generate enough diversity[[2]](#footnote-2)—the mixture of uses and activities—to be self-sustaining. This diversity must be sufficiently complex to stimulate public contact, transactions and street life. (Montgomery, 1998, p.103) Vital urban areas—and indeed as many of their constituent parts as possible— must serve more than one primary purpose, preferably more than two. These primary purposes, and the 'secondary[[3]](#footnote-3)' activities they attract, must ensure the presence of people on the streets and in the spaces and buildings across different times of the day (Montgomery, 1998, p.104).

Montgomery accepts that architectural style is not 'unimportant', or it conveys meaning , identity and images.(Montgomery, 1998, pp. 112-113)

According to PPS, 'the community is expert'. People have an intuitive sense about what they need and we should try to provide a structure to help them find out what it is (Palmer, 2008, p.61).

In order to become the expert at what they call 'ergonomic of the place' and to understand what makes street corner and plazas work, PPS learned to closely watch 'how people come into a place, what they look at, where they stop', for these like Whyte they use time-lapse photography and other methods to quantify pedestrian and automobile traffic pattern, but much of what can be learned about place is through simple observation (Palmer, 2008, pp. 58-61)

 “PPS” like Gehl believes that for creating successful public space, there must be somewhere to go and something to do, so success happens when spectrum of human activities are presented in space.

Based on a synthesis of research and ideas on use and design of public space, Car et al. (1992) argues that, as well as 'meaningful' (i.e. allowing people to make strong connections between the place, their personal lives, and the larger world), and being 'democratic' (i.e. protecting the rights of users groups and providing for freedom of action), public spaces should also be 'responsive' – that is, designed and managed to serve the needs of their users.

Among the human needs that John Lang (1987) argues in his book “creation of architectural theory”, They identify five primary needs that people seek to satisfy in public space: 'comfort'; 'relaxation'; 'passive engagement with the environment'; 'active engagement with the environment'; and 'discovery'. Good places frequently serve more than one purpose (Carmona & Et al, 2003, 165).

It is important to examine needs, not only because they explain the use of places but also because use is important to success. Places that do not meet people's needs or that serves no important functions for people will be underused and unsuccessful (Car & Et al, 1992, pp. 91-92).

Based on the findings of literature review there are many factors that influence the success of public space and they relatively depend on researchers' attitude and expertise. In this section according to findings of the most important theorists of the successful public space such as White, Montgomery, Jacobs, Gehl, Car, Oldenburg and etc. as well as the experience of the famous international institutes such as PPS, the influencing factors based on place model of PPS institute, are categorized in four key attributes of successful space 'comfort and image, access and linkage, uses and activity, sociability. Therefore based on these factors. the questionnaire is extracted.

Whyte by addressing the similar results of Jan Gehl study of pedestrians in Copenhagen and Mattew Ciolek study of an Australian shopping center conclude that despite the cultural and ethnic difference, the strongest similarities are found among the world's largest cities. People in them tend to behave more like their counterparts in other world cities than like fellow nationals in smaller cities (Whyte, 1980, p. 23)

By considering the scale variable, the factors that make a plaza or small space successful in one city work in others (Whyte, 1980, p.90)

Therefore, by having this point in mind, the conclusion of theoretical framework of this research is applied for case study at the most important street in Tabriz metropolitan.

Conclusion of literature

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| Table1. Introducing the factors affecting success of public space |
| What is the level of street frontage visibility from a distance?How much is Space visibile according to location of cars in adjacent of street?How do you find the clarity of information boards?To what extent you have view over surrounding? | Space visibility from distance(Whyte, Carr, PPS) | Visual access | Access and Linkages |
| The space should be the same level as the street level, or at most 3 feet higher or lower.(Whyte, Gehl) |
| Space visibility from adjacent buildings (eyes on the street)(Whyte, PPS, Jacobs) |
| Space visibility according to location of cars in adjacent of street?(Gehl, PPS) |
| Active street Frontage& permeability(Whyte, Gehl, Montgomery) |
| Do the roads and paths through the space take you where you actually want to go?Can you use a variety of transportation options – bus, train, car, bicycle, etc. - to reach the place?Are there bus stops and taxi stations available?  | Varity of transportation options provide access to the place | Physical access |
| Connectivity and continuity of sidewalks(PPS) |
| Function of space for people with special needs(Whyte, PPS) |
| The linkage between street and space(Whyte, Jacobs) |
| Overall design relate to people's use(Whyte, PPS, Gehl) |
| Are there space services accessible for all types of economic classes? | Space accessibility for all types of economic classes(offering service of different kinds at varying prices and degrees of quality)(Montgomery, Oldenburg) | Economical access |
| What is the level of your place attachment in this space?  Do You immediately understand the changes in this street? | Sense of place(Montgomery) | Psychological access |
| How much the facade of street is attractive? | Symbolic limitation or attraction(Carr) | Symbolic access |

|  |  |  |
| --- | --- | --- |
| Is there any Unique features in this street in comparison to similar streets? If yes, please explain?...Are there any choices of things to do for attracting all members of your family?Can diversity of activities attract and amuse all people?How much this street keeps its vitality after evening?How frequently do you use the cafes and parks in this street? | variety of primary land uses, including residential, Mixed use & Mixed housing(Gehl, Montgomery, Jacobs) | Uses & Activities |
| Varying opening hours and stimulating the evening economy(Montgomery, Jacobs, Oldenburg)  |
| Multi-function public space(Gehl) |
| Uniqueness activity(Whyte, Gehl, PPS) |
| Specialness activity(Whyte, PPS) |
| Wide spectrum of social, economic and cultural activities(Whyte, Gehl, Montgomery, PPS) |
| Retail sales(Whyte, PPS) |
| Holding of event and activities(PPS) |
| Availability of cinemas, theatres, wine bars, cafe's, pubs, restaurants andother cultural and meeting places(Montgomery, Whyte, Oldenburg) |
| Availability of spaces, including gardens, squares and corners to enablepeople-watching and other activities(Montgomery) |
| Third place accessibility(Oldenburg) |
| Property values(PPS) |
| Rent levels(PPS) |
| Local business ownership(PPS) |
| Do you meet your acquaintances along this street by chance?Do you usually make your appointment with acquaintances along this street?Do you usually choose this place for talking with your friends?Do you have sense of pride due to space? In other words can you proudly tell others about positive characteristics of space? Is there any opportunity for users to communicate with the strangers?Does this space make you feel good at first glance? | Mix of ages, ethnic, cultural groups(Gehl, Whyte, PPS, Jacobs, Oldenburg) | Sociability |
| Volunteerism(PPS) |
| Welcoming and Strangers receptivity(Montgomery, PPS) |
| Level of contacts(Montgomery, PPS, Jacobs, Oldenburg) |
| presence of people across differenttimes of the day and nights(PPS) |
| Pride(PPS) |

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| Do you feel safe when crossing the street (against traffic accidents)?Do you have to spend a lot of time for crossing the street?Do the presences of undesirable groups & drug users disturb your feeling of safety?Do the presence of thieves and gangs disturb your feeling of safety?Do you feel safe in the evening after sunset? | Traffic accident | Protection against traffic and accident(PPS, Gehl) | (feeling of safety) | Comfort &Images |
| Fear of traffic |
| Other accidents |
| Lived in/ used | Protection against crime & violence (feeling of safety)(Jacobs, Gehl) |
| Street life |
| Street watchers |
| Overlapping functions- in space & time |
| Wind / draft | Protection against unpleasant sense experiences(Whyte, Gehl) |
| Rain / snow |
| Cold / heat |
| pollution |
| Dust / glare / noise |
| Appropriate trees & planting |
| Can you feel relax due to existing noise?Does space present freshness and vital atmosphere?Is the presence in this space memorable for you?Is the surface of sidewalk good for walking?Is this space clean?Are there any Possibilities for sitting, standing/staying in the space? | Room for walking | Possibilities for walking(Whyte, Gehl, PPS) | comfort |
| Untiring layout of street |
| Interesting facades |
| No obstacles |
| Good surfaces |
| Using ramps instead of stairs |
| Avoid making stairs & different level as much as possible |
| Attractive edges"edge effect" | Possibilities for standing / staying(Whyte, Gehl) |
| Defined spots for staying |
| Supports for staying |
| Zones for sitting | Possibilities for sitting(Whyte, Gehl, PPS) |
| Maximizing advantages primary and secondary sitting possibilities |
| Benches for resting |
| Seeing-distance | Possibilities for see(Gehl) |
| Unhindered views |
| Interesting views |
| Lighting (when dark) |
| Low noise level | Possibilities for hearing / talking(Whyte, Gehl) |
| Bench arrangements "talk spaces" |
| Invitation to physical activities, play, unfolding& entertainment-day and night and summer and winter | Possibilities for play/ unfolding/ activitiesGehl)) |
| Public telephones, information kiosks, drinking fountain.  | amenities(Whyte, PPS) |
| Do you find this space beautiful(Architecturally oriented)? | Dimensioning of building & space in observation of the important human dimensions related to senses, movements, size & behavior | Scale(Montgomery, Gehl) | enjoyment |
| Sun / shade | Possibilities for enjoying positive aspects of climate(Whyte, Gehl) |
| Warmth / coolness |
| Breeze / ventilation |
| Good design & good detailing | Aesthetic quality / positive sense-experience(Whyte, Gehl, Montgomery) |
| Views / vistas |
| Trees, plants, water |
| Memory representation (memorable space) | meaning(Montgomery) |

Research methodology

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| Table2. Research steps for testing the hypothesis |
| identifying the factors influencing the success level of Imam st  | Main goal | fundamental |
| What factors and indices are influencing the level of success in Imam st in Tabriz | Question |
| It seems that among the influencing factors, image and comfort are the most important factors | Hypothesis |
| Four section of Imam Khomeini st in Tabriz  | Case study |
| Assessing the level of success in different section of Imam st in Tabriz | Goal | first stage |
| Evaluation research method for assessing the success of public space as introduced in table4. | Methodology |
| Deep observation. Questionnaire. interview | Data collection means |
| Excel software, | Analysis method  |
| The checklist of evaluating the success level of street  |
| Assessing the level of success at four sections of Imam st through questionnaire |
| GIS software, |
| Extraction of descriptive data from questionnaire for analyzing by excel in order to feel in checklist criteria | Analysis process |
| Evaluation of success according to given model |
| Use of GIS software for geo-referencing the location for the questionnaire data |
| Identify the relatively successful sections of the Imam st in Tabriz | Result |
| Explanation the most important factors influencing the success of Imam st by using the results from the first stage of the study for verification of the hypothesis | Goal | Second stage |
| Correlation test | Methodology |
| Questionnaire | Data collection means |
| Spss software | Analysis means |
| Excel software |
| Using Spearman test between success factors and level of success at four different section of imam st | Analysis method |
| Identifying the most important factor influencing the success of Imam st  | Result |

Selection of case study

Montgomery based on Jane Jacob emphasize four essential determinants which govern or set the conditions for activity: a mixture of primary use, intensity, permeability of the urban form and the mixture of building types, ages, sizes and conditions. Furthermore Montgomery by referring to researchers such as Gehl (1989) and Cook (1980) argue that successful urban places are based predominantly on street life, and the various ways in which activity occurs in and through buildings and spaces (Montgomery, 1998, 96). Streets are undoubtedly the most important elements in a city's public realm, the network of spaces and corners where the public are free to go, to meet and gather, and simply to watch one another. Good urban places are judged by their street life. For it is in streets- as multipurpose- that all the ingredients or city life are combined: public contact, public social life, people-watching, promenading, transacting, natural surveillance and culture (ibid, p109).

By considering the type of public space, in our case study it was selected in a way that in addition to including varied functions it could provide us a comparison for the results and explanation of the most important factors affecting the success of public space.

Such space must primarily include the potential for the absorption of people as an important precondition for success. The historic, cultural, commercial and official axes of Imam st as the most important and affective east-west axes in Tabriz city with the most important historic buildings, main neighborhoods, railway station, Qonqa square, Shahnaz st, Tarbiat walk way, Shahrdari historical building, Kabood mosque, Abresan commercial st, Tabriz university and the most important cultural centers and historical residential complex provide us with needed features. Moreover, the researchers are familiar with the atmosphere. It has to be mentioned that this street due to different reasons has been the one of the most attractive and commuting place in Tabriz since Qajar period.

Fiqure1. Location of Imam Khomeini street (case study) in the map of Tabriz

Sample size and sampling method

Since the statistical population and sampling method size in this research is unlimited and the objective is the selection of samples without any particular characteristic, the method use in this research has been simple random sampling.

For obtaining the sample size, by using the following formula number 368 is calculated based on the maximum acceptable error at 95% confidence level.





In order to collect the relevant data, 34 questions including 10 indices in 4 main categories were selected and presented in 5 optional of likert. Descriptive background parameters in this questionnaire are shown in the following table. From 332 interviewees 29% were in Imam st. 25% in adjacent neighborhood. and 46% in other districts of the city.

Table 3. Descriptive background parameter of the questionnaire

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Marital status | Education level | Period of residence | Gender | Age group |
| Married | Single | BA & more | Junior college diploma | Secondary school or no diploma | More than 10 years | 2 to 10 years | Less than 2 years | Native | Male | Female | More than 35 | 35-55 | 18-35 | 14-18 |
| 27% | 73% | 60% | 34% | 6% | 8% | 7% | 5% | 80% | 66% | 34% | 17% | 22% | 48% | 13% |

Proving the hypothesis

For the evaluation and comparison between the success level of four section of Imam st first, the place evaluation checklist were completed by using deep observation, questionnaire, Llewlyn Davies's scale and field survey techniques. In order to spatially analyze of success level at Imam st, interpolation model at GIS software was also used.

After assessing the success level between four section of Imam street, Spearman correlation test was conducted to recognize the most important factors that influence the success of this street.

First stage: Evaluating the success rate among four sections of Imam Street

The first method: Success evaluation based on proposed place evaluating model

After answering and attributing the score to model questions based on questionnaire, field survey and deep observation were conducted. In order to prioritize each section according to overall success and success in each criteria, as "PPS" institute proposed at "place game" model, the statistical indices (mode and average), has been calculated. The calculated numbers only reflect the condition of each section relative to others.

Table4. Success evaluation based on proposed Place Evaluating Model at four Section of Imam Stree

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Golestan | Saat | Mansoor | Abresan | Data collection means | Qualitative questions | Criteria |
| 1 | 3 | 2 | 4 | questionnaire | Level of voluntary activities in space | Sociability |
| 1 | 2 | 3 | 4 | questionnaire | Level of contacts in space |
| 1 | 3 | 2 | 4 | questionnaire | Attraction of space for being selected |
| 1 | 2 | 4 | 3 | questionnaire |  Level of Welcoming & strangers receptivity |
| 1 | 2 | 4 | 3 | questionnaire | Level of being proud about space |
| 1 | 2.4 | 3 | 3.6 | Average of sociability score (sum of scores/5): |
| 1 | 2 | 4&2 | 4 | Mode of sociability score |
| 2 | 1 | 3 | 4 | questionnaire | Feeling of safety due to traffic accident | Feeling of safety | Comfort & images |
| 2 | 4 | 3 | 1 | questionnaire | Possibility of crossing the street in short time |
| 1 | 1 | 1 | 1 | observation | Possibilities of safe staying at street refuge in the time of crossing  |
| 1 | 3 | 2 | 4 | observation | Level of pedestrian priority at street  |
| 1 | 2 | 4 | 3 | questionnaire | Level of Feeling safety due to gang & thieves |
| 1 | 2 | 4 | 3 | questionnaire | Level of Feeling safety due to undesirables |
| 1 | 2 | 3 | 4 | questionnaire | Level of Feeling safety after evening |
| 1 | 2 | 3 | 4 | observation | Possibility of street for protection against bad weather |
| 0 | 0 | 0 | 0 | observation | Plants compatibility with climate |
| 3 | 1 | 2 | 4 | observation | Flat sidewalk without stairs | Comfort |
| 1 | 2 | 4 | 3 | observation | Availability of benches for rest |
| 3 | 1 | 2 | 4 | questionnaire | Quality of sidewalk coverage |
| 1 | 2 | 3 | 4 | observation | Possibility of Sitting or staying at edges |
| 1 | 2 | 3 | 4 | observation | Availability of suitable places for sitting which are designed for other main function |
| 1 | 3 | 2 | 4 | questionnaire | Level of feeling comfort & satisfaction |
| 1 | 3 | 2 | 4 | observation | Level of street lightening at night |
| 2 | 3 | 1 | 4 | questionnaire | Possibilities for unhindered views |
| 1 | 2 | 3 | 4 | questionnaire | Low noise level for hearing and talking |
| 1 | 2 | 3 | 4 | observation | Availability of suitable amenities (public telephone, information kiosk, recyclebin, …) |
| 2 | 1 | 3 | 4 | questionnaire | Level of street cleanness |
| 2 | 3 | 4 | 1 | questionnaire | Level of memory representation at street |
| 1 | 2 | 3 | 4 | observation | Level of street elements uniqueness (bus station,…)  | Enjoyment |
| 1 | 2 | 4 | 3 | observation | Beautiful facade due to architectural-orientation |
| 1 | 2 | 4 | 3 | observation | Beautiful vistas (fountain, sculpture,…) |
| 0 | 0 | 0 | 0 | observation | Human scale of street without the feeling of float or enclosure  |
| 1.4 | 2.1 | 2.9 | 3.4 | Average of comfort & image score (sum of scores/25): |
| 1 | 2 | 3 | 4 | Mode of comfort & image score |
| 1 | 2 | 3 | 4 | questionnaire | Level of Space visibility from distance for walking | Visual access | Access & linkage |
| 1 | 3 | 2 | 4 | questionnaire | Level of Space visibility according to location of cars in adjacent of street |
| 2 | 3 | 1 | 4 | questionnaire | Dominate over surrounding |
| 1 | 3 | 2 | 4 | observation | Level of Space visibility from adjacent buildings |
| 3 | 4 | 2 | 1 | Llewlyn Davies's scale |  Level of Active frontage |
| 1 | 3 | 2 | 4 | questionnaire | Level of information board clarity along street and intersections |
| 4 | 1 | 2 | 3 | observation | Connection method between sidewalks and adjacent space | Physical access |
| 4 | 1 | 2 | 3 | questionnaire | Level of sidewalk connectivity and continuity |
| 3 | 2 | 1 | 4 | questionnaire | Varity of transportation option for use |
| 2 | 1 | 3 | 4 | questionnaire | Availability of Public transportation station  |
| 1 | 1 | 1 | 1 | observation | Level of facilities for pedestrians with disabilities |
| 1 | 3 | 2 | 4 | questionnaire | Level of place attachment sense | Psychological access |
| 2 | 3 | 2 | 4 | questionnaire | Level of understanding the space changes |
| 2 | 3 | 4 | 1 | questionnaire | Level of place accessibility for all types of economic classes | Economic access |
| 1 | 2 | 3 | 4 | questionnaire | Level of symbolic limitation of space | Symbolic access |
| 1.9 | 2.3 | 2.1 | 3.3 | Average of access & linkage score (sum of scores/15): |
| 1 | 3&4 | 2 | 4 | Mode of access & linkage score |
| 3 | 2 | 4 | 4 | questionnaire | Level of evening & night activities | Uses & activity |
| 1 | 3 | 2 | 4 | questionnaire | Liminal space for public communication (café, ..) |
| 1 | 3 | 2 | 4 | Field survey | Level of mixed use |
| 4 | 4 | 4 | 4 | Field survey | Domination of retail (if more than 50% of land uses dedicated to retail street gets 4 score) |
| 3 | 4 | 1 | 2 | observationinterview |  Level of Holding event and activities at street |
| 1 | 3 | 2 | 4 | observation | Presence level of street venders |
| 1 | 1 | 1 | 1 | observation | The availability of cinemas, theaters & restaurants |
| 1 | 2 | 4 | 3 | observation | the availability of spaces, including gardens, squares and corners to enable people-watching and other activities |
| 1 | 2 | 3 | 4 | questionnaire | Spectrum of different activities |
| 1 | 3 | 2 | 4 | observationinterview | Existing transition base in social, economic & cultural fields |
| 1 | 4 | 2 | 3 | questionnaire | Existing of unique activity at street |
| 1 | 4 | 2 | 3 | questionnaire | Existing of Special character at street |
| 1.6 | 2.9 | 2.4 | 3.3 | Average of uses and activities score: (sum of scores/12) |
| 1 | 3 | 2 | 4 | Mode of uses and activities score |
| 1.7 | 2.4 | 2.6 | 3.4 | Average of average scores in each criteria: |
| 1 | 2 | 3 | 4 | Mode of all score |

According to the result of the evaluation, Abresan section has the most successful space among others, next are Mansoor, Saat and Golestan sections respectively.

Explanation the method of filling the place evaluation model questions according to questionnaire, field survey and deep observation

* Questionnaire

In order to clarify the method of place evaluation by using the questionnaire, table number 5 is presented. In this table it is shown how marks for example are given to the criteria of level of street frontage visibilities.

Table5. Level of street frontage visibilities for the different sections of the street

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Priority(score in model) | Score mean | Total | Excellent | Good | Average | Fair | Not at all | Street name |
| 5 | 4 | 3 | 2 | 1 |
| 4 | 3.41 | 75 | 10 | 20 | 38 | 5 | 2 | frequency | Abresan |
| 256 | 50 | 80 | 114 | 10 | 2 | score |
| 3 | 3.33 | 90 | 3 | 37 | 38 | 11 | 1 | frequency | Mansoor |
| 300 | 15 | 148 | 114 | 22 | 1 | score |
| 2 | 3.12 | 83 | 8 | 18 | 34 | 22 | 1 | frequency | saat |
| 259 | 40 | 72 | 102 | 44 | 1 | score |
| 1 | 2.95 | 77 | 5 | 13 | 34 | 23 | 2 | frequency | Golestan |
| 227 | 25 | 52 | 102 | 46 | 2 | score |

* field survey

For example, we evaluate level of mixed use in four streets by using table number 6 data.

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| Table6: Variation of commercial land use at four sections of Imam street |
| Imam | Golestan | Saat | Mansoor | Abresan |
| type | percentage | type | percentage | type | percentage | type | percentage | type |
| 102 | 42% | 42 | 57% | 58 | 66% | 67 | 40% | 41 |

* Llewlyn Davies's scale

Table7: Using Llewlyn Davies's scale to evaluate the performance of designs according to the intensity of active frontage

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  Street name Criteria  | Golestan | Saat | Mansoor | Abresan |
| More than 15 premises every 100 m | 3 | 4 | 4 | 1 |
| A large range of functions/land use | 2 | 3 | 3 | 1 |
| More than 25 doors and windows every 100 m | 3 | 4 | 4 | 1 |
| No blind/blank facades and few passive ones | 3 | 4 | 4 | 1 |
| Much depth and relief in the building surface | 1 | 2 | 2 | 4 |
| High quality materials and refined details | 1 | 3 | 3 | 4 |
| Total score | 13 | 20 | 15 | 20 |

* Deep observation

Table 8: Average of demographic data in four section of imam st. during 6 working days(sat-thr)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Street name | Frequency of users | Sex ratio | Ratio of users in group to all users |  Ratio of Elderly and children presence to all users |
| Abresan | 158 | 1.37 | 0.55 | 0.08 |
| Mansoor | 48 | 4.24 | 0.44 | 0.10 |
| Saat | 126 | 4.23 | 0.40 | 0.08 |
| Golestan | 72 | 8.09 | 0.35 | 0.10 |

Table 9: Average of demographic data in four section of Imam st. at weekend(Friday)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Street name | Frequency of users | Sex ratio | Ratio of users in group to all users |  Ratio of Elderly and children presence to all users |
| Abresan | 59 | 2.01 | 0.69 | 0.10 |
| Mansoor | 19 | 2.33 | 0.67 | 0.11 |
| Saat | 25 | 3.44 | 0.60 | 0.09 |
| Golestan | 28 | 5.05 | 0.69 | 0.10 |

The second method: success evaluation based on questionnaire

In order to ensure the accuracy of place evaluating model results, and to verify the hypothesis through questionnaire. Next, success rate is evaluated according to questionnaire data.

Table10. Distribution of people according to success of imam Khomeini Street selected sections

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| total | Not at all | fair | average | good | excellent | Descriptions | Street name |
| 1 | 2 | 3 | 4 | 5 |
| 77 | 0 | 7 | 35 | 25 | 10 | frequency | Abresan |
| 100 | 0 | 9.1 | 45.4 | 32.5 | 13 | Percentage |
| 100 | 100 | 90.9 | 45.5 | 13 | Cumulative percentage  |
| 3.49 | mean |
| 93 | 1 | 10 | 49 | 30 | 3 | frequency | Mansoor |
| 100 | 1.1 | 10.8 | 52.7 | 32.3 | 3.2 | Percentage |
| 100 | 98.9 | 88.1 | 35.5 | 3.2 | Cumulative percentage  |
| 3.26 | mean |
| **84** | **2** | **9** | **46** | **24** | 3 | frequency | Saat |
| **100** | **2.4** | **10.7** | **54.8** | **28.6** | **3.6** | Percentage |
| **100** | **97.6** | **86.9** | **32.2** | **3.6** | Cumulative percentage  |
| **3.2** | mean |
| **78** | **4** | **16** | **42** | **14** | 2 | frequency | Golestan |
| **100** | **5.1** | **20.5** | **53.8** | **17.9** | **2.6** | Percentage |
| **100** | **94.9** | **74.3** | **20.5** | **2.6** | Cumulative percentage  |
| **2.92** | mean |
| 332 | 7 | 42 | 172 | 93 | 19 | frequency | Imam khomeini |
| 100 | 2.1 | 12.7 | 51.8 | 28 | 5.4 | Percentage |
| 100 | 97.9 | 85.2 | 33.4 | 5.4 | Cumulative percentage  |
| 3.22 | mean |

Similar to the results of place evaluation model, people evaluation of Abresan street success is more positive than other sections while Golestan street have the worst score

Third method: showing the success in each street section by using point density model in ARCGIS

In order to spatially analyze the success level in Imam Khomeini Street of Tabriz , interpolation was used. Interpolation technique is the way of finding undefined point by using sampled points. In other words, this is the method for predicting the value of each pixel in raster layers. This is done by limited numbers of sample point. For interpolation, point layer was created and the value of each point was allocated according to the answer for each respondent (between 1 to 5). By using that layer and IDW (inverse distance weighted) method, raster layer of success was created. In IDW method it is assumed that sampled points are influenced by their location. In this method places of each respondent must be exactly determined on the map. After showing the success in raster layers each pixel shows success in every parts of street.

Fiqure2. Success level in four section of Imam Khomeini street (case study)

Second stage: explanation of the most important factors influencing the success of public space

For explanation of the most important factors influencing the success of public space, according to likert scale of data. Spearman correlation test run between proposed criteria and the success rate of selected sections at Imam Khomeini st by using 332questionnaires.

Results of all spearman tests used to evaluate the effectiveness of success factors were less than 0.05 and in most cases were less than 0.01. These numbers shows the correctness of tests have been used.

Results of spearman correlation test in Imam Khomeini street

* First test

Running correlation test between (image & comfort, sociability, access & linkage, uses & activity) and success rate of Imam Khomeini street to prioritize the influencing factors

Table11.Prioritizing the dimensions influencing the Imam Khomeini street success

|  |  |  |  |
| --- | --- | --- | --- |
| Significant degree | Correlation rate with success of space | Dimension | Priority |
| 0.000 | 0.83 | Image & comfort | 1st |
| 0.000 | 0.73 | Access & linkage | 2nd |
| 0.000 | 0.67 | Uses & activity | 3rd |
| 0.000 | 0.65 | socialabiliyt | 4th |

According to table above the correlation test between space success dimensions and success rate has acceptable significant degree(Less than one percent error. (

* second test

Running correlation test between (comfort, Activity, sociability, Feeling of safety, Enjoyment, Symbolic access, Visual access, Physical access, Psychological access, Economic access) and success rate of Imam Khomeini Street to prioritize the influencing factors

Table12. Prioritizing the factors affecting the Imam Khomeini street success

|  |  |  |  |
| --- | --- | --- | --- |
| Significant degree | Correlation rate with success of space | Factor | Priority |
| 0.000 | 0.72 | comfort | 1st |
| 0.000 | 0.67 | activity | 2nd |
| 0.000 | 0.65 | sociability | 3rd |
| 0.000 | 0.61 | Feeling of safety | 4th |
| 0.000 | 0.56 | Enjoyment | 5th |
| 0.000 | 0.5 | Symbolic access | 6th |
| 0.000 | 0.48 | Visual access | 7th |
| 0.000 | 0.47 | Physical access | 8th |
| 0.000 | 0.38 | Psychological access | 9th |
| 0.000 | 0.3 | Economic access | 10th |

Results of spearman correlation test at four sections of imam Khomeini street

In order to recognize the most important factors and for verifying the hypothesis, spearman correlation test have been used by SPSS software at four selected sections of Imam st.

The summary of these test results are mentioned in the following.

Table13 .Prioritizing the factors influencing the selected sections of Imam Khomeini street success

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Significant degree | Correlation rate with success of space | Dimension | Priority | Section name  |
| 0.000 | 0.82 | Image & comfort | 1st | Abresan |
| 0.000 | 0.76 | Access & linkage | 2nd |
| 0.000 | 0.76 | Uses & activity | 3rd |
| 0.000 | 0.71 | sociability | 4th |
| 0.000 | 0.84 | Image & comfort | 1st | Mansoor |
| 0.000 | 0.69 | Uses & activity | 2nd |
| 0.000 | 0.69 | sociability | 3rd |
| 0.000 | 0.67 | Access & linkage | 4th |
| 0.000 | 0.79 | Image & comfort | 1st | Saat |
| 0.000 | 0.76 | Access & linkage | 2nd |
| 0.000 | 0.69 | sociability | 3rd |
| 0.000 | 0.58 | Uses & activity | 4th |
| 0.000 | 0.86 | Image & comfort | 1st | Golestan |
| 0.000 | 0.81 | Access & linkage | 2nd |
| 0.000 | 0.72 | Uses & activity | 3rd |
| 0.000 | 0.58 | sociability | 4th |

According to table above the correlation test between space success dimensions and success rate of selected sections of imam Khomeini street has acceptable Significant degree(Less than one percent error .(according to findings comfort and image has been known as the most effective factors for success of these sections

Table14. Prioritizing the factors influencing the people attendance at public space

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Significant degree | Correlation rate with success of space | Factor | Priority | Section name  |
| 000/0 | 0.78 | Comfort | 1st | Abresan |
| 000/0 | 0.78 | Uses & activity | 2nd |
| 000/0 | 0.71 | Sociability | 3rd |
| 000/0 | 0.56 | Enjoyment | 4th |
| 000/0 | 0.55 | Feeling of safety | 5th |
| 000/0 | 0.53 | Visual access  | 6th |
| 000/0 | 0.51 | Physical access | 7th |
| 000/0 | 0.46 | Symbolic access | 8th |
| 002/0 | 0.35 | Psychological access  | 9th |
| 024/0 | 0.26 | Economic access | 10th |
| 000/0 | 69/0 | Uses & activity | 1st | Mansoor |
| 000/0 | 69/0 | Sociability | 2nd |
| 000/0 | 66/0 | Comfort | 3rd |
| 000/0 | 6/0 | Enjoyment | 4th |
| 000/0 | 57/0 | Feeling of safety | 5th |
| 000/0 | 55/0 | Symbolic access | 6th |
| 000/0 | 47/0 | Economic access | 7th |
| 000/0 | 41/0 | Physical access | 8th |
| 000/0 | 37/0 | Visual access  | 9th |
| 000/0 | 36/0 | Psychological access  | 10th |
| 000/0 | 69/0 | Sociability | 1st | Saat |
| 000/0 | 68/0 | Comfort | 2nd |
| 000/0 | 58/0 | Uses & activity | 3rd |
| 000/0 | 58/0 | Feeling of safety | 4th |
| 000/0 | 58/0 | Enjoyment | 5th |
| 000/0 | 53/0 | Symbolic access | 6th |
| 000/0 | 5/0 | Physical access | 7th |
| 000/0 | 49/0 | Visual access  | 8th |
| 000/0 | 49/0 | Psychological access  | 9th |
| 02/0 | 25/0 | Economic access | 10th |
| 000/0 | 79/0 | Comfort | 1st | Golestan |
| 000/0 | 73/0 | Uses & activity | 2nd |
| 000/0 | 61/0 | Feeling of safety | 3rd |
| 000/0 | 58/0 | Sociability | 4th |
| 000/0 | 58/0 | Visual access  | 5th |
| 000/0 | 53/0 | Physical access | 6th |
| 000/0 | 53/0 | Symbolic access | 7th |
| 000/0 | 48/0 | Enjoyment | 8th |
| 000/0 | 4/0 | Psychological access  | 9th |
| 000/0 | 33/0 | Economic access | 10th |

According to table above the correlation test between space success dimension and success rate of selected sections of imam Khomeini street has acceptable Significant degree(Less than one percent error .(according to findings comfort and activity has been known as the most affective factors in the success of these sections

80 individual and 20 focus group interviews, activity, sociability, comfort & access dimensions are prioritized by asking question: you prefer a park or street if…According to results the people choose respectively comfort and image, uses and activity, access and linkage and sociability.

Prioritizing the factors influencing the people attendance at public space

|  |  |  |  |
| --- | --- | --- | --- |
| Score | Factors | Dimensions | Priority |
| 576 | It was beautiful  | Comfort & image | 1st |
| 514 | It was memorable  | Uses & activity | 2nd |
| 471 | It was accessible  | Access & linkage | 3rd |
| 460 | It was suitable for sitting or resting  | Comfort & image | 4th |
| 438 | It was suitable for talking and meeting friends | Sociability | 5th |
| 434 | It has varied and interesting activities  | Uses & activity | 6th |
| 390 | It has suitable sidewalks | Access & linkage | 7th |
| 287 | The other people have comfortable presence | Sociability | 8th |

Conclusion

In testing hypothesis, in addition to verifying a significant relationship between criteria and indices outlined in the model with the level of success, results shows that comfort and image being as the most important influencing parameters in the success of Imam Khomeini Street. Based on theoretical framework gender ratio, group presence, frequency of use of space, duration of staying in space were considered to be the most important indices of success in public space. According to findings of PPS institute the presence of women has direct relationship with the level of comfort in the environment. According to the views of Gehl discussed earlier, in order to increase the period of frequency and duration of stay in space, one most pay attention to comfort of space. Therefore, in support of the findings of hypothesis testing, comfort and image are the most determining factors in the successful function of public space: consequently in order to increase the success level of space, first the comfort of space (feeling of safety, enjoyment and comfort) must be improved. In other words, if the comfort and image of space are promoted, the presence of women and people in group, will consequently be increased (Madden, 2010, 92) and the increase in the attendance of women in space will result in successful function of public space. On the other hand, creating the suitable condition for outer activities and promoting the feeling of safety, enjoyment and comfort will result in further frequency of use of space and duration of stay in space since themselves are the indicators of successful public space.

Prioritization of influencing factors in the parameters of presence which was extracted from the analysis of 100 group and individual interviews, could explain the causes of success for Abresan section in relation to 3 other sections. In case of PPS institute the underlying activity and usage were the main factors for a successful public space, in our case the testing of the hypothesis showed that the success of Abresan street had more correlation respectively with comfort, activity, access and sociability which are in complete coordination with the result obtained from Prioritization of space for public attraction for presence. Therefore, as Carmona indicates one can conclude that the best solution for creation of successful public space is in the comprehension of the mental and behavioral Prioritization of people and the coordination of the characteristics of the space with the needs of people. Successful public space must be able to attract whatever people desire around themselves not whatever the designers and planners are dictating.

 In conclusion, in conformity with the theory of Stephan Carr (Carmona & Etal, 2003, 163), Abresan section by exhibiting comfort, passive and active interaction with space and with suitable responding to more than one needs of people is the most successful section in our studies. In relation to comfort and image, according to the questionnaire obtained in Abresan, comfort, enjoyment and feeling of safety had a considerable difference with other criteria of other sections and with respect to cleanness and orderness and the provision of suitable sidewalks with respect to other sections had better condition. Broad pavements of Abresan, which was underlined by 60% of the users was indicated as the most important features of that section and had direct relationship with the level of comfort in space, therefore one can indicate that it is the most important factor of successful public space with respect to comfort. According to proposed Place Evaluation Model, with respect to activities, the main difference between Abresan and other sections is the existence of its coffee shops, coffeenets and diversity of space for amusement activities for all range and gender groups. Accessibility of meeting places which are considered as one of the condition for successful space by Montgomery (Montgomery, 1998, 99) and Third Place according to Ray Oldenburg is emphasized and verified in the research as one of the most important factors of public space. According to our analysis, one of the advantages for the activities in Abresan section was its specialization. This section by locating commercial and services such as clothing shops, mixed commercial passages, restaurants and educational complex، located adjacent to Tabriz University, attract people

* There is direct and significant relation between sociability and public space success
* There is direct and significant relation between access(linkage) and public space success
* There is direct and significant relation between uses(activity) and public space success
* There is direct and significant relation between comfort(image) and public space success
* Abresan, Mansoor, Saat & Golestan streets are respectively the most successful and unsuccessful sections of Imam Khomeini Street
* Comfort & image, access &linkage, uses & activity, sociability, respectively are the most influencing dimensions for the success of imam Khomeini Street and comfort, activity, sociability, feeling of safety, enjoyment, symbolic access, visual access, physical access, psychological access, economic access are the most determining factors for the success of imam Khomeini Street
* Comfort and image are the most determining factors for the success of imam Khomeini Street.
* The success of imam Khomeini street can be explained by correspondence of street characters with users need

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1. .Corresponding Author: Nazila Rashidpour, Faculty of Urban Planning and Design, Islamic Azad University, Tehran, IRAN, Email: Nazila.Rashidpour@gmail.com,Tell:09128600262 [↑](#footnote-ref-1)
2. These should not be confused with overcrowding [↑](#footnote-ref-2)
3. secondary diversity refers to the enterprises and services which grow in response to primary uses, to serve the people which the primary uses attract. [↑](#footnote-ref-3)