Evaluating Spatial Behavior in the Urban Public Space of Kadıköy Square

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ABSTRACT

This article focuses on the study of public open space of Kadıköy square. The objective is to assess user perceptions, satisfaction and patterns of outdoor space use. A qualitative approach is used to gain insights into aspects of human-environment intersections, for this purpose, a questionnaire survey and observation were conducted to examine this interaction. This research studies how people use public open spaces and what are the factors that impact the use of these spaces and what physical features are the most influential on the behavior patterns and specific activities related to the space in Kadıköy square.

Keywords: Public open space, physical features, spatial behavior, user satisfaction, Kadıköy Square.

1 INTRODUCTION

Urban spaces are all the private and public spaces in between urban structures. In an urban system, space is the whole comprised of structures, perceived by city dwellers and associated with all urban circumstances and events. Public open spaces, as multi-functional spaces, reflect culture and life style of the individuals as well as economic and social condition of the society. Urban spaces have functioned as people's interaction place throughout centuries and have corresponded with their economical, political and socio-cultural issues and demands trough their specific qualities. Public open spaces have important role in human societies and are interwoven with people' everyday experiences throughout the history, evolving from the Greek agora and Roman forum, from Victorian theatres and Parisian Café's, from the medieval commons to Italian plazas and modern urban squares and along with this process they have always been at the center of everyday life.

In this context, urban squares are essential components of cities regarding to the opportunities they provide in terms of socialization through their physical and spatial attributes. Moughtin (1992) identifies a square or plaza as an area framed by buildings and forms as a "center" in the city, which is associated with adjectives like "known" and "friendly" referencing to human's perception of the living environment or in Lynch's term (1960), they are focal points of activity formed in dense urban spaces. Within this framework, Kadıköy Square can be observed in terms of its physical environment and behavior patterns of the city dwellers. A closer look at the history of the district reveals that Kadıköy is considered one of the oldest settlements on the Anatolian side of Istanbul, functioning today as the commercial and service zone of the area and brings various activities into a single environment. In addition, Kadıköy square is the main public open space of the district that covers a range of different types of activities from transportation to business and entertainment and has an important place in collective memory of the citizens. Although it's characteristics as a public square is deteriorating regarding its current use pattern and urban transformation of the district and recently, it is mostly used as a transit point, instead of performing as a place for social interactions.

Therefore, this fact demonstrate the significance of conducting a survey in order to evaluate the environmental qualities of the space and the extent of opportunities that contribute to enhancing city dwellers public life which may light the way for further refinements in the space.

The problem of this study have been approached from the perspective of environmental behavior studies and focuses on the relation between people and built environment by analyzing the users' activities in the setting, in order to comprehend how they perceive the place and how they use their environmental setting. So, the research question has been defined as does Kadıköy Square in terms of its physical features set an appropriate context for people's divers activities in a public

open space and whether it contribute to users' satisfaction of the setting?

2 HUMAN AND ENVIRONMENT

2.1. Public Open Space

Public space can be defined as **"**the common ground where people carry out the functional and ritual activities that bind a community, whether in the normal routines of daily life or in periodic festivities**"** (Carr *et al.,* 1992). Public spaces are "publicly accessible" places where communities regenerate themselves through dialogue, action and reflection together with a variety of activities. (Carr *et al.*,1992; Lynch, 1972; Francis, 2003; Madanipour, 1996; Shaftoe, 2008). Public open space has been defined by Jacobs (1961) and Madanipour, (1999) as outdoor spaces with free access for people such as cafes, retail, bazaar, parks, streets and pedestrian paths. Thus, public open space is successful while it becomes a conducive place for social interaction (Danisworo, 1989; Whyte, 1985), attracts many visitors to do their activities in there (Danisworo, 1989; Whyte, 1985), with a wide range of activities occur individually or in a group (Rivlin, 1994; CABE and DETR, 2001; Rossi, 1982; Gehl, 2002), informal and suitable for recreation (Whyte, 1985; Project for Public Space, 2000), democratic and non discriminative (Car, 1992), accessible for all class and age of people, including disable people and informal sector (Nasution & Zahrah, 2012).

Moreover, it can be regarded as a physical context that is perceived and interpreted by people through its visual forms and establish a ground for various activities and circumstances.

Accordingly, the quality of urban public spaces is mainly related to the identity of the city, and this identity is defined by urban elements and activities or circumstances occurring within the environmental setting and could also become indicators of behavioral patterns, so people respond to the environment according to their experiences and also the data that the setting offers them while they perceive it.

It is evident that the definition of built environment is strongly related with human behavior, as Canter(1975) emphasizes on the role of physical environment in shaping the human behavior and this is a reciprocal relation, while the behaviors as well influence the space.

2.2. Human, Environment and Spatial Behavior

Environment is a context in which people construct their outside world and within this environmental framework the "spatial organization of urban society" establishes the pattern of human behaviors; interrelated to the experience, culture, knowledge and sentiments (Walmsley, 1988). The human- environment experience is complex and many researches conducted on the subject to explain this association from various perspectives. According to Walmsley, the experiences and information acquired from the space could have an impact on behavioral patterns which are correlated with spatial layout and activities that take place in the setting.

With regard to this, Weisman makes a classification of the environmental behavior system, dividing it to three components, namely; social organization/context, individuals (their activities) and the physical setting, so, these element produce "attributes" of the environment, which refers to experiential qualities. The manner, in which the components interrelate, has an eventual effect on the experiential qualities (Dunlap, *et al.,* 2002).

According to Hall (1966), individuals express various reflections and act differently in using physical environment due to their cultural norms and backgrounds. Besides, it has been emphasized that the design of a space forms and arranges the behaviors and interactions happing within it and contrarily, the environment is produced and modified by the transactions within the context as well. Lang (1987) and Gehl (1987) also accentuate the impact of physical components on activity patterns, in which a sort of "congruence" and "fit" is established in the "behavioral setting".

Gehl (1987), in Life between buildings, asserts that the outdoor activities are influenced by some factors, among them; physical aspects of the setting are crucial items. He divides the outdoor activities in public spaces to three groups: necessary activities, optional activities and social activities. Necessary activities encompass everyday tasks and less or more are done compulsorily. Optional activities include those that occur when the exterior conditions are optimal and the social activities refer to the presence of other people in public spaces and are indirectly

supported whenever the other two groups are given better condition in public space.

2.3. Fundamental principles of a responsive environment

As a matter of fact, the quality of urban space is a multi-dimensional notion that is obtained through some interrelated concept, which is unique for each community considering its characteristics and can be concerned in two viewpoints; one is the social dimension and the other refers to physical attributes and spatial layout of the environment. Physical aspects and appearance play a critical role in comprehending and perceiving the place. "Legible" places will assist the inhabitants to create a vivid and accurate image of a place (Lynch, 1960).
Within this framework, the quality of environment has been analyzed by Bentley & *et al.* in their eminent book, "Responsive Environments" (1993), discussing that in order to enrich the environmental quality, there should be specific design principles, which are defined as: Permeability, Variety, Legibility, Robustness, Visual Appropriateness, Richness and Personalization. In environmental settings;

- Permeability; refers to the state of being accessible, physically or visually, for citizens and it is relevant to the number of alternative routs passing trough the setting.
- Variety; specifically in terms of " variety of use", and indicates the variety of the spatial experiences regarding to the setting's environmental qualities because different activities, forms and people provide a rich perceptual environment and various users interpret the place differently.
- Legibility; discusses the state that how much an environmental setting' layout is understandable and the issue is explored in two levels; physical form and activity patterns. This parameter is correlated with Lynch' five key physical elements in the image of city (1960).
- Robustness; refers to a quality of place that is multi-purpose and offers more activity choices and the issue is more significant in public spaces because of their "public" nature of activities and socialization tendencies.
- Visual appropriation; associates with people's interpretations of the place and the meanings that they attach to it. The subject can be more traced in public spaces where is more frequented by wider group of users with various backgrounds.
- Richness; encompasses the verity of sense-experiences, the quality of place that responds to a large range of expectations and is connected to users' senses, particularly, visual senses.
- Personalization; refers to users' participation in places and the sense of personalizing the existing environment.

To understand physical aspects of the public place better, it is necessary to understand what is "legibility" in the city setting. However, before that, to grasp the "the image of the city", Lynch (1960) begins explaining what are the core elements of cities and how they are correlated with residents' perception. He initiates his debate with analyzing three American cities and their images in inhabitants' memory. For him, a rich and integrated physical environment, capable of generating a vivid image, plays a social role as well in inhabitants' communications and establishing a collective memory. He defines the fundamental components of the city image as; path, landmark, edge, node and district that contribute to legibility and imageability of a city and help to making places more legible to the people that can be recognized and organized by users. The spectrum of possibilities offered in outdoor spaces, the variety (Bentley, *et al.*, 1993), reasonably, improves the quality of the space and increases the social interactions. As Whyte, in his prominent book, "The social Life of Small Urban Spaces" (1980), claims there is a close connection between qualities of urban space and activities occurring there and simple physical alterations can enhance the quality of use of the place noticeably.

3 A BRIEF INFORMATION ABOUT FIELD OF STUDY; KADIKÖY SQUARE

Conquered by the Ottomans about a century before what was then Constantinople, even though Kadıköy long predates Istanbul, its settlement history is rather recent with the banks stretching from Kadıköy to Bostancı being appropriated for its current inhabitational purposes only in the 19th century. During Byzantine period, it was a modest town that depended on gardening mostly. The real contact it had with the Ottoman capital only started in 1846 with the

ferry that was launched by Fevaid-I Osmaniye. The Haydarpaşa bay, which is still home to one of the most important ports in the municipal maritime transportation and the Kadıköy square, turned into the core of the area. In the 20th century, the area around the port transformed into a center with the mosque, Armenian and Greek churches, various official buildings and the market place. By 1985, there were no rural places left within this strip. As such, Kadıköy grew to be one of the most important urban centers. Located at the crossroads of important routes such as the D-100 highway, Haydarpaşa train station, it functions as a nodal point in public transportation as well. For this reason, taking into consideration also its critical place in trade and service industries (though not of manufacturing), Kadıköy became a hub not only of Istanbul but also of Turkey, which promoted it to the status of a so-called "metropolitan sub-center". The heavy use of the Kadıköy square due to these logistic factors turned it into a "transfer center", robbing it off its function as a square and rendering it a space which only vehicles and passersby utilize. Though several plans to reduce this heavy traffic were proposed such as installing a light rail system, Kadıköy square mostly still continues to be a gigantic terminal stop (Kilic, 2001). It is regarded as one of the largest, most populous and cosmopolitan districts of Istanbul, has obtained a central position in terms of commerce, business and transportation on the Anatolian side. Many functions are active here, specifically; it is a conjunction point in that it connects various transportation systems within the city, in particular, and the whole country in general. In the terms of Lynch (1960), this can be identified as a node, which is defined as a strategic spot in the city. Not only this, it is also the "focus and epitome of the district over which its influence radiates and of which it stands as symbol" (Jencks, Kropf, 2006).

The dynamism of the district encompasses a variety of urban characteristics including architectural and socio-cultural multiplicity, and provides a hybrid architectural and life patterns. Despite the district's complex urban qualities, its functional centrality, which is a result of radical changes in terms of cultural, social, political and economic issues during the last several decades, is noticeable. Considering the public space as a domain of various aspects of the urban life, it represents the complexity and the contrasting nature of society. Also, it illustrates the heterogeneous and therefore consistent nature of contemporary architecture and the newly occurred changes have transformed it into a center of social and commercial activities (Mustecaplioglu,2000). However, It has started to lose most of its specific characteristics as a public square and can hardly be perceived as a united and integrated entity during last decades. Its aesthetical values, environmental richness and visual homogeneity are deteriorating.

4 METHOD

Although, the notion of "environment" encompasses all social, cultural and physical variables regarding to an individual, but here the emphasis mostly is put on the physical features of the environment and their impact on social interactions and individuals' activities. In this sense, the diversity of the activities has been evaluated, and the area analyzed with regard to its spatial formation and design elements.

The foremost hypothesis of this research is based on the assumption that there are many items that assist the success of a public space (Bentley & *et al.,* 1993) and affect the use of a public open space that in Kadıköy Square in spite of having an a special place in collective memory of citizens, the environmental qualities and visual homogeneity are declining and the space is incapable of providing adequate opportunities for people's social interactions (Gehl, 1987) and individual various activities. In addition, diversity and frequency of the activities that take place in the environment are relevant to these physical attributes.

4.1. Instruments

Research started by conducting a pilot survey in square to identify trend of usage and activity pattern occurs in the square. For this purpose questionnaires and field observation used in order to collect data of physical condition and diversity of activities and people perception through questionnaires.

Field observation through photographs and sketches carried out to identify how variety of patterns of activities takes place and which parts of the area are mostly frequented by users. Therefore, the variables of the hypotheses has been identified; independent variable was defined as physical

features of the setting and depend variables were described as users' activities and their satisfaction. Besides previous personal experience within the setting during a year the researcher was living in the district and commuting via the square everyday, observations were carried out over a two-week period in December 2012, including workdays and weekends, during noon and evening which are the rush hours of the district.

Questionnaire technique also were intended to obtain data of 25 respondents which chosen randomly and guided by interviewer to fill the questionnaires. Questions consist of eight sections, arranged considering Bentley & *et al.* (1993) principle factors on the success of environmental qualities, and attempted to determine the respondents' profile, characteristics of activities, physical features of the square and users' satisfaction of the environmental setting.

5 RESULTS

5.1 User Profile

A total number of 25 respondents participated in questionnaires from which 56% were male and 44% female. Most of them are young people with age bracket of 18-25; 20%, 26-35; 32% and 36-45; 28%. 64% of all of the users reside in the Anatolian side as demonstrated in Appendix 2.

5.2 The Influence of Physical Elements on Spatial Behavior

Almost 68% of the respondents use public transportation system to reach the square and most of them (about 80%) mentioned that they easily could access the space. Since Kadıköy is a nodal spot and a transportation hub, the majority of users use it as a transit space. While 60% of the respondents use it as a compulsory transit route only 36% come to spend time or work.

Whereas the space was easily accessible to %68 of the respondents, the majority thinks that the traffic caused by land transport creates disturbance and restrains other functions of the space.

Different parts of the space are used for different purposes. The most frequented areas are ports, bus stops, nearby restaurants and cafes. 76% of users remain in the space for less than an hour with 40% less than half an hour. This indicates that the space is mostly used for transit purposes. Only 12% of the users access the square via private transport. In terms of security, 68% responded that it was a very chaotic place for pedestrians. The erratic vehicle traffic on several parts of the square negatively influences pedestrian traffic, hindering comfortable and safe walking.

Regarding physical aspects, the space is rated poor for its spatial layout and physical components. According to the surveys, 64% the participants marked the square inadequate, in terms of providing different recreational opportunities, while, 72% of them did not find it well-organized. The most remarkable components of the space are the ports, sea edge and Ataturk statue and when asked if they liked a particular building in the area, only 52% answered positively.

Fifty four per cent of users think that the spatial configuration of square is either inadequate or highly inadequate. Most of the participants stated that the square is asymmetrical, ugly and unattractive and that it lacks order, harmony and impact.

Social interaction is low in the space even though the square is evaluated as lively due to the crowded nature of it. The spatial elements, perception of which is crucial in determining environmental quality, have been found inadequate.

Table 1 Level of satisfaction of respondent from various attributes of the square.

Factors of Public open space	Attributes	Level of satisfaction
Permeability	accessibility	80%
	pedestrian safety	32%
	Traffic comfort	38%
Variety	recreation opportunities	36%
	activity facilities	33%
	spatial layout	33%
	physical components	28%

Legibility	landmarks	60%
	sea edge	88%
	paths	35%

Robustness	flexible environment	33%
	interaction opportunities	41%
Visual appropriation	spatial dimension	29%
	contextual cues	24%
	Use cues	32%
Richness	visual attraction	24%
	cleanness	28%
	orderliness	16%
	vitality	44%
	lighting	16%
	safety	24%
Personalization	public participation	48%

6

DISCUSSION

A responsive place is able to accommodate human activities. Vitality means liveliness, energy and enthusiasm of a place is a result of intensity and diversity in activity generated by pedestrian movement (Jacobs,1961; Montgomery,1998)

In terms of "richness" and "robustness", as mentioned already, as a "node" and a center for commerce and transportation, there is a heavy load on Kadıköy. Land, sea and rail transport meet to form something akin to a deadlock, turning the square into a transit space. Therefore, the social, cultural and recreational activities that ought to take place in an urban square are pushed to the background. In terms of physical attributes, even though it has buildings like the Haldun Taner theatre, municipal building and the old port that are important both functionally and physically and can act as "landmarks"; the spatial elements are not organized around a center and associated with one another. The fact that it is naturally bound on one side with the phosphorus, which is considered as a significant natural "edge", does not help it become an enclosed space that is isolated from the pollution, noise and other urban issues. The roads cutting through the space further fragment the space. So, the space is not bound by natural or unnatural elements and lacks the feeling of a distinct space.

On the other hand, in terms of "permeability" and accessibility, the nodal position of the square grants it extreme accessibility. In fact, the factors that make such accessibility possible are also the ones that make the traffic as a problem for users. This is why Kadıköy square is mostly perceived as a transit space on the way to cultural and social activities. Moreover, the pedestrian traffic and the traffic of vehicles are not clearly separated from one another through proper landscaping, lending an air of chaos in the space. The space is not even noticed by those rushing from one port to the other, and the square, which does not invite people inside it, is perceived merely as an extension of the road. Regarding "legibility" and "visual appropriation", randomly distributed buildings or elements such as buffets, recently built ports as well as bus and minibus stops keep the square from attaining the attributes of an urban square with an enclosed space and a character that is built through use. In terms of its form, the square is not focused around a consistent and well-organized structure and important buildings in the square are not coming together to form a meaningful and coherent whole.

In terms of "variety" and "richness", due to lack of environmental diversity, the activities within the square are limited and monotone. There is not any opportunities in the banks of the sea for seating and enjoying the nature and instead it is filled with the poorly arranged cafes that dose not address to many of the users specifically woman. In addition, there is not any other facilities for "optional and social activities" including proper seating elements and gathering points and even the greenery of the square is so poor that dose not contribute to attracting people for spending time in the setting. These and other factors,

doubled with the chaotic flow of traffic and people, makes the square offer limited opportunities for various activities and social interactions.

Looking at the social aspects, it can be mentioned that the square does not invite people to participate in "optional and social activities"; therefore, for most of its users, it is necessity, not interest that brings them there.
So, the squares situation is in contrary with what Gehl states. He asserts that when the quality of the outdoor area is good, optional activities occur with increasing frequency. Furthermore, as the level of optional activities rise, the social activities usually increase subsequently. Thus, public space provides opportunities for human's social contact, in less or more degrees and "the need for stimulation" and experiencing other people, so, living cities are stimulating and make people to interact and see and hear each other. Given this, it can be mentioned that all the spatial attributes that form up the environmental setting and makes it more successful and responsive are not taken into consideration in this space and it is not addressing users' needs and expectations appropriately.

7 DISCUSSION

Great cities require public spaces for social transactions, the places that invite and attract people and promote the opportunities for diversity of functions, including moving, siting, watching, gathering and enjoying the environment. The exterior spaces between buildings are spaces for city life, where citizens engaged in establishing a community and experience the space. A successful public space expresses alternatives for day-to-day life activities and attract people to create the spirit of being with and taking part (White, 1999).
The results of the study indicates that the large range of the activities occurring in the square are necessary activities, in terms of Gehl (2011), because of the poor and unfavorable condition of the square that dose not provide adequate opportunities for social and optional activities.
The vitality and diversity of activities in the space denotes the significance of a place to the immediate users. In the context of Kadıköy Square, the functional form of the space and the existing opportunities play a significant role in creating a distinctive atmosphere, as it has mentioned by most of the respondents, but it has not taken to account in space formation and though does not contribute to make harmonies and inviting space for users' divers range of activities. Therefore, improvement programs should take into consideration the dominant function of the place perceived by the users which is translated in the way they participate in the optional activities.
The finding suggests that further improvement may be organized in a way that enhance the legibility and robustness offering opportunities for recreational activities rather than just accessibility and enhance the richness and visual features of the space in order to be able to secure the integration of users and the environment. In addition to a restructuring of the space in a way to respond to the needs of users, it seems there are some alternatives that can be considered; in terms of permeability, pedestrian safety must be recognized and the space should be arranged to function as a public open space instead of being a transit hub. Considering variety and robustness, while maintaining diversity, the structures and other elements that attribute uniqueness to the space might be reevaluated. Certain arrangements with regard to recreational and leisure activities can be made in order to make people spend more time in the space. The space should be able to accommodate socio-cultural activities that will lead to a more frequent use of the space.
For achieving better visual appropriation and more spatial richness, the special character of the square must be discovered and emphasized and there should be congruence between various elements of the space while achieving spatial definition and legibility.
Regarding personalization, the structure of the society should also be taken into consideration to attract a wide range of citizens which can creates positive impact on production of a vital urban space. In conclusion, design and quality of public open space influence the use of public open space and activities occur in the place (Abu-Ghazzeh, 1996; Golicnik and Thompson, 2009), as open urban spaces, urban squares are only meaningful and dynamic as long as humans everyday life taking place within it. These spaces ought to address physiological, psychological and social necessities of the users. Square as the most important venue for social participation and communication must be arranged in a way that address the citizens' socio-cultural and psychological demands and can be function as a conducive place for social interactions and aim to increase their satisfaction of public spaces.

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Appendix 1. Tables.

A. User profile

	18-25	26-35	36-45	46-55	55 and more
age	20%	32%	28%	12%	8%

A.3

Residence area	Kadikoy district	Anatolian side	European side	other
	36%	28%	36%	0

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Residence length	0-5 year	6-10 year	11-15 year	16-20 year	more than 20 years
	36%	20%	12%	16%	16%

B. Permeability

B1.Access mean	walking	car	bus	minibus	Ferry boat	other
	20%	12%	20%	12%	32%	4%

B2.Accessing easily	yes	no
	80%	20%
B3.Impact of existing transportation on activities	yes	no
	68%	32%
B4.Pedestrian security	yes	no
	32%	68%

C. Variety							
Activity type	alone			in a group			
	64%			36%			
Purpose of using square	compulsory	leisure time	work place	meeting friends	passing	other	
	16%	32%	4%	20%	24%	4%	
Most frequented area	piers	stations	parks	cafes and restaurants	theatre	business and shops	other
	28%	16%	4%	24%	8%	12%	8%
Length of spending time	5-10 minutes	5-10 minutes		30 minutes to one hour		mora than one hour	
	20%	20%		36%		24%	
Offering opportunities	yes			no			
	36%			64%			

D. Legibility		
D2.Well-arranged components	yes	no
	28%	72%
D3.Spending time beside Bosporus edge	yes	no
	88%	12%
D4.Noticeability of Ataturk statue	yes	no
	60%	40%
D5.Satisfaction of Haldun Taner theatre	yes	no
	80%	20%
D6.Harmony of the square	yes	no
	36%	64%

E1.Robustnses					
	strongly disagree	disagree	neither	agree	strongly agree
Places with opportunities	%12	%28	%28	%32	0
Closeness to nature	%16	%24	%12	%16	%32
Well-defined buildings	%32	%20	%24	%20	%4
Well-defined space	%12	%40	%24	%20	%4
Connection between spatial components	%20	%40	%16	%12	%12
Offering chances to make friends	%16	%24	%16	%32	%12
Offering chances for spending time with friends	%4	%20	%12	%32	%32

E2:Robustness					
	strongly disagree	disagree	neither	agree	strongly agree
Ports	%8	%8	%16	%40	%28
Haldun Taner Theatre	%8	%8	%20	%44	%20
Municipality Building	%12	%12	%28	%34	%16
Ataturk's Statue	%8	%8	%28	%24	%34
Buffets	%40	%32	%16	%8	%4
Metro entrances	%20	%20	%28	%28	%4
Pathway	%16	%20	%32	%20	%12
Waterfront	%16	%20	%26	%34	%4
Greenery	%40	%24	%12	%16	%8
Benches	%40	%32	%12	%12	%4
Lighting	%24	%32	%16	%24	%4
stations	%28	%20	%24	%24	%4

F. Visual appropriation					
	strongly disagree	disagree	neither	agree	strongly agree
F1.Layout of square	20%	32%	20%	24%	4%
F2.Understandable shape and size	32%	24%	12%	32%	0%
F3. Adequate and distinguishable dimension	20%	36%	16%	16%	12%

G. Richness							
Unsatisfactory components	Stations	Traffic congestion	Dirt and smell	Noise and crowd	Peddlers	Disorganized tearooms	Disorganized environment
	8%	20%	16%	32%	8%	8%	8%

H. Personalization		
Satisfaction of the space	yes	no
	36%	64%
Attachment to the space	yes	no