VISITOR BEHAVIOR IN MUSEUM ENVIRONMENTS: AN ANALYSIS OF VISITOR CIRCULATION PATTERNS IN SADBERK HANIM MUSEUM

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MASTER OF FINE ARTS

By

Aslı Canan Yılmazsoy
August, 2005

I certify that I have read this thesis and in my opinion it is fully adequate, in scope and in quality as a thesis for the degree of Master of Fine Arts.

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ABSTRACT

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Keywords: Museum environment, museum experience, visitor behavior, circulation patterns, visitor characteristics.

ÖZET

MÜZELERDE ZİYARETÇİ DAVRANIŞLARI:
SADBERK HANIM MÜZESİ'NDE
ZİYARETÇİ DOLAŞIM ŞEKİLLERİNİN İNCELENMESİ

Aslı Canan Yılmazsoy

İç Mimarlık ve Çevre Tasarımı Bölümü, Yüksek Lisans

Danışman: Dr. Çağrı İmamoğlu

Ağustos, 2005

Bu çalışmada, müzelerde ziyaretçi dolaşımı incelenmiştir. Temel konu, ziyaretçilerin bireysel özellikleri ve bu özelliklerin dolaşım davranışlarına etkisidir. Bu bağlamda, ziyaretçilerin cinsiyet ve yerellik farklılıklarının dolaşım davranışları üzerindeki etkisini ortaya çıkarmak için Sadberk Hanım Müzesi'nin bir bölümünde alan çalışması sürdürülmüştür. Bu özelliklerin değerlendirilmesi sonucu, dolaşım davranışları ve demografik özellikler arasında önemli bir ilişki bulunmuş, müze ziyaretçilerine daha verimli ve düzenli bir ziyaret sağlamada ziyaretçilerin bireysel özelliklerindeki çeşitliliğin göz önünde bulundurulması gereği vurgulanmıştır.

Anahtar Kelimeler: Müze ortamı, müze deneyimi, ziyaretçi davranışları, dolaşım şekilleri, ziyaretçi özellikleri.

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1. INTRODUCTION

Derived from the Greek word *mouseion*, a place of contemplation or shrine of the Muses, the term 'museum' has come to mean a building which is used for storage and exhibition of objects related not to the collection itself but to the cultural heritage (Woodhead and Stansfield, 1994). As an institution, museum is defined formally as:

> "an establishment, …open to the public and administered in the public interest, for the purpose of conserving and preserving, studying, interpreting, assembling, and exhibiting to the public for its instruction and enjoyment objects and specimens of educational and cultural value, including artistic, scientific (whether animate or inanimate), historical and technological material" (American Association of Museums, cited in Ambrose and Paine, 1994, p.16).

However, today museums, pursuing both informative and recreational roles (Bitgood, 2002; Stephen, 2001; Foley and McPherson, 2000; Hood, 1993; Falk and Dierking, 1992; Falk and Balling, 1982), are being reconceptualized in terms of the way they communicate and their relationships to the public (Reussner, 2003; Hooper-Greenhill, 2000, 1992; Doering, 1999; Weil, 1997).

Hooper-Greenhill (2000) points out the shift in museums that has begun to emerge during the last thirty years. She states that "the modernist museum, which emerged during the nineteenth century and reached its apogee by the beginning of the twentieth, understood its visitors as deficient …visitors were represented as undifferentiated mass" in contrast to the superiority and unquestionable authority (political, historical, and social) of museums (p.125). Although the modernist museum is partly in place today (Hooper-Greenhill, 2000), the new museum model, called 'post-museum', has broken down and differentiated the mass; "has become much closer to [its] audience and become conscious of those to whom they are

speaking. Who is being addressed, how they are spoken to, and who is speaking and how have become major targets for analyses" (Hooper-Greenhill, 2000, p.142).

The shift in museum concept is also reflected in visitor studies. Audience surveys based on demographical and psychographical data (Falk and Adelman, 2003; Combs, 1999; Falk, Moussouri, and Coulson, 1998; Bourdieu and Darbel, 1997; Prentice, Davies, and Beeho, 1997; McManus, 1996a; Hood and Roberts, 1994; Hood, 1993), program evaluations and behavioral researches of particular groups, such as children (Cohen, 1996; Thomas, 1996; Cohen and McMurtry, 1985), adults (Cohen, 1996; Matthew, 1996), families (Sandifer, 1997; McManus, 1994; Falk, 1991), and the reports of these segmented visitors have been rapidly increased by the 1970s (Hein, 1998; Hood and Roberts, 1994).

The concept of 'post-modernism' that influences and gives its 'name' to the idea of museums is described by Weil (1997) as "the proposition that no text is completed except through the act of reading it, and that every text, accordingly, must have as many versions – all equally correct – as it has readers" (p.269). Thereby, what is at the hearth of the questioning of modernist museum is, indeed, the museum objects, which were seen as sources of knowledge and accepted as having fixed and finite meanings by the modern period (Hooper-Greenhill, 2000; 1992). Post-modernity accepts that "meaning of an object lies both in the object itself, with all historical and structuralist/functionalist way in which this meaning is constituted, and equally in the process which the viewer carries out in relation to the object" (Pearce, 1993, p.217).

In this regard, Hooper-Greenhill (2000) states that the post-modern thought puts the questions of 'identity' and 'subjectivity' on the current agenda of museums. She also discusses that:

> "Subjectivity needs to be understood as something in process, and not as fixed and autonomous, outside history; subjectivity is always gendered, and based in class, race, ethnicity and sexual orientation" (p.142).

In museums, therefore, meaning of an object is subject to multiple interpretations – and idiosyncratic rather than fixed – in relation to "the specific memories, expertise, viewpoint, assumptions and connections that the particular [viewer] brings" (Weil, 1997) and to who put the object on display in a particular setting (Hooper-Greenhill, 2000; Pearce, 1993; Silverman, 1995).

Visitors, from different social and cultural backgrounds, sexual orientation or developmental stage of life, bring their unique experiences and prior knowledge to the exhibitions, and relatively they respond and react in diverse ways according to their own perspectives (Hein, 1998). The material property, historical and social context, and also the setting of objects in which they are displayed, result in different emotional and cognitive responses in diverse audience (Hein, 1998; Pearce, 1998; 1994); thus, they may or may not be interested in or pay attention to displayed objects (Bitgood, 2002; Mehrabian, 1976). Respectively, as Hooper-Greenhill (2000) states, behavior of visitors differs, since behavior "cannot be separated from the emotions, and equally, mental activity (cognition) works in partnership with bodily responses" (p.113).

Focusing on bodily responses of visitors, behavioral research in museums (Bitgood, 2002; Soren, 2001; Bitgood and Loomis, 1993; Klein, 1993; Robillard, 1982) investigates how exhibition spaces are used. With regard to visitors' use of exhibition spaces, Annis (1994), pointing out museum displays as 'texts', states that unlike the readers of a book or the audiences of a film, visitors to a museum, because of its physical nature, have to travel in this setting; and thus, visitors' museum experiences go parallel with their choice of movements. In their visit, as Klein (1993) emphasizes, visitors are free to choose how they move through this environment, and mostly they disregard its museological order which is almost always conceived by museum designers. In this respect, Falk (1993) mentions that during the course of a visit, since visitors' reactions and responses to the museums' physical, social and informational environment are influenced by various factors, i.e. their personal reservoirs (Falk and Dierking, 1992; Mehrabian, 1976), and accordingly vary in attitude and behavior, those factors, in turn, may pull them away from the inner organizations of museum environments.

This current study, considering the discussions above, sets forth the argument that in a museum setting, behavior of visitors differ in relation to their personal characteristics because the interaction between visitors and the exhibition that this particular setting holds cause different emotional responses and reactions in visitors, which in turn, influence overall behavior patterns. The study was conducted in one of the two sections of Sadberk Hanım Museum, Istanbul, called *Turkish-Islamic Section,* which is housing a permanent exhibition of collections containing Turkish-Islamic art works, and costumes and daily-life objects that belong to Ottoman period. The setting was chosen because of the diversity and density of audience flow, and the

characteristics (materiality and content) of the exhibition. The research focused on circulation behavior of visitors and in particular, aimed to explore the impacts of personal identities on circulation patterns. Since the exhibition contains both gender-specific and locally-relevant exhibits in their content and materiality, it was assumed that gender and locality characteristics of visitors would act as determining factors in the way of interacting with exhibits, and relatively, in navigation through the chosen setting.

Studying circulation patterns of visitors with regard to their personal characteristics, the research aims to allow museum designers and exhibition developers to be able to predict how differentiated group of visitors experience specific exhibition settings. Having insight about this fact will enable designers and museum professionals to create a better fit between diverse audience, the exhibition, and the overall design of the setting, and also to shape effective and efficient exhibition spaces for existing and future museums that present themselves to the diverse audience with ease and in an orderly way.

With respect to the aim of the research, the thesis includes five chapters. The first chapter briefly introduces the contemporary idea of museum and its relation to and influence on museum/audience and object/audience relationships. At this point, the argument and the aim of the research are given. The second chapter includes the museum context as personal, social and physical, and museum experience from the visitor perspective. In order to clarify visitor experiences in the context, the interaction among visitors and objects in museum environments is discussed. Finally,

the relationship between emotional and behavioral reactions of visitors that arise from this interaction is discussed.

Third chapter explains visitor circulation in museum context in relation to the issues of orientation and wayfinding. Then, circulation as a kind of behavior is described and the environmental factors that affect visitor circulation patterns are presented. Then, differences in circulation patterns are examined in relation with visitor characteristics in the literature, and visitor demographics and psychographics are emphasized. Finally, circulation behavior and visitor-object relation in the museum situation are examined.

Chapter four includes the case study conducted in Sadberk Hanım Museum, Istanbul, and presents the details of this research. Sampling procedure, the setting, and methods of the research are presented. Finally, results of the study are evaluated and discussed. In the last chapter, major conclusions are presented and suggestions to improve the museum setting are given.

2. THE MUSEUM CONTEXT AND VISITOR EXPERIENCE

2.1. Museum Context

Falk and Dierking (1992) propose that a museum visit has three aspects which are personal, social and physical. The interaction among these three aspects constructs the entire context of museums (Figure 2-1). At the personal level, there are visitors as unique individuals in their demographical characteristics, experiences in and knowledge of museum content and design, motivations to visit, interests and concerns. Such characteristics form the personal agendas of visitors to museums and called ‘the personal context of a given visit’ (Falk and Dierking, 1992; Falk, Koran, and Dreblow, 1985).

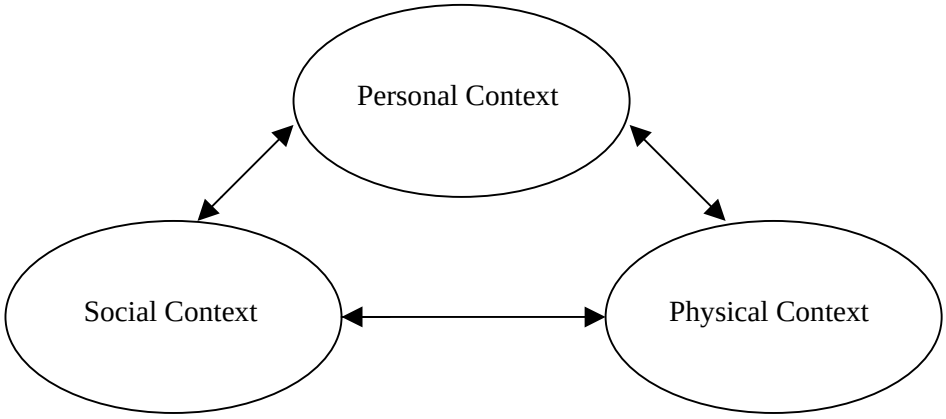


Figure 2-1 Museum Context

It is also stated that museum visiting is a social activity and visitors, whether within an organized group, i.e. tourist groups or school groups, with family or friends, mostly visit museums with their companions (Goulding, 2000; Hein, 1998; Falk and

Dierking, 1992). These social units are also unique in their visit expectations and purposes, and each individual within these units has certain social roles (McManus, 1996). Falk and Dierking (1992) state that these units form the social context of museums.

The physical context, on the other hand, "includes the architecture and 'feel' of the building, as well as the objects contained within" (Falk and Dierking, 1992, p.3). The physical context is also explained by the entirety of a scale that ranges from the microlevel physical context (exhibits and labels) to the macrolevel physical context (pathways, orientation, architectural components) (Falk, 1993).

Falk and Dierking (1992) mention that "through a museum visit, whatever the visitor does attend to is filtered through the personal context, mediated by the social context, and embedded within the physical context" (p.4).

2.2. Visitor Experiences in Museums

Hennes (2002) states that exhibitions are "environments in which complex interaction occurs among visitors, objects, environment, and meaning. They are the places of experiences as unpredictable and idiosyncratic as the individuals who visit them" (p.109). As described by Hennes, experience "arises from activity that leads to a situation in which an individual is moved to interact with his/her environment – information, other people, physical objects, the nature of the environment itself" (p.115). He argues that although the museum initiates the encounter, it is the visitor who drives the experience according to his/her own interest and curiosity.

Annis (1994), from the visitors' point of view, proposes an experience model which has three levels of symbolic engagement in museums that he calls 'spaces'. These are dream space, pragmatic space, and cognitive space. He defines dream space as "a field of interaction between suggesting/affecting objects and the viewer's subrational consciousness" (p.22). He also explains that:

> "In museum dream space, there is a flow of images and meanings – highly personal, sometimes lulling, sometimes surprising, more or less conscious: 'I like this', 'I don't like this', 'I don't care about that', 'I know this', etc" (p.23).

Pragmatic space, on the other hand, is defined as "the field of activity in which physical presence rather than objects has meaning" (Annis, 1994, p.23). In pragmatic space, museum-going is a social event, the important thing is to act within the social roles, and 'to be there' is the purpose and product.

Finally, cognitive space is the "field that corresponds to rational thought and the designed order. In museums, it is the space defined by a subset of symbols that are manipulated by the viewer in such a way as to lead toward cognition or education" (Annis, 1994, p.24). In this space, the viewer selects a set of objects from the ordered physical environment (the actual museum space) for rational consideration according to his/her interests, background and immediate field of vision.

On the other hand, Pekarik, Doering, and Karns (1999) categorize visitor experiences by taking concrete references from what visitors mentioned in their survey study. According to this research conducted in three different museums of Smithsonian Institutions, they present four main types of experiences and verbal statements:

Object experiences, include “seeing ‘the real thing’”, “seeing rare/uncommon/valuable things”, “being moved by beauty”, “thinking what it would be like to own such a thing”, and “continuing his/her professional development”,

Cognitive experiences, include “gaining information or knowledge”, and “enriching his/her understanding”,

Introspective experiences, include “imagining other times or places”, “reflecting on the meaning of what he/she was looking at”, “recalling his/her travels/childhood experiences/other memories”, “feeling a spiritual connection”, and “feeling a sense of belonging or connectedness”, and

Social experiences, mentioned as “spending time with friends/family/other people”, and “seeing his/her children learning new things”.

As the result of the study, the authors state that visitor experiences differ according to the characteristics of museums, exhibitions, and visitors. However, they add that visitors are more likely to play the major role, since they choose what they attend to among what museums offer by their collections.

2.3. Visitor, Object, and Museum Interaction

The interaction between visitors, objects and museums is the central concern of the contemporary discussions based on visual culture, material culture, and constructivist theories (Hooper-Greenhill, 2000; Hein, 1998; Pearce, 1994; 1993; 1988). Together, these theories provide perspectives through which the relationship between visitors and object, and the museum as a whole can be understood.

Hooper-Greenhill (2000) underlines the two vital functions of museums: One is "to present material culture to be viewed … Museums are there to be looked at. Museums are sites of spectacle, exhibitory spaces, where exhibitionary complexes are sited" (p.14). As another function of museums, they assemblage objects in a way that the choice of objects, their placement in groups and physical juxtapositions construct conceptual narratives and present visual pictures (Hooper-Greenhill, 2000). The physical setting, with its appearance and atmosphere, also makes statements about and illustrates what it contains (Hein, 1988). Thereby, visitors to museums engage both with the image that the setting conveys and the objects displayed therein.

Hooper-Greenhill (2000) states that visual culture is concerned with display, vision and visuality, and "to consider objects from the perspective of visual culture is to focus on the relationship between object and the subject – the seen and the seer" (p.108). She emphasizes the vision of the looking subject as a socially constructed phenomenon. In this encounter, how she/he perceives, interprets and makes meaning from the object depends on the subjects' personal biography, cultural background, and the social context that the subject acts as well as on the object imbued with meanings in its own context. She adds that:

> "The interpretation of visual culture in museums may be considered from two points of view: that of the curator, or the museum, and that of the visitor. Curators display objects in groups along with associated images and texts, and thereby produce interpretations for visitors; meanwhile visitors deploy their own interpretative strategies and repertoires to make sense of the objects, the display and the experience of the museum as a whole" (p.124).

Therefore, it is important to consider who displays what, and for whom. However, the 'what' of this question is in the center of the interaction, since the exhibits

themselves and the conceptual/visual outcome that arise from their juxtapositions draw the direction and dimension of the museum experience for visitors (Hooper-Greenhill, 2000; Hein, 1998; Pearce, 1988; Belk and Wallendorf, 1994).

Material culture, on the other hand, focuses on objects, their materiality and significance, their relationships to each other, history, and geography (Hooper-Greenhill, 2000). From this perspective, an object has its own material character and significance that act as determining factors in how it is perceived and interpreted by the subjects, diversified in personal, social and cultural characteristics. In other words, the material property of an object delimits the engagement.

Pearce (1988), by a study she conducted, presents how materiality of objects interacts with people from different socio-economic status and gender; and, argues that this is a crucial issue in museums which should be considered by exhibition designers and museums. Investigating how individuals see their relationship to specific objects which are important to them, she concludes in her study that gender was more likely to be the determining factor in the choice of significant object kind or in symbols which are attached to it. She summarizes that:

> "For women, jewelry, personalia, ornaments and living things are more important than they are for men, followed by toys, furniture and hygiene. For men, vehicles stand out… Men prefer entertainment, craft objects, collections, weapons, and households" (p.228).

Figure 2-2 presents her findings related to gender.

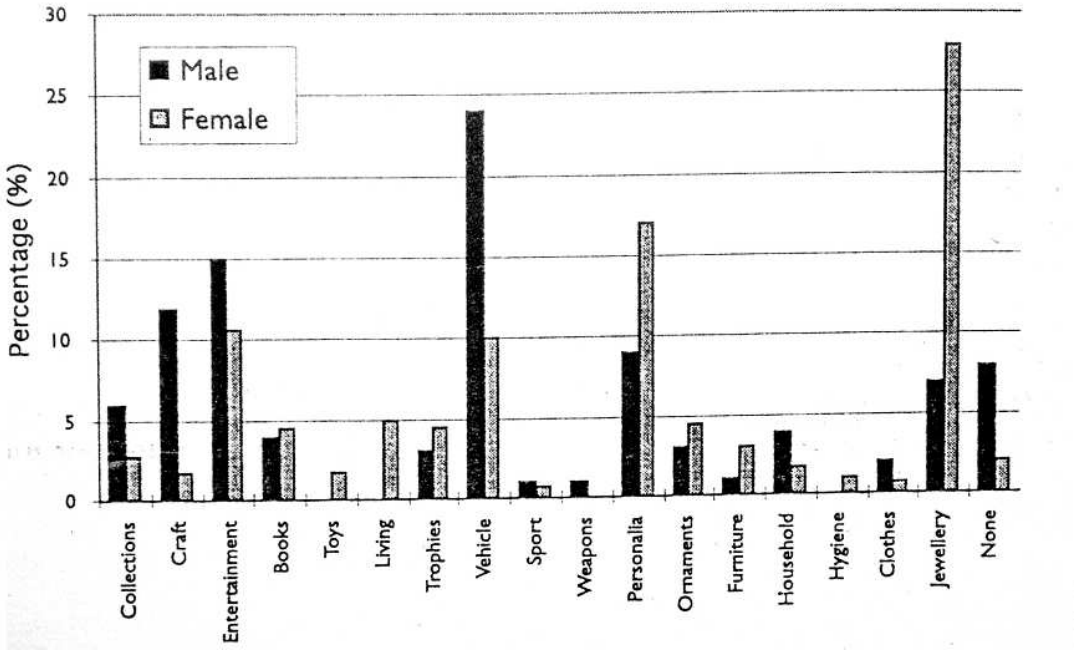


Figure 2-2 First 'most important object' by Gender

Similar to Pearce's accounts, Belk and Wallendorf (1994) focus on gender identity and object relationships and they argue that although not all objects are strongly gender-typed, objects convey certain gender role characteristics, such as brushes (feminine) versus pocket-knives (masculine). In addition, they state that the objects possessed by collectors differ in relation to collectors' gender characteristics and the characteristics of objects:

> "…decorative articles or those whose primary use is decorative are essentially feminine antiques; operating and functional articles are for the most part inherently masculine antiques…Women are more inclined to the fragile rather than the substantial…while men lean toward more substantial materials such as iron and tin" (p.243).

Hein (1998), while discussing visitor-object engagement from the constructivist perspective, puts the importance of 'familiarity' of the content into account. He states that there is an intellectual access of visitors to content of displays, and to the image of the museum as well. The prior knowledge, what is already known, and prior experience of visitors concerning museum image and exhibits determine what meaning visitors will make through their experiences. In this respect, what Hooper-Greenhill (1992) mentions about the National Gallery of Scotland is an appropriate example:

> "The National Gallery of Scotland was recently redesigned with dark, rich, and heavy wall-coverings, apparently intended to recall Victorian decor, although for any visitor who is not a specialist in Victorian style or the history of design, the atmosphere is more likely to evoke impressions of an extremely wealthy present-day house, or a large stately home" (p.204).

In relation to exhibit content, Doering, Pekarik, and Kindlon (1997) state their study conducted for the exhibition related to World War II, "*Degenerate Art"*: *The Fate of the Avant-Garde in Nazi Germany*, which was displayed both in Washington DC and Berlin. The authors emphasize that people who had prior intellectual knowledge of and interest in World War II were more inclined to visit in both venues, however, visitors differed strongly on whether or not the exhibition had anything to do with their lives; their historical and professional backgrounds were the determinant factors. They conclude that:

> "…people attend exhibitions because they anticipate finding personal satisfaction in the visit. Although the exact definition of satisfaction depends on both the exhibition and the individual, at the most basic level it can be described as interest. Background interest in World War II was a predictive factor for attendance and response. Those who care deeply about a subject are more likely to visit an exhibition on that topic, and because the content or

> approach matters to them, they are also more likely to find personal meaning in the experience" (p.137).

Hooper-Greenhill (2000), considering individual displays, especially artifacts, states that they bring the patterns of thought, attitudes, and beliefs that structure a society, and they construct common-sense categories which orient individuals' and communities' lives and expectations. Therefore, both content and materiality of an object have a capacity to become familiar, at an individual and community level. She states that familiar shapes, textures, and colors allow the recognition of objects. This recognition also results in a feeling of belonging, or coming home; in contrast to this, difference, diversity, possibly alienation can be invoked by unfamiliar objects.

Considering visitors' responses to objects, Prown (1994) mentions that visitors respond to objects at an emotional level. Reactions vary in kind, specificity and intensity ranging from indifference to curiosity, or awe to joy. In this respect, Hooper-Greenhill (2000) points out that objects are known tacitly. According to her, this knowledge remains non-verbal and unarticulated, and mobilizes feelings and emotions. She states that whether they are connectedness, being familiar, liking, gaining an understanding or alienation, lack of understanding, unspoken feelings in turn influence visitors' attitudes and behavior in a given visit.

2.4. The Relationship between Emotional and Behavioral Responses

The relationship between emotional responses and behavior is discussed in environment-behavior relation. In this respect, environments that contain different types of stimuli, e.g. objects in museum environments, cause emotional reactions in

people which cause and determine behavioral responses. Mehrabian (1976) states that:

> "people react to enormously varied environments in terms of a few basic emotional dimensions, and that these basic emotional dimensions can in turn produce enormously varied kinds of behavior. This proposition can be thought of as a kind of input-output system. The input or environment end contains literally anything that can be perceived. The output or behavioral-response end includes anything within the human repertory..." (p.18).

The basic emotional dimensions are explained as *arousal-nonarousal*, which indicates that to what extent active, stimulated, excited, wide awake or alert people are; *pleasure-displeasure*, which means being satisfied, content, feeling good or bad; and, *dominance-submissiveness*, which means to feel in control, feel influential, unrestricted or to feel incompetence, loosing authority, lack of understanding (Mehrabian, 1976). Mehrabian mentions that in any environment, these emotional reactions cause people to *approach* or *avoid* that environment which in turn cause measurable behavior. He explains approach and avoidance as:

> "approach behavior, or an environment that causes approach, is usually a positive or desired sort of thing, having to do with movement toward, exploration, friendliness, improved performance, and voiced preference or liking. Conversely, avoidance behavior or an avoidance-causing environment is generally negative, having to do with movement away from, withdrawal, interpersonal coldness, defective performance, and voiced dislike" (p.6).

However, he discusses that the extent which a person approaches or avoids is ultimately determined by how one perceives and thereby feels in relation to a particular environment. As a result of this, she/he behaves in certain ways, but at this time, Mehrabian (1976) states that as experience progresses in that particular

environment, the way she/he behaves can change as the stimuli – physical, social, or informational – that employed therein change.

Gifford (2002) discusses behavioral responses by taking the issue of 'perception' into account. He defines perception as "the initial gathering of information" includes the ways and means by which it is collected through all senses (p.21) and adds that:

> "personal characteristics – such as gender, education or training, experience with a setting – affect environmental perception… The cultural context in which individuals are raised can also lead to different ways of seeing the world" (p.25).

Gifford (2002) also mentions that studies of behavior-inference method, which is "inferring something about perception from the perceiver's behavior" (p.24), use some behavioral indices in order to explore how people perceive an environment and feel about that given setting. In the museum studies, he states that the behavior-inference method is common such that two behavioral indices, *duration* and *spread* of movement (Melton, 1988) are used to measure the degree of visitor interest to the environment. The 'interest' here, does not only indicate the 'satisfaction – due to making personal meaning' (Doering, Pekarik, and Kindlon, 1997), but it also refers to the level of engagement with the environment, and the displays as well (Melton, 1998), which can lead in turn approach or avoidance behavior (Mehrabian, 1976).

Melton (1988) defines duration of movement as the length of time spent in a particular gallery, room or for an exhibit, and the spread of movement, as the amount of area (gallery or room) occupied and the number of exhibits examined.

That is, the more time spent, the more area covered and exhibit engaged, the more interested the visitor is. Then, conversely, it can be said that high degree of engagement/satisfaction means spending more time, examining many exhibits and using more physical space in that given setting. However, in a museum setting, since the level of interaction depends on visitors' and exhibits' characteristics, the diverse audiences would be in different levels of this engagement and thereby their movement patterns, in other words patterns of circulation, would be different.

3. VISITOR CIRCULATION IN THE MUSEUM CONTEXT

3.1. Circulation in Relation to Orientation and Wayfinding

Orientation, as a basic architectural type of environmental communication, is defined as an issue which "concerns a person's ability to perceive an overview of a given environment and recognize where he or she is at any given time within" (Arthur and Passini, 1992, p. 225). Lack of orientation information causes people to feel disoriented which leads them to an inability to situate themselves within the environment and incapability of having or developing a plan in order to reach their destination (Arthur and Passini, 1992). Passini (1984) mentions that the more the environment grows in size and complexity, the more intensified disorientation is.

As the result, when people become disoriented, in other words, become deprived of the information where they are and how to get where they need to go, they feel stressed, frustrated, and fatigued both mentally and physically (Passini 1984; Charpman and Grant, 2002). Being lost is another cost of disorientation that provokes the feeling of incompetence (Passini, 1984).

Wayfinding is mentioned in relation to orientation. Charpman and Grant (2002) describe it as follows:

> "Wayfinding is behavior. Successful wayfinding involves knowing where you are, knowing your destination, knowing and following the best route (or at least a serviceable route) to your destination, being able to recognize your destination upon arrival, and reversing the process to find your way back out" (p.427).

In addition, Arthur and Passini (1992) state that the layout of the setting is a major physical factor that affects the difficulty of a wayfinding task, and they define layout by setting's spatial content, form, organizations and its circulation.

Forming an integral part of any environment organization (Robillard, 1982), circulation system is informative in the sense that the more understandable a circulation system is, the more understandable the spatial organization of the setting and its architecture are (Arthur and Passini, 1992). It is also the space in which people move and have to make decisions to find their way, in other words, the circulation space is the path.

3.2. Circulation in the Museum Context

Orientation of visitors is a crucial issue in museums. The emphasis is given to the first time visitors because being unfamiliar with the environment can cause them to become disoriented when there is lack of orientation information and of direction to galleries or rooms and their contents (Klein, 1993; Erbay, 1992). This situation firstly affects their performances, such as resulting in the decrement of interest in exhibits, called museum fatigue (McManus, 1994; Melton, 1988), and secondly, causes unnoticed, missed exhibits and exhibit galleries/rooms.

Providing environmental cues, such as landmark objects, signs (directional, identification, informative), you-are-here maps, and handheld maps, can increase wayfinding ease and orientation, that is, this can enhance visitors' ability to navigate through the museum settings (Bourdeau and Chebat, 2003; Martin and O'Reilly,

1989). According to the study which Falk, Koran, Dierking, and Dreblow (1985) conducted, the need of visitors to be guided by wayfinding signs was obvious and they conclude that importance of orientation appears in first minutes of a given visit. In addition, researchers examining the effectiveness of wayfinding aids in museums explore that an integrated orientation system – combination of signs and maps (Cohen, Winkel, Olsen, and Wheeler, 1977), and especially handout maps (Talbot, Kaplan, Kuo, and Kaplan, 1993) enhance the quality of visitors' museum experiences.

However, paying attention to lack of informative and directional signs in some museums, it is argued that it might be the result of avoiding distractions concerning to aesthetic effect in museums. In other words, it might be the result of perceived conflicts between aesthetics and function as explained in the following quote:

> "The desire to present art or historic artifacts without visual distractions versus the public's need for visual information to understand, find, and appreciate the collections" (Charpman Grant Associates, 2004, p.1).

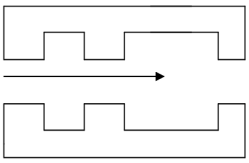
In light of these accounts related to orientation, circulation therefore plays an important role within the museum environments since it affects both visitors' cognitive mapping that is the mental structuring process leading to generate an overall representation of a setting, and their decision making that is the process in which the plan of action to go somewhere is developed (Arthur and Passini, 1992).

Robillard (1982) points out the importance of circulation systems in museums and states that confusion arises from 'poorly-thought-out' systems. He continues that:

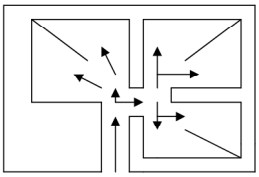
> "The visitor should be led into the museum and through it naturally and easily without feeling that they are in a maze and without being interrupted. There should be continuous controlled circulation, at least each main division of the museum so that [the materials] in each of these divisions to be seen in an orderly and intelligent sequence. Form and size of [paths] must accommodate the movement of people… Thus…the arrangement and itinerary will be clear not only to anyone looking at the ground plan of the museum, but also to anyone walking through the rooms" (p.40).

Martin and O'Reilly (1989) also emphasize that successful circulation system in these settings means successful navigation of visitors, which is, in turn, associated with visit satisfaction. Similarly, Erbay (1992) studies circulation and circulation systems in museums and describes the common circulation plans for visitors in exhibition settings (see Figure 3-1 on the next page).

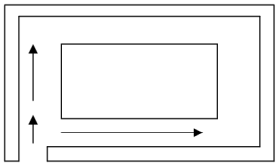
Chain: **The main aim is to allow visitors to navigate in regard to their interest in displayed exhibits.**



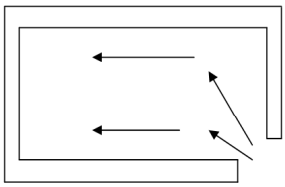
Window: **From the central point, visitors are allowed to move towards the rooms according to their interests.**



Central: **Designing the collection in the center, the aim is to allow visitors to see it from different viewpoints.**



Block: **It provides navigation voluntarily and in a random fashion.**



Brush: **The main aim is to allow visitors to move through the rooms voluntarily.**

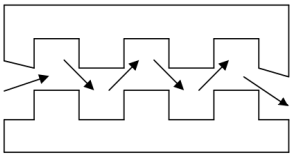


Figure 3-1 The Common Circulation Plans for Visitors

3.3. Circulation Behavior and Environmental Considerations

Circulation behavior is defined in the literature as overall movement patterns of visitors that are the combination of traffic flow and exploratory locomotion (Bitgood, 2002; Klein, 1993; Robillard, 1982). Traffic flow, used as pedestrian traffic pattern, concerns proceeding through the setting and indicates the routes taken by visitors. Exploratory locomotion is, on the other hand, described as "walking around and examining unfamiliar objects in a relatively unfamiliar place" (Robillard, 1982, p.21) that is also subject to curiosity (Klein, 1993).

Klein (1993) states that visitors to museums have to move through these settings in order to see the objects and in this regard "patterns of visitor movement comprise major 'standing' behavior (Barker, 1968) in any exhibit environment" (p.783). Barker (1986) explains 'standing behavior' as a pattern of behavior due to the circumstances in a setting; "a discrete behavior entity with univocal temporal-spatial coordinates; has a precise and delimited position in time and space" (p.18).

Studies of visitors' spatial behavior in museum settings try to answer two questions: Firstly, how and under which conditions do visitors behave, and secondly, why do they behave like that? (Klein, 1993). Investigating how visitors occupy different museum spaces – which direction they follow, which paths they use, where they stop at and how much time they spent – environmental design research in museums focuses on what affects their circulation behavior in these exhibit settings.

It is documented that environmental aspects of a museum, or a single gallery or section have an influence on visitors' circulation patterns and also their

interpretations of galleries and sections (Klein, 1993). It is also argued that they are the most influential factors in museum situation since all activity takes place in these physical settings. The environmental aspects are divided into two categories: setting factors and exhibit factors.

Melton (1988), who pioneered visitor behavior studies in art museums, pointed out several influential factors regarding the setting of a given visit. Location and design of galleries comprised his major concern. The results of his studies at the Pennsylvania Museum of Art were also revealed by further researchers. The literature states the following setting factors in affecting circulation patterns:

- Location and spatial arrangements of exhibits with respect to other exhibits and to the setting (Falk, 1993; Bitgood, Hines, Hamberger, and Ford, 1991; Bitgood, Patterson, and Benefield, 1988; Melton, 1988; Miles, Alt, Gosling, Lewis, and Tout, 1988)
- Size of galleries and position of galleries with respect to each other within the layout of the setting (Bourdeau and Chebat, 2001; Zucker and Clarke, 1993; Klein, 1993; Melton, 1988;)
- Width of the paths between exhibits or exhibit cases (Miles, Alt, Gosling, Lewis, and Tout, 1988)
- Wall colors of the galleries (Srivasta and Peel, 1968, cited in Mehrabian, 1976)
- Floor finishing materials of the galleries (Bitgood, 1996)
- Number of floors of the exhibition setting (Miles, Alt, Gosling, Lewis, and Tout, 1988)

- Number of entrance and exits, and distance between entrance and exits (Melton, 1988)
- Number of exhibits in a given visit (Melton, 1988)
- Lighting of galleries and exhibits (Bitgood, Patterson, and Benefield, 1988)
- Crowd of visitors in the setting (Lakota, 1975; Bernardo, 1972; Borhegyi, 1965; Yoshioka, 1942; cited in Robillard, 1982).

On the other hand, display characteristics of exhibits have impacts on visitors' movement patterns. Studies state the following aspects regarding design characteristics of exhibits and exhibit components:

- Single objects, moving objects, and objects with sound (Bitgood, Patterson, and Benefield, 1988; Peart, 1984).
- Interactivity level of exhibits with visitors (Sandifer, 2003; Fernàndez and Benlloch, 2000; Bitgood, Patterson, and Benefield, 1988; Eason and Linn, 1976).
- Placement of exhibit labels in relation to exhibits, and label characteristics such as content, size, color and typography (Bourdeau and Chebat, 2003; Bitgood, 2000; Hirschi and Screven, 1996; McManus, 1996b; Bitgood and Patterson, 1993).

3.4. Visitor Perspective to the Circulation Issue

In the literature, visitor perspective, taking the personal context of a museum visit as the focal point, tries to predict visitor behavior by taking visitors as unique individuals into account (Falk, Koran, Dierking, and Dreblow, 1985). It is proposed that personal characteristics, which influence what kind of experiences visitors will have during the visits, make up the personal reservoir of visitors' attitudes and behavior (Hood and Roberts, 1994; Falk and Dierking, 1992).

On one hand, it is stated that there are some general habits of people that affect the circulation behavior regardless of individual characteristics (Bitgood, 2002, 1996; Bourdeau and Chebat, 2001; Melton, 1988). Melton (1988), after his studies at Pennsylvania Museum of Art, states that "amazingly irrelevant to the displays…it has been found that the majority of visitors turn toward the wall to the right of an entrance on first entering a gallery" (p.93). The tendency of visitors to turn to the right, as a marked characteristic of the museum population, is referred to *right orientation* or *right-turn-bias* in the visitor behavior literature. One of his studies' findings regarding 'right orientation' in the Flemish-Dutch Gallery is presented in Figure A-1 (see Appendix A)

In addition, it has been also proven that visitors have a tendency to take the shortest distance between the entrance and exit while moving through a gallery or room, which is called *exit-gradient* (Bitgood, 2002; Melton, 1988). Bitgood (1996) also mentions *inertia* which is referred to visitors' general tendency to continue walking along a straight-line path. Following this argument it was also proposed that visitors

are less likely to turn back after they passed a gallery or exhibit (Bourdeau and Chebat, 2001) (see Figure A-2 in Appendix A).

On the other hand, the previous research explores individual characteristics in the way of finding differences in circulation behavior between visitors. Mehrabian (1976), stating the individual differences in environment and behavior relation, mentions that this is because of:

> "the differences in their psychological make up; in attitudes toward, and past experiences with, various places; in familiarity and sophistication in dealing with places; and in the way people cognitively process the information they receive from their surroundings" (p.4).

Bitgood (2002), by pointing out the issue of attention, mentions that because of individual differences, people focus on and pay attention to different types of information employed in environments, especially in exhibit settings; "attention is selective in the sense that some things capture our attention while others do not" (p.486) and some things capture our attention can not capture others'.

Individual characteristics are categorized into two groups: demographic characteristics and psychographic characteristics (Hood, 1993). Demographics include visitors' age, gender, race, nationality, level of education, occupation, income, marital status, and place of residence; psychographics, on the other hand, include attitudes, opinions, values, interests, and goals.

3.4.1. Demographic Characteristics

Robillard (1982) states an early study conducted by Bechtel (1967) who used an electric floor grid system sensitive to visitors' movements in order to assess their range of movements (this technique is also referred to as Hodometer method). Bechtel reports that there were differences between males and females, such that, males covered more ground on a given visit, had more footsteps, and were slower than females; however time spent did not differ among genders.

On the other hand, the studies conducted by Falk (1991) at Florida State Museum of Natural History (FSMNH) and Smithsonian Institution's National Museum of Natural History (NMNH) show that there are differences between family visitors and nonfamily visitors, and between children and adults. He reports that family groups predominantly have predictable behavioral patterns in terms of time spent and duration of stops, and the path taken through the visits. According to his results, children when compared to adults exhibited much behavioral variability in movement patterns.

Sandifer (1997), who conducted his study at the Reuben Fleet Science Center, also reports the differences between family and nonfamily groups and concludes that adults with children spent more time than single adult groups in certain areas but the two groups did not differ in their average time spent in the center as a whole.

3.4.2. Psychographic Characteristics

Psychographics of visitors include visitors' motivations to visit, their strategies, interests in and knowledge of the exhibition contents, and familiarity with the museum visiting as a time spending activity (Falk and Dierking, 1992; Falk and Adelman, 2003; Hood, 1993; Merriman, 1989). The literature also reports the following results regarding psychographic characteristics of visitors and circulation behavior.

Motivations, the reasons for visiting museum, comprise the concern of the study that Falk, Moussouri, and Coulson (1998) conducted at the Smithsonian Institution's National Museum of Natural History (NMNH). They conclude that, since a visitor might have more than one reason to come to a museum, visitors had predominantly integrated recreational and educational motivations, however visitors who had recreational motivations (resting, relaxing, spending time with family or friends) were more likely to spent much time in the museum.

Bitgood (1996) states that "if visitors are looking for some specific objects or areas, goal seeking behavior may influence visitors' circulation behavior" (p.150). The goal seeking behavior is referred to strategies of visitors. According to Falk, Moussouri, and Coulson (1998) visitors who have focused strategies – who have plan in their minds to see specific exhibits or exhibition in the museum – spent more time than visitors who have unfocused strategies – who do not have any specific plan or goal concerning museum visiting.

3.5. Circulation Behavior in Relation to Visitor/Object Relationship

Behavioral differences considering visitor-exhibit interaction are the concern of studies which focus on members of families (Diamond, 1994, 1980; McManus, 1994; Blud, 1990; Cone and Kendall, 1978) and these studies report gender-specific behavior of visitors in relation to exhibitions.

McManus (1994) discusses the contradictory results of the two studies that one was conducted in an anthropology hall (Cone and Kendall, 1978) and the other which was conducted in the Science Museum, London (Blud, 1990). According to the results of the first study in the anthropology hall, McManus (1994) cites that:

> "the mothers were likely to be the initiators of conversation while fathers appeared to be rather reticent and directed most of their talk to their sons. Boys asked questions more frequently than girls" (p.94).

However, the results of the study conducted in science museum show the opposite that McManus (1994) states: "In Blud's study, fathers interacted with children more than mothers did, and daughters initiated more conversations than sons" (p.94). After presenting the findings, McManus (1994) indicates that the authority of parents and the intention of children to ask questions seem to be determined by exhibits than family composition. He argues that general interest or familiarity with the content determine whether mother or father will be dominant in verbal behavior, and also lack of understanding or unfamiliarity mobilizes children to ask more questions.

Similar to the accounts of McManus (1994), Diamond (1994) discusses family behavior in science museums. By pointing out gender influences in experiencing

science exhibitions, he states that boys and fathers are more likely to stay longer and interacted with more exhibits than girls and mothers. As the reason of these differences, he argues that because of the socialization of females away from science-related issues that even begins early in their education, they remain passive in science museums. Diamond, on the other hand, presents the findings of his studies at the Exploratorium and the Lawrence Hall of Science that “mothers were significantly less likely to choose what exhibits to visit and more likely to follow other members of the group to exhibits” (p.22) and fathers moved through by themselves without following any ordered information.

However, these researches, consider visitor-exhibit relationship while discussing behavioral differences, especially movemental behavior (Diamond, 1994), neither show the design of study settings nor visualize the use of physical spaces of those settings. The literature, supporting equity (Diamond, 1994; McManus, 1994) and recommending balance between diversified audiences, museum exhibitions and physical environment (Combs, 1999; Soren, 1999; Hein, 1998; McManus, 1996a; Falk and Dierking, 1992; Martin and O’Reilly, 1989), however, does not attempt to relate these findings to the environmental design in museums.

In addition, the researches which focus on environmental factors and disregard visitor-exhibit interaction while discussing circulation behavior (Sandifer, 2003; Bourdeau and Chebat, 2001; Fernàndez and Benlloch, 2000; Hirschi and Screven, 1996; Falk, 1993; Klein, 1993; Zucker and Clarke, 1993; Bitgood, Hines, Hamberger, and Ford, 1991; Bitgood, Patterson, and Benefield, 1988; Melton, 1988; Miles, Alt, Gosling, Lewis, and Tout, 1988; Srivasta and Peel, 1968; Eason and

Linn, 1976), and the others which report visitor characteristics and differences in circulation patterns by disregarding exhibit characteristics and setting factors (Bitgood, 2000; Falk, Moussouri, and Coulson, 1998; Sandifer, 1997; Bitgood, 1996; Hood, 1993; Falk, 1991; Merriman, 1989; Bechtel, 1967), lack the 'wholeness' of the museum experience (Hennes, 2002; Goulding, 2000; Hein, 1998; Falk and Dierking, 1992).

In this respect, it is reasonable to state that there is a lack of integration of audience surveys, behavioral studies, and the contemporary intellectual discourses regarding museums and displayed objects in visitor studies in museum environments. The following chapter presents the case study which attempted to examine visitor characteristics and use of museum settings by taking references from visual and material culture, and constructivist theories which discuss the contemporary museum situation in terms of communicating with visitors.

4. THE CASE STUDY

4.1. Sadberk Hanım Museum: Background Information

Sadberk Hanım Museum, which belongs to Vehbi Koç Foundation, is the first private museum in Turkey. The museum is in Sarıyer, Istanbul, on the european shore of the Bosphorus (Figure B-1, Appendix B). It is composed of two buildings, *Azaryan Yalısı* and *Sevgi Gönül Building*. Together with the garden, the total area of the museum is 4280 square-meters (Figure B-2, Appendix B).

Azaryan Yalısı (Figure B-3, Appendix B), a building which belongs to the 19th century, was opened to public as a museum in 1980. This historical building which was used as a summer house by the Koç Family, today displays the private collection of Sadberk Koç that includes Turkish and Islamic Art Works and daily-life objects and costumes that belong to Ottoman period (Vehbi Koç Vakfı, 2004). It is composed of two floors with a 400 square-meters area.

The *Sevgi Gönül Building* (Figure B-4, Appendix B), a historical building that belongs to the 20th century, was added to the museum and opened in 1988 after the purchase of a collection of archaeological objects that belong to late Neolithic and early Chalcolithic periods to the Byzantine period (Vehbi Koç Vakfı, 2004). The building, composed of five floors, has a 625 square-meters area.

Sadberk Hanım Museum exemplifies the common characteristics of museums in Turkey since, on one hand, the collections of museums in the country are commonly composed of archeological objects and objects belong to Eastern art and Turkish-

Islamic periods (Katoğlu, 2005). Respectively, it is mentioned that Turkish museums are history museums which are heavily housing archeological-ethnographical displays (Katoğlu, 2005). In addition, the first museums in the country are also archeology museums and museums of Turkish-Islamic artifacts (Tansuğ, 1993; Güvemli and Kerametli, 1974; Dolunay, 1973). On the other hand, in terms of museum buildings in Turkey, they are also commonly conversions of historical buildings (Katoğlu, 2005).

4.2. The Case Study

4.2.1. Aim and Objectives

The current study focused on circulation behavior in museum settings from the visitor perspective with the assumption that the use of exhibit spaces depends on individual repertoires of visitors because these characteristics influence how they respond and react to the whole environment, which in turn influence visitors' behavior. The purpose was to gain an overall picture of visitor circulation patterns, and in particular, to determine if circulation patterns differ according to gender (female/male) and locality (local/foreign) characteristics of visitors in an exhibition setting which contains gender-typed and locally-relevant exhibits in terms of content and materiality. The study also aimed to identify whether a relationship exists between psychographics and circulation behavior, and whether the specified groups of visitors (female/male and local/foreign) also differ in their psychographic characteristics which are knowledge and interest levels of the subject matter, visit strategies, visit motivations, and frequency of museum visits.

4.2.2. Research Questions and Hypotheses

With respect to the objectives of the study, four questions were formulated:

1. Do female and male visitors differ in their patterns of circulation?
2. Do local and foreign visitors differ in their patterns of circulation?
3. Is there a relationship between psychographics of visitors and circulation behavior?
4. Do visitors differ in their psychographics in relation to gender and locality characteristics?

The study hypothesized that since visitor characteristics, at both individual and community level (Hooper-Greenhill, 2000), affect their behavior, gender and locality of visitors, as the ways in which they construct their personalities (Hooper-Greenhill, 2000; Pearce, 1998), would affect their interaction with the exhibition, thereby circulation behavior in the chosen setting, and would cause differences. In addition, it was hypothesized that since psychographics is part of visitors' personal repertoires (Hood, 1993; Falk and Dierking, 1992), it would be related to circulation movement patterns and psychographic characteristics would also differ in relation to gender and locality of visitors.

4.2.3. Description of the Setting

The study was conducted in *Azaryan Yalısı* building of Sadberk Hanım Museum which houses one of the two permanent exhibitions of the museum and is called *Turkish-Islamic Section*. The setting was chosen because of the diversity and density of audience flow and the characteristics of the exhibition. Accommodated on both floors of the building, the section's total exhibition area is 700 square-meters. The floor plans and designs of the section are given in Figure 4-1.

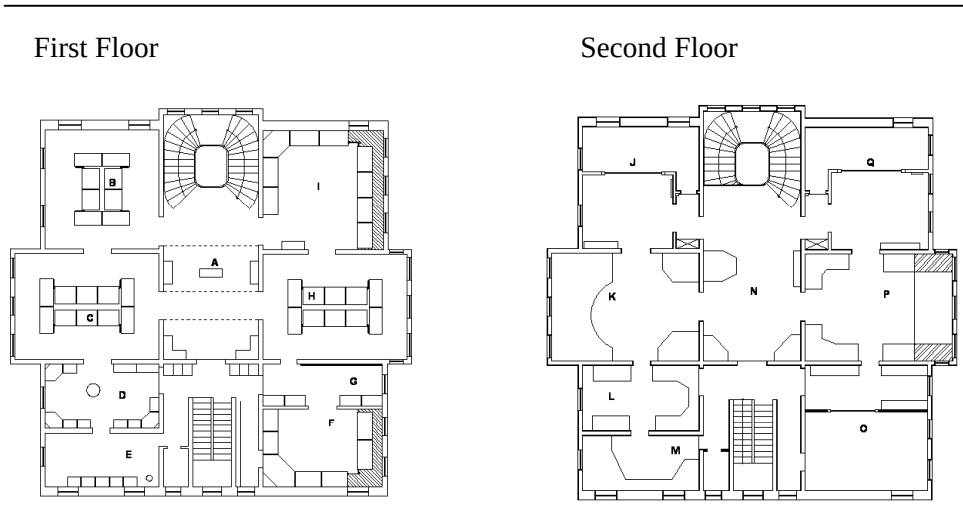


Figure 4-1 Floor Plans and Designs of the Chosen Setting

The presentation of the exhibits on the first floor depends on theme of the exhibits and also follows a chronology from the 13th century to the late 19th century (except the rooms indicated by A and E). On this floor, there is a total of 957 pieces of objects and 73 object cases. The exhibition includes different kinds of objects in materiality and content, such as bronze and cooper bowls and candlesticks from

Islamic periods, objects used in wars, scientific materials, sets of writing tools, gold jewelry, ruby and emerald decorative objects that belong to Turkish-Islamic periods, ceramic plates used both daily and for religious purposes, and ceramic tiles with mosque and church depictions. The contents of the exhibits displayed in each room are shown in Table 4-1.

Table 4-1 Contents of the Exhibits Presented in the Rooms on the First Floor

	Room	**Exhibits**
1	A	Turkish Paintings and French Antiques (Furniture)
2	B	Early Islamic Artifacts
3	C	Late Islamic Artifacts
4	D	Turkish-Islamic Jewelry
5	E	Awards belonging to Vehbi Koç
6	F	Turkish Ceramics (Çanakkale and European Bazaar)
7	G	Turkish Ceramics (Kütahya)
8	H	Chinese Porcelains
9	I	Turkish Ceramics (İznik)

The exhibits on the second floor are presented according to theme and include costumes and daily-life objects that belong to Ottomans such as velvet fabrics used for caftans, silk aprons, wedding dresses, manuscripts, pinking and silver embroideries, leather book covers and cases, and decorative glass cups. There is a total of 560 pieces of objects and 31 object cases on the floor. Some exhibits are

displayed together in order to present Ottoman customs. The contents of the exhibits displayed in each room are shown in Table 4-2.

Table 4-2 Contents of the Exhibits Presented in the Rooms on the Second Floor

	Room	**Exhibits**
1	J	Presentation of woman after childbirth (*Loğusa Odası*)
2	K	Wedding dresses
3	L	Traditional costumes and daily-life objects
4	M	Bed dresses
5	N	Presentations of bridegroom shaving, bride bath, coffee serving
6	O	Presentation of henna ceremony (*Kına Gecesi Odası*) and Ottoman manuscripts
7	P	Ottoman fabrics
8	Q	Presentation of circumcision ceremony (*Sünnet Odası*)

4.2.4. Sampling Procedure

During the days between January 21st and February 20th, 52 visitors were observed in the chosen section (*Turkish and Islamic Section*) except for Wednesdays, on which the museum was closed.

Children and teenagers were excluded from the study as the visitor behavior literature mentions differences between adult visitors and children/teenage groups in terms of both their attitudes and overall behavior patterns in museum environments

(Cohen, 1996; Matthew, 1996; Thomas, 1996; Falk, 1991; Cohen and McMurtry, 1985; Andrews and Asia, 1979). In addition, children and teenagers mostly come within school groups and their visits are "potentially teacher directed and often limited to a preallotted time duration" (Sandifer, 2003, p.125).

Visitors who had visited the museum before were also excluded from the study since frequent visitors' previous experiences could have affected their movement patterns (Bourdeau and Chebat, 2001; 2003). Therefore, the frame of sampling of the study included first-time adult visitors who were 20 and older.

According to the aim of the study, visitors were stratified on the basis of gender (female/male) and locality (local/foreign) and equal number of female and male visitor, and local and foreign visitor was chosen (Table 4-3).

Table 4-3 Number of Chosen Visitors

	Local	**Foreign**	Total
Female	13	13	26
Male	13	13	26
Total	26	26	52

4.3. Methodology

4.3.1. Definitions of Variables

After surveying visitor circulation literature, measures of circulation behavior were identified as (1) Route selection (preference of turning right versus left, the path followed, and visit order of the floors) and (2) Range of movement (the amount of area covered and the duration of use; the number, location and duration of stops). In this study, these dependent variables were defined as follows:

(1) Route selection:

(a) Preference of turning right versus left: It is the preference of turning to right or left side when a visitor has just entered the floors.

(b) The path followed: it is the route taken through the setting.

(c) Visit order: A visitor's preference of visiting order of the floors as starting from the first or second floor was added to the measures.

(2) Range of movement:

(a) The amount of area covered: In the study, it is the numbers of exhibit groups in cases passed by a visitor. Also, it is referred as the spread of use.

(b) The duration of use of area: It is the total time spent (in seconds) in the setting. Total time included any kind of activity of a visitor in the setting, such as walking, examining exhibits, glancing around, talking and resting.

(c) The number of stops: It is the total number of stops of a visitor. In this study, a visitor was considered to have stopped when he or she spent at least 5

seconds at a point. The use of 5-second cutoff is common in the literature (Sandifer, 2003; Fernández and Benlloch, 2000).

(d) Location of stops: It is the point at where visitors stopped in the setting.

(e) Duration of stops: It is the length of stay when a visitor stopped at a point.

For the study, visitor variables (independent variables) were defined as follows:

(1) Demographic characteristics:

(a) Gender: Visitors were noted as female or male.

(b) Locality: Visitors were noted as local or foreign users of the museum. Visitors from Turkey were recorded as local visitors and visitors from other countries (foreign tourists) were recorded as foreign visitors.

(2) Psychographic characteristics:

(a) Visit strategy: Strategies of visitors were defined as focused and unfocused (Falk, Moussouri, and Coulson, 1998). A visitor was considered to be focused when the visitor indicated that he or she had planned to see a particular exhibit or exhibit group. A visitor was considered to be unfocussed when the visitor indicated that he or she had not planned to see anything in particular.

(b) Visit motivation: It is the motivation a visitor has for visiting a museum (Falk, Moussouri, and Coulson, 1998). In this study, motivations of visitors divided into three categories, namely, education and exploration, family and friends, and rest and relaxation (England, 2003). The statements related to each category included: (i) education and exploration: “to develop my general knowledge”, “to seek intellectual enrichment”, “to experience new and different things”, “to gain an appreciation of history”; (ii) family and friends: “to be with my family/friends”, “to do something

with my family/friends"; (iii) rest and relaxation: "to rest and relax", "to reduce the feeling of having too many things to do".

(c) Interest level: It is a visitor's level of interest in the subject matter of the exhibition displayed which was measured as "very high level of interest", "great deal of interest", "moderate interest", "some interest", and "very little interest".

(d) Knowledge level: It is a visitor's level of knowledge of the subject matter of the exhibition displayed which was measured as "expert", "great deal of knowledge", "moderate", "some knowledge", and "very little knowledge".

(e) Frequency of museum visit: In the study, it was defined as the number of yearly museum visits.

4.3.2. Data Collection Procedures

Two methods, observation and questionnaire, were used for collecting data. Observations were made unobtrusively in the course of entire visits. Unobtrusive observation is observing and recording behavior of people in a specific setting without their awareness (Klein, 1993; Melton, 1988). The literature states unobtrusive observation is used when it is important to identify how people move through the exhibition and it assesses the circulation patterns (Bitgood, 2002) and it is also the most used, flexible, and practical method (Klein, 1993). Unobtrusive observation provides honest record of what people actually do (McAndrew, 1993), since when people become aware that they are being observed, they may change their behavior (Kumar, 1999) and this threats the validity of collected information (Sandifer, 2003).

A questionnaire was prepared and performed at the end of the visits in order to obtain information about visitor characteristics and psychographics, and attitudes to some issues which are not possible to obtain by observing.

4.3.2.1. Observation Study

Using the sampling procedure, only one visitor per group was observed through the setting. The observations were made by the researcher and some information was recorded by the museum staff.

As a strict rule of the museum, the security guards have to accompany visitors throughout the visits without disturbing them; and the guards, who were informed about the objectives of the study, helped gathering the time data during observations. Another procedure of the museum made possible and easy to assess all needed characteristics of the visitors for the researcher prior to observations. The museum staff on the ticket desk was also knowledgeable of the study objectives. While visitors were having their tickets, the staff kindly tried to make them talk a little and asked whether it was the first time they had been to the section. In addition, visitors who were making their first visits also asked questions for ticket procedure, looked around carefully, and asked for the cloakroom, restrooms or the shop.

To start, the researcher waited for an eligible visitor at the entrance of the museum near the ticket desk in order to assess visitors' characteristics (gender, locality, and number of visits of the museum). When the first group entered the museum, regardless of visitor number in the social grouping, the first visitor started to visit the

section was observed. Since the visitor was a female local visitor, the observation procedure was determined as follows: after the female local visitor was observed and asked to complete the questionnaire, the first male local visitor entered the setting was observed and asked to complete the questionnaire. Next, the first female foreign visitor was observed. In this manner, the researcher repeatedly cycled through both female and male visitors, and local and foreign visitors.

For each visitor, two observational data were recorded: Time and behavioral data. The time data included (a) time of entrance to the setting, (b) time spent for each floor, (c) time spent for each stop, and (d) time of exiting the setting. The behavioral data included (a) visit order of the floors, (b) right or left turn preference for each floor, (c) the path taken through each floor on a scale map, and (d) the points stopped at. The observation sheets are given in Appendix C.

4.3.2.2. Questionnaire Study

A written questionnaire was administered after a chosen visitor was observed through the setting (see Appendix D). As visitors left the section, given a brief explanation, visitors asked to spare five minutes to fill out the survey.

The data obtained by the questionnaire included visitor variables. 18 questions, predominantly close-ended, included visitor demographics (age, gender, nationality, place of residence, education level, and occupation), visit characteristics (day-time of arrival, social groupings as an organized group, alone, family, friend/s; total number of visits of the museum), visitor psychographics (strategy, motivation, interest and

knowledge level, frequency of a museum visit), and setting-specific attitudes of visitors (perceived visitor crowd, perceived exhibit density, orientation signs).

The questionnaire was prepared both in Turkish and English to enable visitors to complete the survey without any language problem. While visitors were completing the survey, the researcher situated herself close to them. Some participants answered and commented on some issues verbally. These statements were noted and attached to the questionnaire sheets.

4.3.3. Data Analysis

For the study, descriptive statistics including frequencies, as well as cross tabulation and mean comparisons, correlation coefficient (Pearson's R), chi-square and independent sample t-test analyses were employed. The data were analyzed by using SPSS (the Statistical Package for the Social Sciences) software program, Version 12.0.

Time and behavioral data obtained by observations were statistically analyzed. In order to test whether female/male visitors and local/foreign visitors differ in their circulation behavior, both chi-square and independent sample t-test were utilized, since, chi-square is "used to assess whether two or more samples each consisting of frequency data (nominal data) differ significantly from each other" (Howitt and Cramer, 1999, p.114) and independent sample t-test evaluates the differences between two sets of mean scores come from different groups (Aron and Aron, 1997; Howitt and Cramer, 1999; Kaplan, 1987). The path followed by the visitors as one of

the dependent measures was explored by drawings on a scale map. Also, location of stops was qualitatively explored.

The answers obtained by the survey questions were analyzed statistically and so as to test if there is a relationship between visitor psychographics and circulation patterns, correlation coefficient was utilized since it assesses whether a relationship exits between two or more variables (Howitt and Cramer, 1999; Yazıcıoğlu and Erdoğan, 2004). Correlations are displayed in a table called correlation matrix, when several variables are involved (Aron and Aron, 1997; Howitt and Cramer, 1999). Thus the study explored possible relations between all variables by creating a correlation matrix (see Appendix E). In addition, a series of chi-square analysis were run to test whether psychographics of visitors differ in relation to gender and locality characteristics.

4.4. Results and Discussion of the Statistical Analyses

4.4.1. Results of the Questionnaire Study

The results of the data obtained by the written questionnaire for observed 52 visitors are given under four titles; visitor demographics, visit characteristics, psychographics, and setting-specific attitudes of visitors.

According to the objectives of the study, equal number of female and male visitors, and local and foreign visitors was chosen (Table 4-3). The ages of the selected 52 adult visitors were between 20 and 75. The average age of the visitors was 43.

In terms of education levels, 19.2% of the visitors was high school graduate or less, more than half of the visitors (55.8%) had completed the requirements for a Bachelor's Degree, 17.3% of them had a Master's Degree, and 7.7% of them had received their Doctorate Degree (Table 4-4).

Table 4-4 Education Level of Visitors

	Frequency	**Percentage**
Education Level		
High school graduate or less	10	19,2
Bachelor's degree	29	55,8
Master's degree	9	17,3
Doctoral degree	4	7,7
Total	52	100

The results of the questions of place of residence and occupation showed that local visitors had come from different cities of the country; however, the number of visitors from Istanbul was more than others. For foreign visitors, it was noticeable that most of them were from the capitals of other countries. The professions of the visitors also varied. However, almost all of them indicated that they had high status.

In terms of visit characteristics, 57.7% of the visitors were recorded as morning visitor (10am-12:30pm) and 42.3% of the visitors were recorded as afternoon visitor (12:30pm-16:30) (Table 4-5). The percentage of the visitors who belonged to an organized group was 44.2. 26.9% of the visitors indicated that they came to the museum with their families and 21.2% of the visitors indicated that they came to the museum with their friends. Only 3 of the 52 visitors (5.8%) visited the museum alone (Table 4-5).

According to the objectives of the study, all of the selected 52 visitors were first-time visitors and no one indicated on the questionnaire that he or she had visited the museum before.

Table 4-5 Percentage of Visitors in relation to Day Time and Social Grouping

	Frequency	**Percentage**
Day Time		
Morning	30	57,7
Afternoon	22	42,3
Social Grouping		
with an organized group	23	44,2
alone	3	5,8
with family	14	26,9
with friends	11	21,2
Total	52	100

In order to obtain information about visitor psychographics, visitors were asked to indicate whether they had focused strategies or unfocused strategies, in other words, whether they came to see a specific object/object group or not. According to results given in Table 4-6 (on page 52), 21.2% of the visitors indicated that they came to see a specific object/object group in the museum; on the contrary, 78.8% of the visitors indicated that they did not come to see anything in particular.

Motivation statements indicated by the visitors were categorized into three main titles; education and exploration, family and friends, and rest and relaxation. Regarding those categories, three quarter of the visitors indicated that reasons underlying their visit to the museum were only educational and for exploration. 9.6%

of the visitors indicated their family and friends as the reasons of coming to the museum together with the reasons of education and exploration. The statements related to rest and relaxation together with the statements of education and exploration were indicated by 5.8% of the visitors. The percentage of visitors who indicated all three categories' statements as the reasons best described why they visited the museum was 9.6. None of the visitors indicated only the statements of family and friends without mentioning other two types of reasons. This result was same for the statements of rest and relaxation. The results are given in Table 4-6.

In order to assess the interest levels of the visitors in the subject matter of the exhibitions displayed per floor, they were given the subject matters that "Turkish and Islamic Art Works" for the first and "Ottoman Customs and Costumes" for the second floor. Table 4-6 shows the results of interest levels of the visitors in the subject matter of the exhibition displayed on the floors. For the exhibition on the first floor, 13.5% of the visitors indicated that they had very high level of interest, 26.9% of the visitors indicated that they had great deal of interest, 26.9% of them indicated that they had moderate interest, 17.3% of them indicated that they had some interest, and the percentage of the visitors who had very little interest in the subject matter was 15.4%. For the subject "Ottoman Customs and Costumes", 26.9% of the visitors indicated that they had very high level of interest, 21.2% of the visitors indicated that they had great deal of interest, 26.9% of the visitors indicated that they had moderate interest, 21.2% of them indicated that they had some interest and only 3.8% of them indicated that they had very little interest.

Following the same manner for assessing visitors' interest levels, knowledge levels of the visitors of the subject matters of the exhibitions displayed per floor were assessed. Table 4-6 summarizes the knowledge level results for the subject matter of the exhibition on the first floor, which was "Turkish and Islamic Art Works". 13.5% of the visitors indicated that they had great deal of knowledge, a quarter of the visitors indicated that they had moderate knowledge, 34.6% of the visitors indicated that they had some knowledge and 26.9 of them indicated that they had very little knowledge. Again, as summarized in Table 4-6, for the subject matter of the exhibition on the second floor, 3 of the 52 visitors indicated their knowledge levels as expert. The percentage of the visitors who indicated their knowledge level of the subject matter of the exhibition displayed on the second floor as great deal was 26.9. 28.8% of the visitors indicated that they had moderate knowledge, 26.9% of the visitors indicated that they had some knowledge and 11.5% of them indicated that they had very little knowledge.

Finally, visitors were asked to indicate how many times they visit a museum in a year. The percentages of visitors who indicated that they visit a museum twice a month and once a month were 7.7. 48.1% of the visitors indicated that they visit a museum three or times in a year. 30.8% of them indicated that they visit a museum once a year and 3.8% of them indicated that approximately they never visit a museum. One visitor indicated his/her frequency of museum visit as other than those times (Table 4-6).

Table 4-6 Percentage of Visitors in relation to Psychographics

	Frequency	Percentage
Visit Strategy		
Focused	11	21,2
Unfocused	41	78,8
Motivation		
Education&Exploration	39	75,0
Education&Exploration and Family&Friends	5	9,6
Education&Exploration and Rest&Relaxation	3	5,8
Education&Exploration, Family&Friends, and Rest&Relaxation	5	9,6
Interest Level (1st floor)		
very high level of interest	7	13,5
great deal of interest	14	26,9
moderate interest	14	26,9
some interest	9	17,3
very little interest	8	15,4
Interest Level (2nd floor)		
very high level of interest	14	26,9
great deal of interest	11	21,2
moderate interest	14	26,9
some interest	11	21,2
very little interest	2	3,8
Knowledge Level (1st floor)		
great deal of knowledge	7	13,5
moderate	13	25
some knowledge	18	34,6
very little knowledge	14	26,9
Knowledge Level (2nd floor)		
Expert	3	5,8
great deal of knowledge	14	26,9
moderate	15	28,8
some knowledge	14	26,9
very little knowledge	6	11,5
Museum Visit		
Twice a month	4	7,7
Once a month	4	7,7
Three or four times in a year	25	48,1
Once a year	16	30,8
Never	2	3,8
Total	**52**	**100**

In order to assess visitors' perceived exhibit density for both floors, they were asked to rate the number of the exhibits displayed per floor on a scale of 5-1 (5=too many, 1=a few). For the number of exhibits on the first floor, 76.9% of the visitors rated as 'moderate' ("3") and 19.2% of the visitors rated as 'many' ("4"). None of the visitors rated 'a few' ("1") on the scale. For the number of exhibits on the second floor, the percentages are very similar that 78.8% of the visitors rated the level as moderate and 17.3% of the visitors rated as 'many'. None of the visitors rated "1" on the scale.

In order to have insights about visitors' perceived crowd of other visitors on both floors of the setting during the visits, visitors were asked to rate the density of visitors during their visits on a scale of 5-1 (5=too crowded, 1=completely empty). The percentage of visitors who rated 'completely empty' ("1") was 46.2 and who rated 'somewhat empty' ("2") was 44.2. None of the visitors rated 'crowded' ("4") or 'too crowded' ("5"). For the second floor, percentages of visitors and rated levels were the same as the first floor.

Visitors were also asked to indicate to what extent they would have been in favor of being oriented by the arrows if they had been located through the routes in the setting. Table 4-7 shows that 30.8% of the visitors indicated they would have been very much in favor. 40.4% of the visitors indicated that they would have been in favor. A quarter of visitors indicated "indifference" and 3.8% of the visitors indicated that they would not have been in favor. None of the visitors indicated the item that "being not at all in favor".

Table 4-7 Attitudes towards Orientation Signs

	Frequency	Percentage
Orientation Signs		
Very much in favor	16	30,8
In favor	21	40,4
Indifferent	13	25,0
Not in favor	2	3,8
Total	52	100

4.4.2. Results of the Observation Study

The data obtained by observations were analyzed and the results for observed 52 visitors are given under two titles; route selection and range of movements.

Tables 4-8 shows the visitors' preferences of turning to right or left side when they entered the floors of the setting. On the first floor 61.5% of the visitors turned right while 38.5% of them turned to left side. On the second floor, the percentage of turning right was 71.2 (37 of the 52 visitors preferred to turn to right side) while 28.8% of the visitors turned left.

40 of the 52 visitors (76.9%) started to visit the setting from the first floor while 12 of them (23.1%) visited the second floor of the setting first (Table 4-8). None of the visitors visited only one floor of the setting.

Table 4-8 Frequency of Turn Preference and Visit Order of the Floors

	Frequency	Percentage
Turn preference (1st floor)		
Right turn	32	61,5
Left turn	20	38,5
Turn preference (2nd floor)		
Right turn	37	71,2
Left turn	15	28,8
Visit order of the floors		
Starting from the first floor	40	76,9
Starting from the second floor	12	23,1
Total	52	100

Routes most frequently taken by the visitors through the first and second floor are given in Figure 4-6 (on page 57) in relation to right and left turns. According to arrows drawn on the scale maps, visitors followed same paths regardless of turn preferences, in other words, they passed and missed the same exhibits. It is also obvious that when visitors turned right at the entrance of the floor, they maintained right turn preferences for each room entrance and when visitors turned to left side at the entrance they maintained left turn preferences. This manner did not change the exhibits that were passed and missed but changed the order of the exhibits (information) in each room as well as the order of the exhibition displayed on the floor.

The results of the percentages of visitors in rooms in relation to taken routes (Table 4-9, on page 58) also showed that when visitors turned to left side at the entrance, they were more likely than visitors who turned to right side, to visit every room on

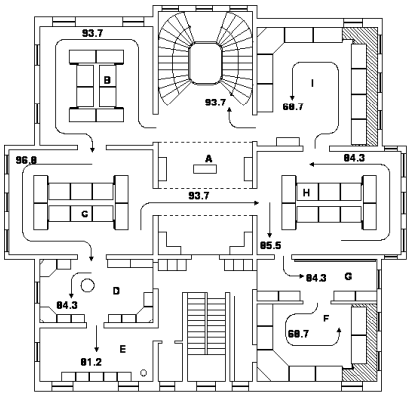
the first floor in the absence of back turns. For the first floor the least frequently visited room was E.

For the followed paths of the visitors on the second floor there is a slight difference between visitors who turned right and left that when visitors turned to right side they were attracted by the exhibit just near the entrance. Conversely, it might be said that visitors who were attracted by the exhibit just near the entrance turned to right side. Similar to the first floor, visitors maintained their turn preferences at the entrance of each room on the second floor.

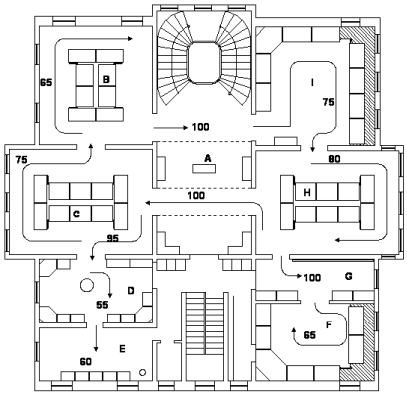
According to Table 4-9, visitors who turned to left side when they just entered the second floor were more likely than visitors who turned to right side to visit every room on the floor in the absence of back turns. In addition, for the second floor the least frequently visited room was M.

First Floor

Right turn

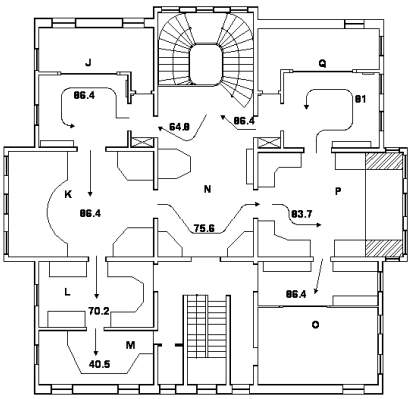


Left turn



Second Floor

Right turn



Left turn

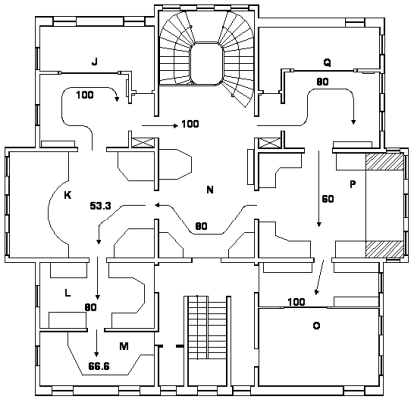


Figure 4-6 The Path Followed by the Visitors in the Setting
(Numbers are in %.)

Table 4-9 Percentage of Visitors in Rooms in relation to Taken Routes

First Floor	**Right Turn** % N=32	**Left Turn** % N=20	**Second Floor**	**Right Turn** % N=37	**Left Turn** % N=15
A	93.7	100	J	86.4	100
B	100	100	K	100	100
C	100	100	L	70.2	80
D	100	100	M	40.5	66.6
E	81.2	60	N	100	100
F	84.3	100	O	86.4	100
G	84.3	100	P	86.4	100
H	84.3	100	Q	86.4	93.3
I	97.7	100			

The number of exhibit cases passed by a visitor was taken as the visitor's spread of use of the setting which was also accepted, in the study, as the amount of area covered by the visitor. The number of the exhibit cases in the setting was 104 and 73 of those cases were on the first floor and 31 of them were on the second floor. The average number of cases passed by visitors in the setting was 95 (minimum 61, maximum 104). 32.7% of the visitors (N=17) occupied the whole setting and relatively, passed through all the 104 exhibit cases (Figure 4-7).

Figure 4-7 Frequency of Number of Exhibit Cases Passed by Visitors in the Setting

On the first floor, an average of 66 of the 73 cases were passed by visitors and on the second floor, an average of 29 of the 31 cases were passed by visitors. In addition, 48.1% of the visitors (N=25) on the first floor (Figure 4-8) and 65.4% of the visitors (N=34) on the second floor occupied the whole floor area (Figure 4-9)

Figure 4-8 Frequency of Number of Exhibit Cases Passed by Visitors on the First Floor

Figure 4-9 Frequency of Number of Exhibit Cases Passed by Visitors on the Second Floor

Visitors spent an average of 1623 seconds (27 min. 3 sec.) in the setting (Table 4-10). The average time spent was 870 seconds (14 min. 30 sec.) on the first floor and 748 seconds (12 min. 28 sec) on the second floor.

Counted number of stops of the visitors was 33 on average (Table 4-10). Visitors stopped at least 15 times and at most 83 times in the setting. As shown in Table 4-10, on the first floor the average number of stops was 22 and on the second floor the average number of stops of the visitors was 11. In addition, visitors spent, on average, 1175 seconds (19 min. 35 sec.) of their time in front of the exhibit cases. The average length of stops on the first floor was 645 seconds (10 min. 45 sec.) and on the second floor it was 530 seconds (8 min. 50 sec.) (Table 4-10).

Table 4-10 Time Spent, Number and Length of Stops by Visitors

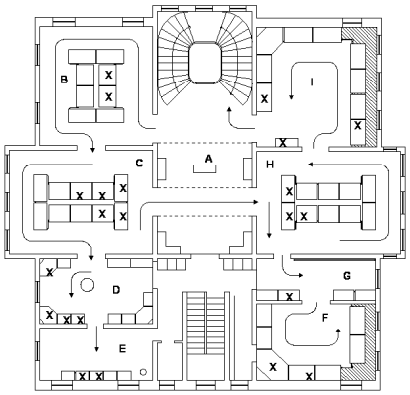
	Minimum	**Maximum**	**Mean**	**Std.Deviation**
Time spent (in seconds)				
in the Setting	374	4767	1623	794,50
on the First floor	191	2771	870	445,76
on the Second Floor	183	1964	748	390,43
Number of stops				
in the Setting	15	83	33	12,20
on the First floor	5	60	22	9,07
on the Second Floor	5	23	11	4,05
Total length of stops (in seconds)				
in the Setting	138	4082	1175	728,88
on the First floor	65	2400	645	420,45
on the Second Floor	73	1682	530	390,08

Recorded information of locations at which visitors stopped showed that all stops were made in front of the exhibit cases. The ‘X’s in Figure 4-10 indicate the most frequently stopped cases. The results showed that visitors had more stops in the rooms indicated by C and D on the first, and N on the second floor. In addition, overall, visitors stopped at some certain areas on the floors.

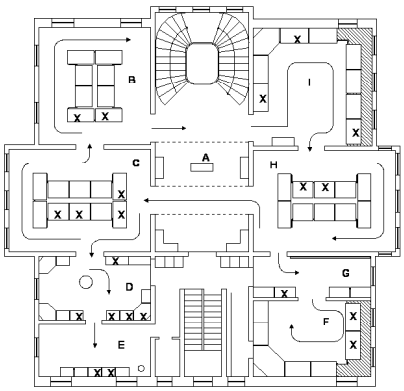
Regarding length of stops, which is another measure of circulation behavior, the cases indicated by ‘X’s are also the ones at which visitors spent more time. According to observation results, visitors spent more time in room C and D on the first, and in room N and O on the second floor. The rooms indicated by A and P was the least frequently stopped areas in the setting.

First Floor

Right turn

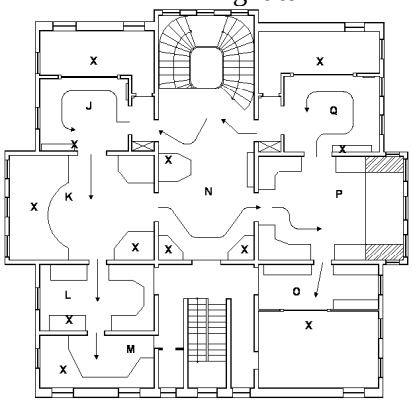


Left turn



Second Floor

Right turn



Left turn

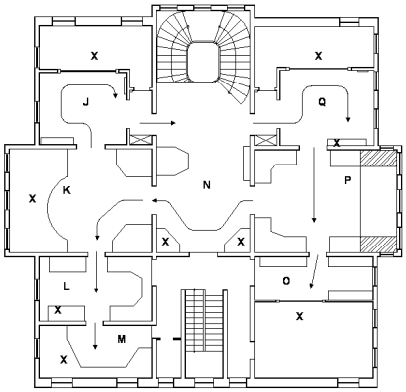


Figure 4-10 Location of Stops in Relation to Taken Routes
'X' indicates the case at which visitors frequently stopped.

4.4.3. Statistical Analysis of the Hypotheses

4.4.3.1. Do female and male visitors differ in their patterns of circulation?

Chi-square analyses were run in order to test whether females and males differ in their preferences of turning right versus left on both floors of the setting and visiting order of the floors. No significant relationship was found between gender of the visitors and preference of turning to right or left side and the preference of starting to visit from the first or second floor. In other words, female and male visitors did not differ in their turn and floor order preferences as shown in Table 4-11.

Table 4-11 Chi-Square Analysis for Gender with Route Selection

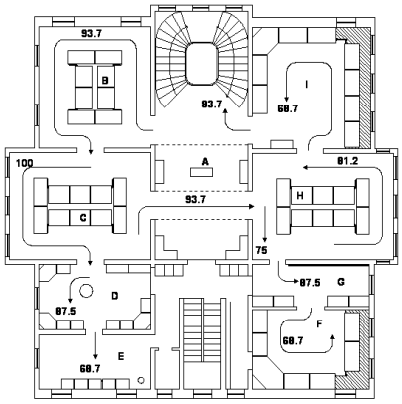
	Pearson Chi-Square Sig.
preference of turning right vs. left on the first floor	1.000
preference of turning right vs. left on the second floor	.126
visit order of the floors	1.000

***** Significance is 2-tailed at the 0.05 level

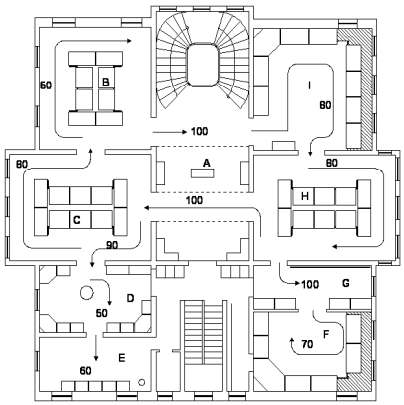
In order to determine whether the paths followed by the visitors differ in relation to gender, route sketches were drawn on the scale maps of the floors for both right and left turn preferences. The results showed that females and males followed same paths through the floors (Figure 4-11 and Figure 4-12). However, percentages of females and males in rooms showed that male visitors were more likely than female visitors to visit the room indicated by E on the first floor (Table 4-12, on page 67), regardless of their turn preferences.

Females

Right turn

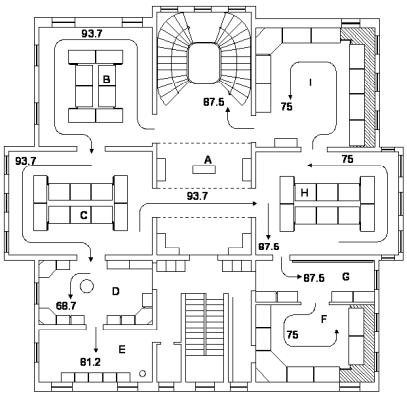


Left turn



Males

Right turn



Left turn

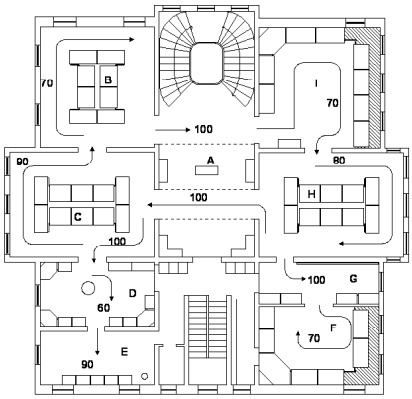
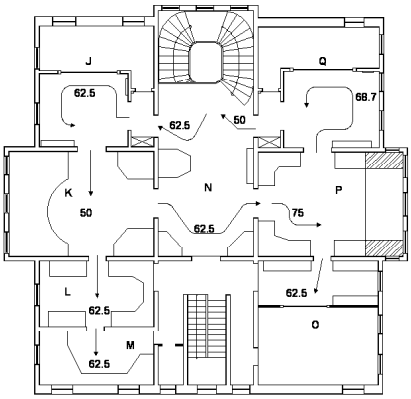


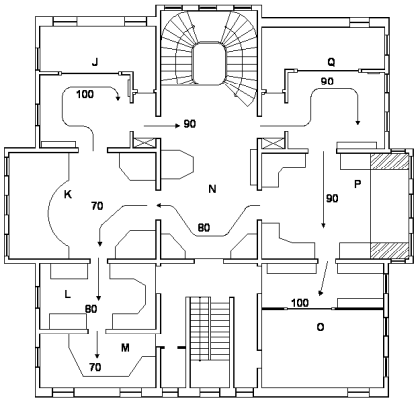
Figure 4-11 The Path Followed by Female and Male Visitors on the First Floor (Numbers are in %.)

Females

Right turn

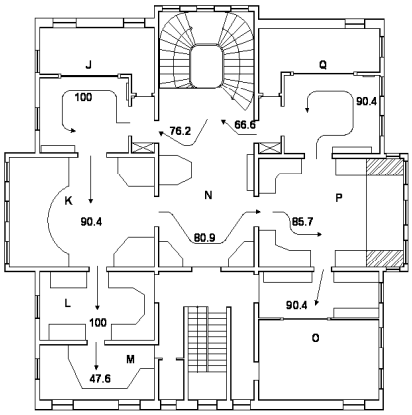


Left turn



Males

Right turn



Left turn

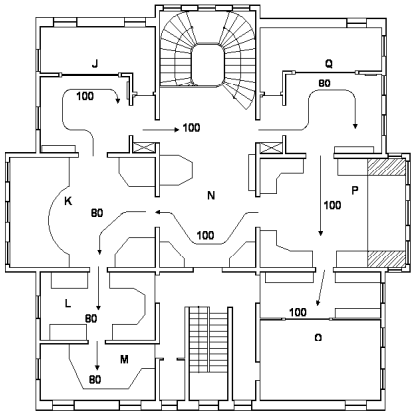


Figure 4-12 The Path Followed by Female and Male Visitors on the Second Floor (Numbers are in %.)

Table 4-12 Percentage of Females and Males in Rooms in relation to Taken Routes on the First Floor

	Females			Males	
	Right Turn N=16 %	Left Turn N=10 %		Right Turn N=16 %	Left Turn N=10 %
A	93.7	100	A	93.7	100
B	100	100	B	100	100
C	100	100	C	100	100
D	100	100	D	87.5	100
E	68.7	60	E	81.2	90
F	87.5	100	F	81.2	100
G	87.5	100	G	87.5	100
H	87.5	100	H	93.7	100
I	93.7	100	I	87.5	100

Table 4-13 Percentage of Females and Males in Rooms in relation to Taken Routes on the Second Floor

	Females			Males	
	Right Turn N=16 %	Left Turn N=10 %		Right Turn N=21 %	Left Turn N=5 %
J	87.5	100	J	100	100
K	87.5	100	K	100	100
L	62.5	80	L	100	80
M	62.5	70	M	47.6	80
N	100	100	N	95.2	100
O	62.5	100	O	90.4	100
P	87.5	100	P	90.4	100
Q	81.2	100	Q	90.4	100

A series of independent samples t-tests were run to explore whether female and male visitors differ in their circulation patterns in terms of the amount of area covered, duration of use of area, and the number and duration of stops (Table 4-14 on page 69).

For the amount of area covered by the visitors in the setting as a whole and on the first floor, the mean scores of females and males did not differ significantly.

However, on the second floor, there was a significant difference that female visitors (M=30) covered more ground (two-tailed *p*=.049) than male visitors (M=27).

Total time spent scores of females and males did not differ significantly. Analysis of the number of stops made by females and males did not find any significant difference either. On the contrary, the mean length of stops on the second floor scores of female visitors (M=643) was significantly higher (two-tailed *p*=.035) than that of male visitors (M=416).

In terms of location of stops (Figure 4-13 on page 70) results showed that females had more stops than males in room D, and males had more stops in room E on the first floor, regardless of right or left turn preference. The observations also showed that females tend to stay longer in room D, and males tend to stay longer in room E.

On the second floor (Figure 4-14 on page 71), although both females and males stopped at similar locations (in front of the same cases), males had more stops than females in room O. On the floor, the room indicated by P was the least frequently stopped area by both groups. The results of the observations also showed that females tend to stay longer in rooms M and N, while males tend to stay longer in room O.

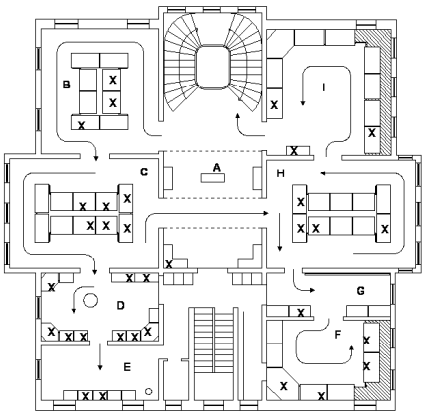
Table 4-14 Independent Sample T-Test for Gender with Range of Movement

Female N=26 Male N=26	**T**	**Sig.**
the amount of area covered in the setting	.309	.758
the amount of area covered on the first floor	-.466	.643
the amount of area covered on the second floor	2.03	**.049**
total time spent in the setting	1.80	.078
total time spent on the first floor	1.35	.183
total time spent on the second floor	1.60	.116
total number of stops in the setting	1.42	.161
total number of stops on the first floor	1.11	.269
total number of stops on the second floor	1.77	.081
total length of stops in the setting	1.89	.064
total length of stops on the first floor	1.26	.212
total length of stops on the second floor	2.17	**.035**

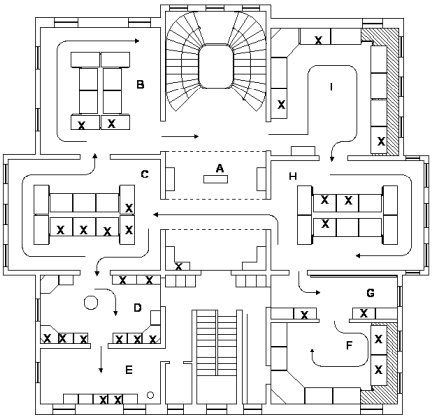
***** Significance is 2-tailed at the 0.05 level

Females

Right turn

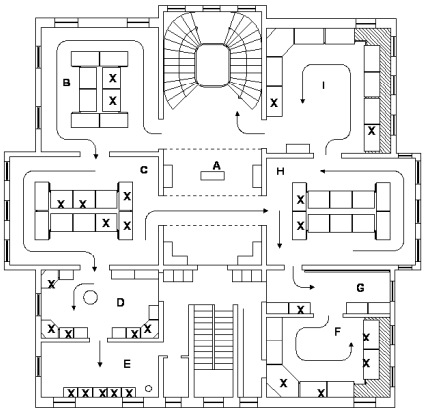


Left turn



Males

Right turn



Left turn

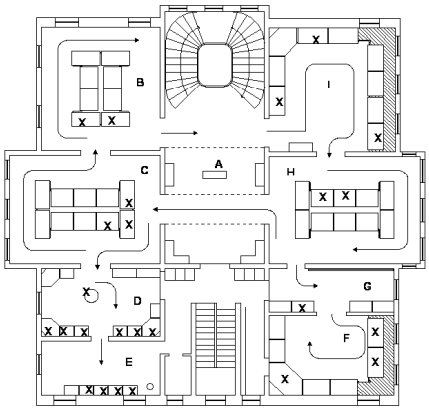
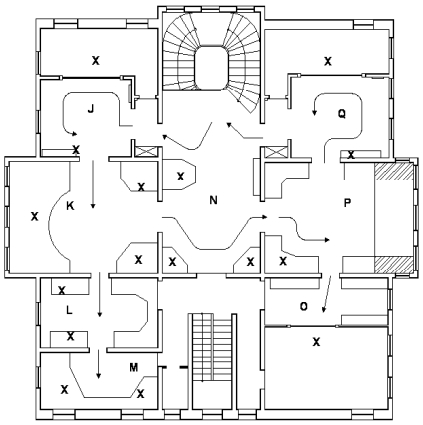


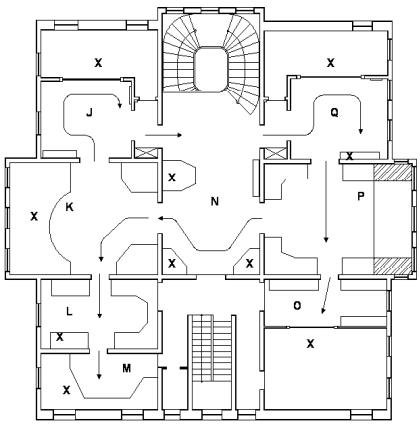
Figure 4-13 Location of Stops in Relation to Gender on the First Floor
'X' indicates the case at which visitors frequently stopped.

Females

Right turn

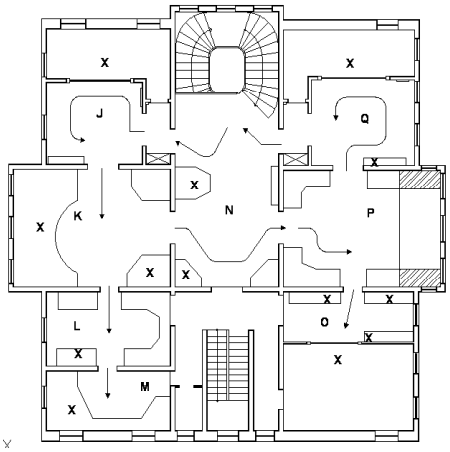


Left turn



Males

Right turn



Left turn

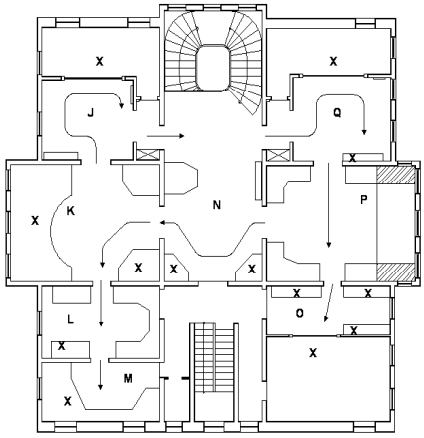


Figure 4-14 Location of stops in Relation to Gender on the Second Floor
'X' indicates the case at which visitors frequently stopped.

4.4.3.2. Do local and foreign visitors differ in their patterns of circulation?

In order to test whether visitors differ in their preferences of turning right versus left on both floors of the setting and visiting order of the floors in relation to locality differences, chi-square analyses were used similar to the first research question.

Results of these analyses (Table 4-15) showed that local and foreign visitors did not differ in the frequency of preferences of turning to right or left side on the floors. However, local and foreign visitors differed significantly in visit order of the floors (p=.008) that local visitors were more likely than foreigners to start from the first floor to visit the setting.

Table 4-15 Chi-Square Analysis Results for Locality with Route Selection

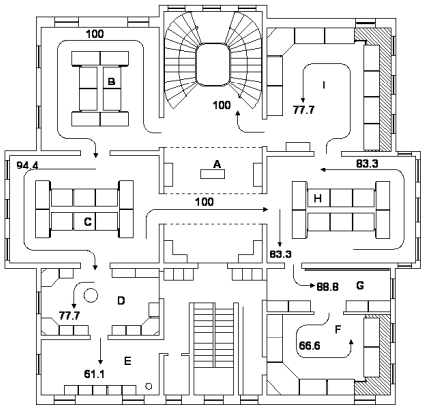
	Pearson Chi-Square Sig.
preference of turning right vs. left on the first floor	.126
preference of turning right vs. left on the second floor	.254
visit order of the floors	**.008**

***** Significance is 2-tailed at the 0.05 level

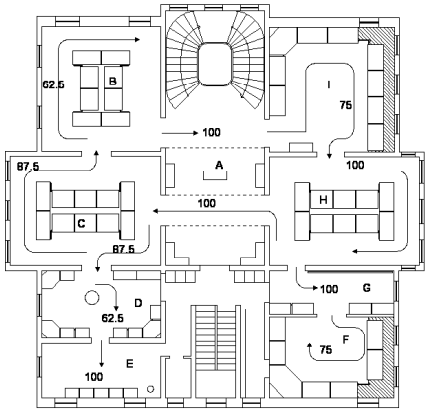
In order to determine whether the paths followed by the visitors differ in relation to locality, route sketches were drawn on the scale maps of the floors for both right and left turn preferences (Figure 4-15 and 4-16, on pages 73-74). The results showed that similar to gender of the visitors, the routes taken by local and foreign visitors did not differ on the first and second floor. Tables 4-16 and 4-17 (on page 75) portrayed some conclusions that both local visitors and foreign visitors visited the room E on the first and room M on the second floor least frequently.

Local visitors

Right turn

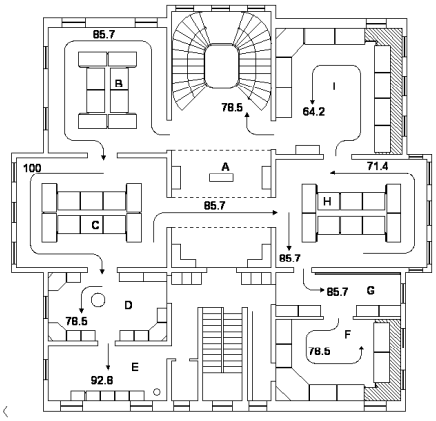


Left turn



Foreign visitors

Right turn



Left turn

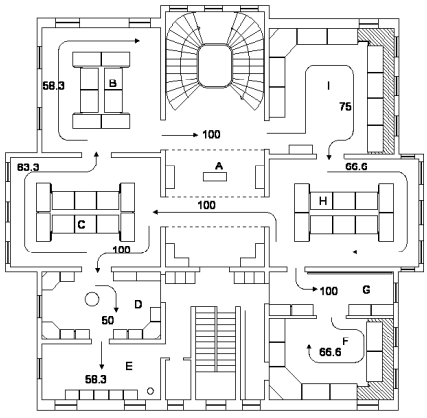
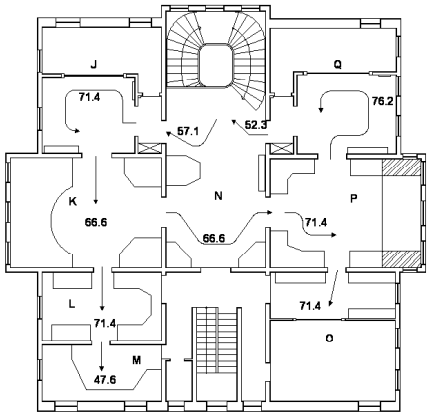


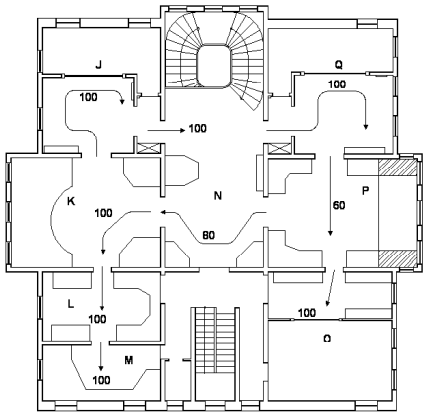
Figure 4-15 The Path Followed by Local and Foreign Visitors on the First Floor
Numbers are in %.

Local visitors

Right turn

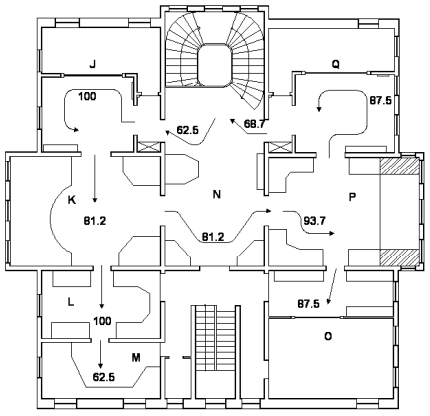


Left turn



Foreign visitors

Right turn



Left turn

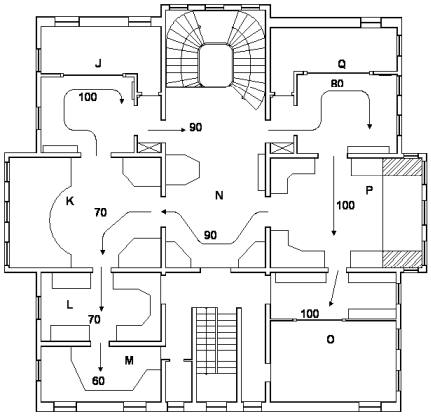


Figure 4-16 The Path Followed by Local and Foreign Visitors on the Second Floor Numbers are in %.

Table 4-16 Percentage of Local and Foreign Visitors in Rooms in relation to Taken Routes on the First Floor

	Local			Foreign		
	Right Turn N=18 %	Left Turn N=8 %		Right Turn N=14 %	Left Turn N=12 %
A	100	100	A	85.7	100
B	100	100	B	100	100
C	100	100	C	100	100
D	88.8	100	D	100	100
E	61.1	100	E	92.8	58.3
F	71.4	100	F	85.7	100
G	88.8	100	G	85.7	100
H	100	100	H	85.7	100
I	100	100	I	78.5	100

Table 4-17 Percentage of Local and Foreign Visitors in Rooms in relation to Taken Routes on the Second Floor

	Local			Foreign		
	Right Turn N=21 %	Left Turn N=5 %		Right Turn N=16 %	Left Turn N=10 %
J	90.4	100	J	100	100
K	85.7	100	K	100	100
L	71.4	100	L	100	70
M	47.6	100	M	62.5	60
N	100	100	N	93.7	100
O	71.4	100	O	87.5	100
P	85.7	100	P	93.7	100
Q	80.9	100	Q	87.5	100

A series of independent t-test analyses were utilized to determine if local and foreign visitors significantly differ in their range of movements. The results of the analyses (Table 4-18) showed that except the mean amount of area covered on the second floor scores of visitors, local and foreign visitors differed significantly in their range of movement patterns in terms of the amount of area covered, duration of use of area, and the number and duration of stops.

Results showed that local visitors covered more ground than foreign visitors in the setting as a whole (two-tailed p=.014) and on the first floor (two-tailed p=.024); they spent more time than foreign visitors in the setting (two-tailed p=.008), on the first floor (two-tailed p=.011) and on the second floor (two-tailed p=.019); they made more stops than foreign visitors in the setting as a whole (two-tailed p=.001), on the first floor (two-tailed p=.001) and on the second floor (two-tailed p=.009); and they spent more time in stops than foreigners in the setting (two-tailed p=.004), on the first floor (two-tailed p=.010) and on the second floor (two-tailed p=.011).

In terms of location of stops in the setting, Figure 4-17 and Figure 4-18 (on pages 79-80) show the points at which both groups stopped on the first and second floors. On the first floor, among local and foreign groups, differences were observed in the rooms indicated by C, E, F, G and I that local visitors had more stops than foreigners in those rooms. In terms of duration of stops, the results showed that local visitors tend to stay longer than foreign visitors in each room except D and H on that floor. However, on the second floor, the results showed that there was no difference between local visitors and foreigners.

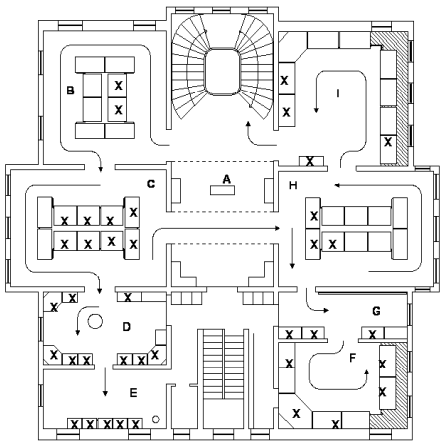
Table 4-18 Independent Sample T-Test for Locality with Range of Movement

	T	Sig.
the amount of area covered in the setting	.2.57	**.014**
the amount of area covered on the first floor	.2.36	**.024**
the amount of area covered on the second floor	.815	.419
total time spent in the setting	.2.75	**.008**
total time spent on the first floor	.2.63	**.011**
total time spent on the second floor	.2.44	**.019**
total number of stops in the setting	.3.70	**.001**
total number of stops on the first floor	.3.70	**.001**
total number of stops on the second floor	.2.71	**.009**
total length of stops in the setting	.3.02	**.004**
total length of stops on the first floor	.2.67	**.010**
total length of stops on the second floor	.2.67	**.011**

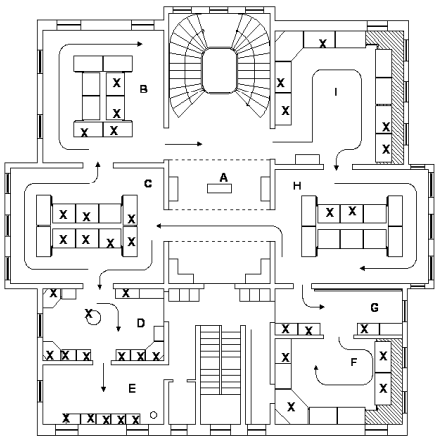
***** Significance is 2-tailed at the 0.05 level

Local visitors

Right turn

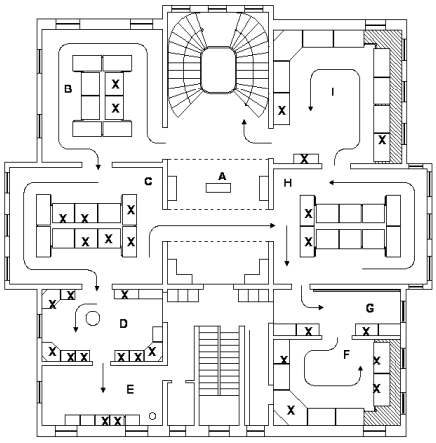


Left turn



Foreign visitors

Right turn



Left turn

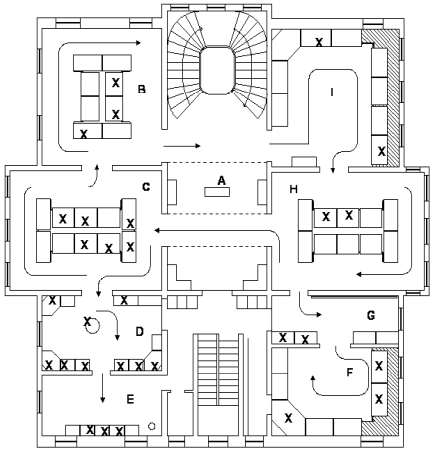
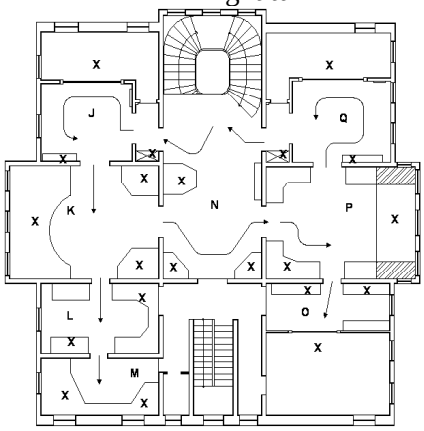


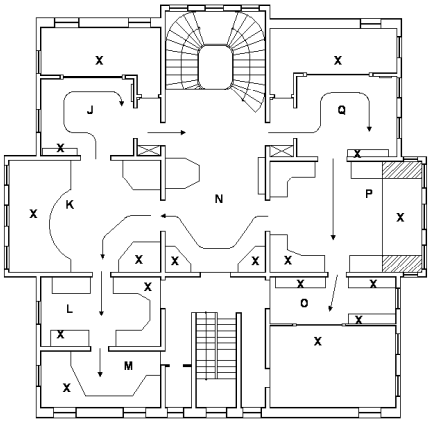
Figure 4-17 Location of Stops in Relation to Locality on the First Floor
'X' indicates the case at which visitors frequently stopped.

Local visitors

Right turn

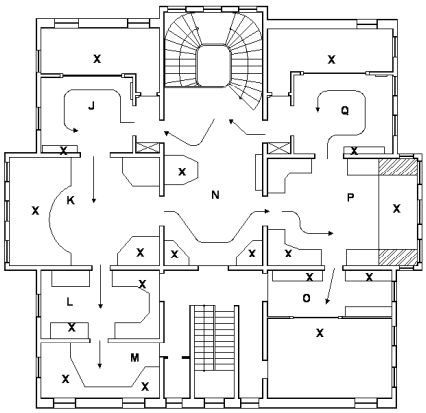


Left turn



Foreign visitors

Right turn



Left turn

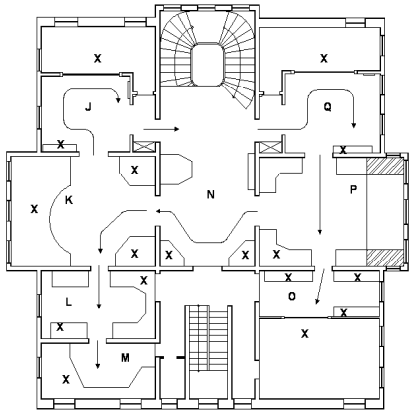


Figure 4-18 Location of Stops in Relation to Locality on the Second Floor
'X' indicates the case at which visitors frequently stopped.

4.4.3.3. Is there a relationship between psychographics and circulation patterns?

In the study the psychographics of visitors included visit strategy, visit motivation, frequency of a museum visit, and visitors' interest level in and knowledge level of the exhibitions in the section. In order to determine whether a relationship exists between psychographics and measures of circulation behavior, a correlation matrix (Pearson's correlation, Sig. is at the 0.01 level) was created (see Appendix E).

It was found that there was a significant relationship between strategies of visitors and time spent in the setting (two-tailed p=0.003), and the duration of stops in the setting (two-tailed p=0.001) as a whole. In addition, strategy was significantly related to time spent (two-tailed p=0.001) and duration of stops (two-tailed p=0.000) on the second floor. According to questionnaires, visitors who indicated that they came to see something particular mostly mentioned an exhibit or exhibit group which is on the second floor of the section. The results matched with the answers on the questionnaires that focused visitors, who came to the museum to see an exhibit or an exhibit group in particular, spent more time and had longer duration of stops than unfocused visitors.

On the other hand, a significant relationship was found between interest levels of visitors in the subject matter of the exhibitions displayed, time spent and duration of stops. The more interested visitors in the subject matter of the exhibition displayed on the first floor, the more time they spent (two-tailed p=0.002) and the longer duration of stops they had (two-tailed p=0.002) on the first floor. In addition, the more interested visitors were in the subject matter of the exhibition displayed on the second floor the more time visitors spent (two-tailed p=0.010) and the longer

duration of stops they had (two-tailed p=0.002) on the second floor. Results showed that interest level and the amount of time spent in the exhibition are significantly related.

Finally, it was found that knowledge level of visitors of the subject matter of the exhibition displayed on the second floor was significantly related to time spent (two-tailed p=0.004), the number (two-tailed p=0.002) and the duration of stops (two-tailed p=0.003) on the second floor. The more knowledgeable visitors of the subject matter of the exhibition on the second floor, the more time they spent and the more stops they made on that floor.

However, the expected relationships between first floor knowledge level as well as motivations and frequency of museum visit of the visitors and circulation patterns were not found in the correlation analysis.

4.4.3.4. Do visitors differ in psychographic characteristics in relation to gender and locality?

In order to determine if visitors differ in psychographic characteristics in relation to gender and locality, a series of chi-square analyses were employed. Table 4-19 shows the results of chi-square analysis for gender with psychographics and there was no significant difference between their psychographics in relation to gender. In contrast to gender of the visitors, they differed in their psychographics in relation to locality characteristics (Table 4-20). Results showed that there was a significant association between locality, visit strategy and knowledge level of the visitors that

local visitors were more likely than foreign visitors to be focused (to come to see something in particular) (p=.017), and were more likely than foreigners to be knowledgeable of the subject matter of the exhibitions displayed on both floors (p=.007, p=.000). Crosstabulations are given in Appendix F.

Table 4-19 Chi-Square Analysis for Gender with Psychographics

	Pearson Chi-Square Sig.
visit strategy	.090
visit motivation	.257
frequency of museum visit	.465
first floor interest level	.839
second floor interest level	.139
first floor knowledge level	.663
second floor knowledge level	.343

***** Significance is 2-tailed at the 0.05 level

Table 4-20 Chi-Square Analysis of Locality with Psychographics

	Pearson Chi-Square Sig.
visit strategy	**.017**
visit motivation	.810
frequency of museum visit	.936
first floor interest level	.222
second floor interest level	.056
first floor knowledge level	**.007**
second floor knowledge level	**.000**

***** Significance is 2-tailed at the 0.05 level

4.4.4. Discussion of the Results

4.4.4.1. Visitor Profile

The mean age of the adult visitors of the study, who were chosen equally in number by the stratification on the basis of gender and locality, was 43. Visitors to museum coming from various cities also showed variety in their professions, however they were highly educated that more than half of the visitors (55.8%) had completed the requirements for a Bachelor's Degree and the percentage of the visitors who had a Master's Degree was 17.3%. The results supported that museum visitors tend to be well educated (England, 2003; Soren, 1999; Hood, 1993; Martin and O'Reilly, 1989 Merriman, 1989).

During the days that the study was conducted (between January 21st and February 20th, 2005) visitors were predominantly morning visitors (57.7%). Alt (1979) and Miles, Alt, Gosling, Lewis and Tout (1988) state that for a museum it is important to know at what times visitors mostly arrive and depart. The result of the research revealed the findings of their studies that visitors are more likely to come during the early periods of the day. In addition, visitors to museum came predominantly as a member of an organized group (44.2%). This result also supported the literature that visitors mostly prefer to visit in groups (Goulding, 2000; Soren, 1999; Hein, 1998; Falk and Dierking, 1992).

In terms of visit strategies, the majority of the visitors (78.8%) indicated that they had not come to see an exhibit or exhibit group in particular. This might explain that either all objects had carried equal values for the majority of visitors or visitors who

had had detailed information about the displayed exhibits were less than others (Falk, Moussouri, and Coulson, 1998).

Visitors predominantly indicated their reasons for coming to the museum as educational and for exploration. The results showed that “to experience new and different things”, “to seek intellectual enrichment”, “to develop general knowledge” and “to gain an appreciation of history” underlined their reasons to visit more than social and recreational factors. The result supported the previous researches that education and exploration are predominantly indicated motive by museum visitors regardless of type of museums (England, 2003; Falk and Dierking, 1992). However, this result of the study seemed to indicate the opposite of the result of the study conducted by Falk, Moussouri, and Coulson (1998) since they have found that an overwhelming majority of visitors stated recreational motivations.

Interest and knowledge levels of the visitors concerning the subject matter of the exhibitions displayed in the section were clearly high. Soren (1999) also mentions that “people usually attend a museum or an exhibition because they already have some level of interest in the subject, some knowledge and opinions about it” (p.57). However, visitors were more interested in “Ottoman Costumes and Customs” (displayed on the second floor) than “Turkish and Islamic Art Works” (displayed on the first floor). Similar to the results of the interest levels of the visitors, visitors to the museum were more knowledgeable about the subject matter of the exhibition displayed on the second floor than they were about the subject matter of the exhibition on the first floor.

According to the results, visitors were moderately frequent museum visitors. The majority of them (48.1%) indicated that they went to a museum at least three or four times in a year. Literature also states that museum visitors to a museum also tend to be frequent visitors of other museums (Falk and Dierking, 1992; Merriman, 1989).

So as to gather insights to how visitors evaluated number of exhibits per floor and crowd of other visitors during the visits in the setting, they were asked to rate both issues on a scale. Neither on the first floor nor on the second did the perceived number of exhibits vary, and the majority rated the level as moderate. Ratings of crowd level were also constant on both floors that visitors indicated the crowd level as either completely empty (46.2%) or somewhat empty (44.2%). Results might explain that visitors were not affected by the amount of objects in number and were not affected by the crowd of other visitors either during the observations. Melton (1988) explains that the density of exhibits in a gallery or in a section negatively affects visitors when they are too many, and causes visitors to feel fatigued, a situation referred to *object satiation*, resulting in differences in movement patterns and decrement of interest. On the other hand, literature has already shown that crowd of visitors in a given setting results in differences in circulation patterns and affects visitors' experiences negatively (Robillard, 1982; Falk and Derking, 1992).

In the lack of orientation signs in the setting, visitors were asked to indicate whether they would have been in favor of being guided by signs. Most of them indicated that they would have been in favor (40.4%). This might not explain that whether they were disoriented but it might explain that their visits would be easier by orientation aids.

4.4.4.2. Circulation Patterns

Overall behavior patterns of the visitors showed that most of the visitors turned their right both on the first (61.5%) and the second (71.2%) floors. As a result, the study revealed the result of the studies by Melton (1988) that visitors had tendency to turn to the right. In addition, visitors predominantly started their visits from the first floor (76.9%). Miles, Alt, Gosling, Lewis and Tout (1988) also state that visitors usually begin by exploring the first floor before ascending to higher floors.

The results of the study showed that visitors occupied same areas of the section and followed clearly predictable paths while moving through the floors regardless of their turn selections. These results supported the previous research by Melton (1988). However, order of the information visitor received changed conversely in relation to right versus left turn preference.

In addition, the study found that the last rooms on the right sides of the floors from the entrance (rooms E and M) were the least frequently visited rooms regardless of turn selections. This might be explained by the physical characteristics of the floors. Finally the results of the paths followed by the visitors showed that there is a relationship between visitors' visit frequency of rooms and visit order of the rooms; when visitors turned to left from the beginning, the chance of rooms being noticed increased.

The number of exhibit cases passed by visitors was taken as the amount of area covered by the visitors in the study. In the chosen section of the museum, there were 104 cases (73 of them were on the first floor and 31 of them were on the second

floor). The results showed that only 32.7% of the visitors covered the whole section. In other words, only 17 of the 52 visitors passed through all the exhibit cases in the setting. Serrell (1997) also states that visitors to a museum use less than half of the exhibition spaces. However, when the first and second floors were compared, visitors missed more exhibit cases on the first floor. This might mean that while visitors were moving through the first floor, the routes they took caused more missed exhibits. This result was also attributable to the finding (Miles, Alt, Gosling, Lewis, and Tout, 1988) that visitors are less likely to complete the circuit of island displays, since on the first floor there are island displays.

In contrast to the amount of area that visitors covered on the first floor, visitors spent more time (M=14 min 30 sec) on the first floor than on the second (M=12 min 28 sec). This result might have occurred due to inequality of the number of cases on the floors and differences in overall arrangements in relation to layout.

According to the results of the study, visitors made more stops on the first floor (M=22) than they made on the second (M=11). Again, this might be explained by the number of cases on the first and second floors (there were more exhibit cases on the first floor). In terms of locations of stops by visitors, results showed that visitors had more and longer stops at certain areas which are close to entrance and exits. Peponis and Hesdin (1976, cited in Pearce, 1993) has also shown a similar result by a study they conducted in a single gallery of the Royal Ontario Museum (Figure A-3, Appendix A). Melton (1988) and Serrell (1997) also indicates that exhibits near the entrance and exits have more chance to be noticed and get attention.

In addition, total length of stops of the visitors were, on average, 10 min 45 sec on the first floor and 8 min. 50 sec. on the second floor. This might mean that since all stops were made in front of the exhibit cases, exhibits displayed on the second floor (N=31) were more likely to hold visitors' attention than which were on the first floor (N=73).

4.4.4.3. Circulation Patterns in relation to Gender, Locality, and Psychographics

The analyses of comparisons of female versus male, and local versus foreign visitors in terms of their circulation patterns showed that beyond some general tendencies of visitors and the effects of physical factors in the setting, there were differences between these specified visitor groups.

Firstly, behavior of visitors differed in relation to gender characteristics of visitors such that:

- On the first floor, females had more stops than males in room D which contains the display of Turkish-Islamic jewelry. This was also the room that female visitors were likely to stay longer than male visitors. In contrast, the room E on this floor, which contains a display of awards belonging Vehbi Koç won in industrial arena – also includes car miniatures – was visited predominantly by male visitors. Room E was also the area in which male visitors had more stops and stayed longer than females.

- On the second floor of the setting, female visitors were more likely to stay longer and have more stops than males in the rooms indicated by K and N which include the displays of wedding dresses and presentations of customs, such as bride bath and coffee serving. On the other hand, male visitors stayed longer and had more stops than females in room O, which contains manuscripts by Ottoman sultans.
- The research also found that, on average, female visitors significantly covered more ground and had longer stops than males on the second floor which houses the whole collection of costumes, decorative and customary objects of Ottoman period.

These findings revealed that at the individual level gender characteristics act as determining factor in the way of interacting with exhibits (Pearce, 1988). In this regard, the findings of the study supported the hypothesis that in an exhibition setting which contains gender-typed objects (Belk and Wallendorf, 1994) in materiality and content, gender of visitors affect circulation patterns and cause behavioral differences between female and males.

Secondly, the research found that circulation patterns of local and foreign visitors significantly differed. It was figured out that:

- Local visitors predominantly started their visits from the first floor on which the Turkish-Islamic collection is exhibited. Foreign visitors had tendency to pass the first floor and visit the second floor first on which Ottoman costumes, daily-life objects and customs are presented.

- Specifically, the rooms C, F, G, and I on the first floor, which display the objects of Turkish glass and ceramic artistry, were the most frequently visited areas by local visitors. Local visitors also had more stops and stayed longer than foreign visitors on these rooms.
- On average, local visitors covered more area and spent more time in the whole setting than foreign visitors. In addition, the number and duration of stops of local visitors significantly differed from foreigners such a way that local users had more and longer stops both on the first and second floor of the setting.

As Hooper-Greenhill (2000) states, visitors interact with exhibits also at the community level that content, materiality and the physicality (shapes, texture, colors, etc.) of objects, which construct common-sense categories of communities, determine the level of this engagement. In regard to this situation, the findings of the study also supported the hypothesis that locality of visitors influence circulation patterns and result in differences between local and foreign visitors in an exhibition setting containing locally-relevant objects.

Another premise of the study was that psychographics were related to the circulation patterns since they are the part of personal agendas of visitors to museums. The study found that there was a relationship between strategies and circulation behavior. The focused strategy a visitor has, the more time she/he spent for stops and in the setting. The result revealed the findings of Falk, Moussouri, and Coulson (1998) that strategy and time spent is related.

The study also figured out that prior knowledge and interest levels were significantly associated with circulation behavior of visitors. Similar to strategies, these psychographic characteristics were also associated with time-based movement patterns that the more knowledge and interest a visitor had, the more she/he time spent for stops and in the section. However, the study did not find a significant relationship between circulation patterns and motivational factors, and also between these patterns and frequency of museum visiting, in contrast to the hypothesis.

Finally, in terms of psychographics, results showed that local visitors had predominantly focused strategies in contrast to foreigners and they were significantly more knowledgeable of the exhibition contents than foreign visitors were. However, there was no significant difference in psychographics across females and males. This means that locality characteristics of visitors, regardless of gender, played a significant role in determining whether a visitor came with a plan in mind to see a specific exhibit or exhibit group in the museum and whether a visitor had high level of knowledge of the subject matter of the exhibition displayed in the setting. Thereby, it seems reasonable to state that being local user of a museum which is placed on that locale and contains ‘familiar’ exhibits to that community influence strategies and determine the knowledge level. However, the study found that interest level, motivations and times of a museum visit were independent from locality characteristics.

In contrast to the hypothesis of the research, it was found that psychographic characteristics were independent from gender characteristics and only strategies and knowledge level were connected to locality of visitors. The next chapter, according

to the findings of this research, presents the major conclusions of the study and includes suggestions for the improvement in the museum case.

5. CONCLUSION

Post-modernity, as which the contemporary culture is analyzed, has shaped the new museum idea that is called ‘post-museum’ (Hooper-Greenhill, 2000). The concept of post-modernity which emphasizes the ‘subject’ has influenced museums in a way that they began to embrace their audiences and try to involve emotions and attitudes of visitors to the exhibition processes (Hooper-Greenhill, 2000). From this perspective, the current research stressed on visitors and their personal characteristics that influence experiencing museum environments. Since the museum experience includes the interaction between visitors, objects, and the environment, the behavioral outcome arises from this interaction was the central concern of the research. Playing a major role in museum environment and going parallel with the experience, circulation patterns were examined in relation to visitors’ personal characteristics. A case study was conducted in one of two sections of Sadberk Hanım Museum, Istanbul, which is called *Turkish-Islamic Section* designed on both floors of Azaryan Yalısı Building of the museum. The section houses a collection of exhibits regard to Turkish and Islamic art works and Ottoman costumes and daily-life objects, and also presents Ottoman customs. During a one-month period, 52 visitors were observed in this setting and a survey was administered to the observed visitors. The visitors were equal in number in relation to gender and locality characteristics regarding the aim of the research.

The aim of the research was to contribute to the visitor behavior research in museums by examining circulation patterns of visitors as compared to visitors’ characteristics. Since visitors respond and react to the exhibited objects in museums

at the emotional level (Prown, 1994) and these emotions differ in relation to their personal characteristics (Hooper-Greenhill, 2000), which in turn influence behavioral patterns (Mehrabian, 1976), the research, with respect to this argument, particularly sought to explore whether circulation behavior differs among female/male and local/foreign users of the chosen setting which houses a collection of exhibits that can be classified as gender-typed (Belk and Wallendorf , 1994) and local-specific (Hooper-Greenhill, 2000; Doering, Pekarik, and Kindlon, 1997). Assuming that the specified groups of visitors would be in different level of engagement with the exhibits because of their personal characteristics, the study hypothesized that circulation patterns would differ among female and male, and local and foreign visitors. As a secondary aim, the study dealt with visitors' psychographic characteristics, which are interest and knowledge level of the exhibition's subject matter, visit strategy, motivations to visit the museum, and frequency of a museum visit in a year as a time spending activity (Falk and Dierking, 1992; Falk and Adelman, 2003; Hood, 1993; Merriman, 1989). Hypothesizing a relationship between circulation patterns and psychographics – as part of visitors' personal agendas to the museums (Falk and Dierking, 1992), the study also hypothesized that these characteristics would be associated with gender and locality of visitors.

After a series of statistical analyses, the study, on the one hand, drew the visitor profile of the study sample and showed that they possessed the common characteristics of museum visitors in terms of education level and occupational status, visit characteristics as social groupings and day time of visit, and also psychographics: They were well-educated with high status jobs and preferred visiting early periods of day and predominantly within groups; being moderately frequent

museum visitors, they came to the museum by the reasons of learning and exploration, and also had prior knowledge and interest concerning the subject matter of the exhibition. In addition, as occasional visitors, they predominantly came without any specific plan in order to see a particular exhibit or exhibit group.

On the other hand, the analyses of overall circulation patterns showed that the visitors remained general tendencies of the museum population and the results revealed the previous research: The visitors maintained right-orientation at first entering the exhibition setting (Melton, 1988), walked through a straight-line path that is called inertia (Bitgood, 1996), and rarely turned back to the areas they had visited before (Bourdeau and Chebat, 2001). In addition, an overwhelming majority of them paid attention to and stopped in front of the exhibits that were closed to entrance and exits (Peponis and Hesdin, 1976; Melton, 1988; Serrell, 1997) and rarely completed the whole circuit of the island displays (Miles, Alt, Gosling, Lewis, and Tout, 1988). The layout of the setting and the location of rooms in relation to the layout, as physical factors (Klein, 1993; Bourdeau and Chebat, 2001; Melton, 1988; Zucker and Clarke, 1993) also affected visitors' average frequency of visiting the rooms that the last rooms on the floors from the entrance were the least frequently visited areas.

The statistical analyses in order to test the hypotheses of the research showed that following clearly predictable routes through the setting, visitors differed in their circulation behavior and those differences were, as hypothesized, attributable to visitor personal characteristics specified as gender and locality. The results showed that in terms of gender, more females than males, and in terms of locality, more local

users than foreigners had tendency to approach (Mehrabian, 1976) to the whole setting, in other words, had tendency to be at the high level of engagement with the exhibitions (Melton, 1988). However, differences in visitors' locality characteristics (local/foreign) were more influential that causes more significant differences among visitors. In this regard, the study concludes that in the chosen setting, relevance of displays to the audiences at the community level, rather than relevancy to gender characteristics, significantly affects the use of the physical space – from which floor visitors will start their visits, how much time they will spend in the setting, which rooms they will visit and how much time they will spent therein, and in front of which exhibits they will stop and how much time they will devote to these stops. In addition, strategies, as one of the psychographic characteristics of visitors, should be accentuated that being focused or unfocused determines time-based movement patterns and differ according to locality characteristics of visitors to the museum.

In light of these conclusions, the study suggests that in the future research, the findings of the study might be revealed by different sample of visitors in the museum since the study was limited to one sample group of visitors. It is also suggested that the study be replicated at other museums in the country and in other countries as well, which display similar exhibit characteristics in terms of specificity and relevance to gender and locality characteristics in order to see whether and how visitor characteristics (gender and locality) have an impact on circulation patterns. In addition, with respect to the results, the study presents suggestions to the museum in particular.

Bringing the common characteristics of the museums in Turkey in terms of collections and building characteristics, Sadberk Hanım Museum displays Turkish-Islamic art works and objects belong to Ottoman period in its one of the two wings, called Azaryan Yalısı building. In this respect, this section can be called ethnographical in characteristics. From this perspective, the study assumed that the findings of the research concerning the museum would also provide an insightful report for other museums in the country in terms of environmental design. According to the results, suggestions to the museum case stress on differences in use of the section space due to visitor diversity and its importance for the exhibition designers and professionals of the museum. The study also emphasizes the answers of the survey questions regarding setting-specific attitudes of the visitors.

However, there are limitations for requirements such that the study could not make suggestions related to change in placement of exhibit cases and modifications in layout for betterment in circulation. Since the building, houses the collection, is historical, exhibition areas (also areas for amenities, i.e. the café, gift shop, rest-rooms, and staff areas) have to be designed by saving the original layout of the building (*Reported by the interior architect of the museum*). In addition, there is *'kalem işçiliği'* on the walls of the floors that is a kind of handicraft similar to fresco – paintings on walls, and this situation forces exhibit cases to be installed in the center of some rooms, which in turn creates island displays, or forces to leave spaces between walls and exhibit cases, which in turn narrows circulation spaces (*Reported by the exhibition designers of the museum*). In this regard, the study suggested that informing visitors about the exhibition themes on the floors and specifically in the rooms prior to visits together with orientation aids (directional signs and handheld)

would help both controlling flow of diverse visitors in the setting and making them to circulate with ease and in an orderly way that result in satisfaction of visitors.

Prior to research, it was reported by Sadberk Hanım Museum that more female adult visitors when compared to males, and more foreign adult visitors than local visitors comprise the majority of the museum population. Additionally, the records of visitors during the study showed that the number of female visitors and foreign visitors was more than males and local visitors. In this case, since some areas address to a specific group of visitors in relation to gender and locality characteristics as found in the research, these groups would be in searching for those areas and would create density in those areas. In addition, some areas, which are far from entrance and exits, and on sides of the island displays which are close to walls, because of the taken routes, took little attention on average regardless of characteristics of visitors.

The intention of the museum is to make visitors start from the first floor and follow a route from right to left on the floors because the section has been designed according to both chronology and theme order (*Reported by the exhibition designers of the museum*). In order to achieve these goals, in other words, to provide a visit in which the information is received in an orderly way and with ease for the diverse audience, there should be orientation aids. Besides, many visitors stated their comments on this issue, when they were asked to indicate to what extent they would be in favor of being guided by signs, as;

> "Yes, it would be better to be guided by arrows or signs but I liked traveling through this historical house freely." (*A female foreign visitor*)
>
> "There should be written aids but they should be in various languages." (*A male foreign visitor*)

Therefore, it is required that visitors should be directed in a way that directional signs will not harm the interior atmosphere and design of the section and the written information on orientation signs will be prepared in different languages. In this respect, the staff should also be informed and educated in order to give efficient oral aids to the visitors. Additionally, there should be brochures at the ticket desk, which give information about the exhibition themes on the floors and about room contents including a scale map of the section.

Considering groups' density in specific rooms and in front of the specific exhibits in relation to their characteristics, this study suggests that the museum should use the attractive design factors in order to create curiosity to exhibits and to hold visitors' attention. In this respect, according to the literature it is required that exhibit labels should be re-designed (Bourdeau and Chebat, 2003; Bitgood, 2000; Hirschi and Screven, 1996; McManus, 1996b; Bitgood and Patterson, 1993) since they are not close to exhibits and contrast in color, and illumination levels between exhibits and their surroundings should be more contrasting (Bitgood, Patterson, and Benefield, 1988) since there is no noticeable contrast through the whole exhibition in the setting. As a result, all visitors might be motivated to look at and pay attention to the displayed exhibits regardless of their personal characteristics. Finally, since being focused is related to high level of engagement with the exhibits and the setting, the museum should consider providing prior information about what kind of collection it contains for the visitors come from outside of the country.

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APPENDIX A

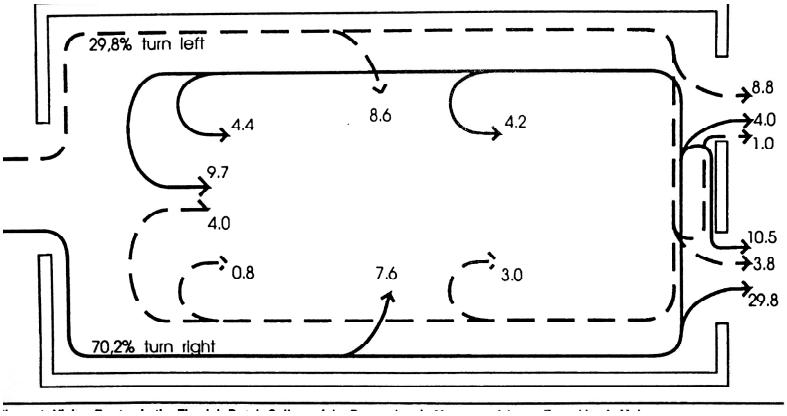


Figure A-1 Percentage of Visitors Who Turned Right versus Left Found by Melton, 1988

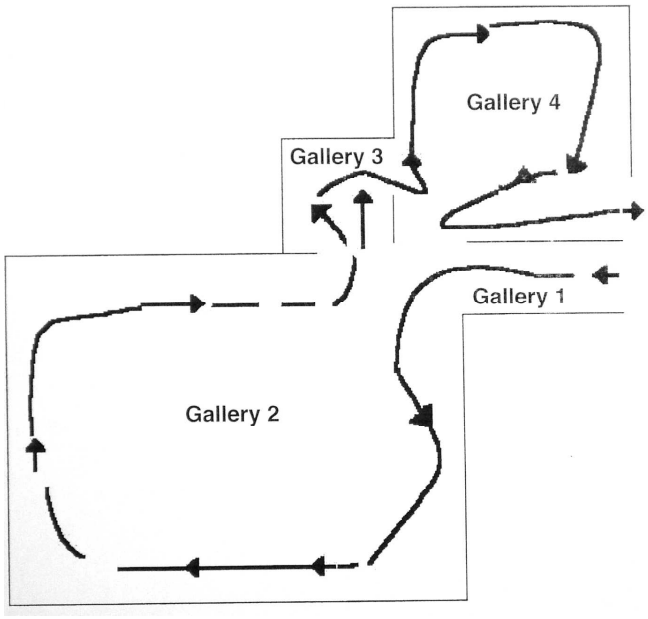


Figure A-2 Visitor Routes Recorded by Bourdeau and Chebat, 2001

Entrance ***Exit***

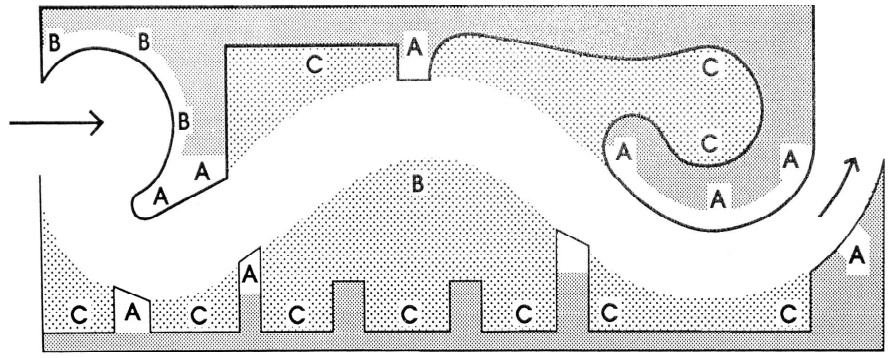


Figure A-3 Exhibits which were looked at according to the taken route as found by Peponis and Hesdin, 1976 (cited in Pearce, 1993). The frequency of being looked at ranges from C to A regardless of exhibits.

APPENDIX B

Figure B-1 View of the Museum

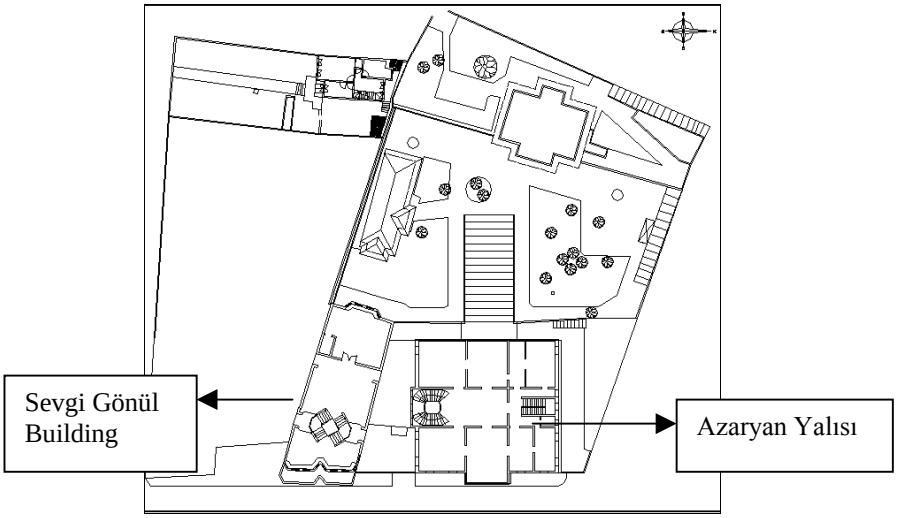


Figure B-2 Site-Plan of the Museum

Figure B-3 View of Azaryan Yalısı Building

Figure B-4 View of Sevgi Gönül Building

APPENDIX C

Observation Sheet 1

Observation #: _____

Date: _____

F ( ) M ( )

Loc. ( ) Frgn. ( )

Time Sheet

Entering to the Section: _____ (min/sec)

Visited first ( ) 1st floor:

Entering: _____ (min/sec)

Exiting: _____ (min/sec)

( ) 2nd floor:

Entering: _____ (min/sec)

Exiting: _____ (min/sec)

Exiting the Section: _____ (min/sec)

NOTES:

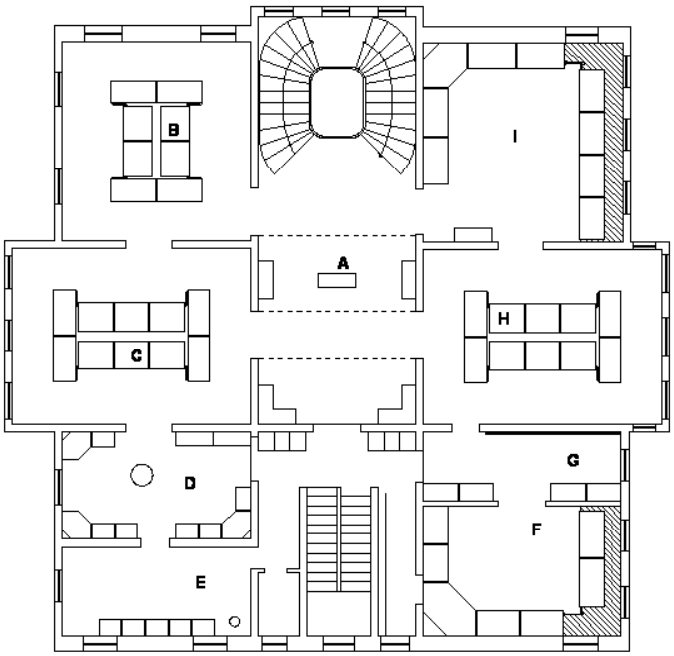
Observation Sheet 2

Observation #: _____

Date: _____

F ( ) M ( ) Loc. ( ) Frgn. ( )

1st Floor



NOTES:

* Time spent for each stop was recorded on the Sheet 2

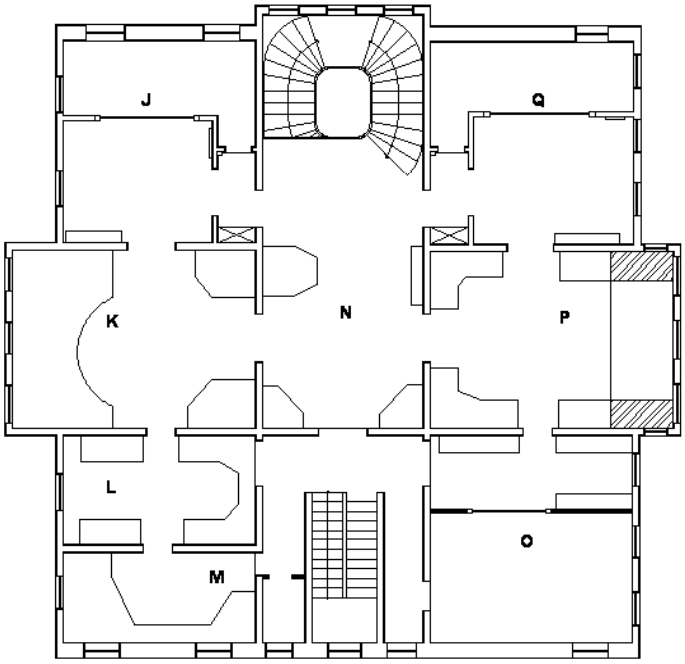
Observation Sheet 3

Observation #: _____

Date: _____

F ( ) M ( ) Loc. ( ) Frgn. ( )

2nd Floor



NOTES:

* Time spent for each stop was recorded on the Sheet 3

APPENDIX D

English Version of the Questionnaire

Hello, my name is Aslı Canan Yılmazsoy. I am from Bilkent University, Ankara, Department of Interior Architecture and Environmental Design. I am conducting a survey of visitors to *Turkish and Islamic Section* of Sadberk Hanım Museum as part of a research project for my MFA thesis.

This survey takes less than 5 minutes to complete. Your responses will be completely anonymous and confidential.

Thank you for your participation and contribution to this study.

PLEASE WRITE DOWN YOUR RESPONSES AND CHECK (√) THE RELATED BOXES

Date:

Morning ( ) Afternoon ( )

1. Age:

2. Female: Male:

3. Nationality:

4. Place of Residence (city and country):

5. Please indicate the highest level of education you have completed:

   High School graduate or less ( )
   Bachelor's degree ( )
   Master's degree ( )
   Doctoral degree ( )

6. Occupation:

7. Today, did you come to the Museum

   With an organized group ( ) Alone ( ) With family ( )
   With friend/s ( ) Other ( )

8. Is this the first time you have been *to this museum*?

   Yes ( ) No ( )

9. Is this the first time you have visited *Azaryan Yalısı building* of the Museum?

   Yes ( ) No ( )

10. Is this the first time you have seen *the exhibition* on Azaryan Yalısı building?

    Yes ( ) No ( )

11. Did you come to see anything in particular?* (i.e., a specific exhibit or exhibit group)

Yes ( ) No ( )

12. Please check the reason/s best describe why you came to the museum: **

To be with my friends/family ( )
To experience new and different things ( )
To rest and relax ( )
To seek intellectual enrichment ( )
To do something with my friends/family ( )
To develop my general knowledge ( )
To reduce the feeling of having too many things to do ( )
To gain an appreciation of history ( )
Other ( ), please indicate:

13. How would you rate your interest in the subject matter of the exhibition?

Turkish and Islamic Art Works: Very high level of interest ( )
Great deal of interest ( )
Moderate interest ( )
Some interest ( )
Very little interest ( )

Ottoman Customs and Costumes: Very high level of interest ( )
Great deal of interest ( )
Moderate interest ( )
Some interest ( )
Very little interest ( )

14. How would you rate your knowledge of the subject matter of the exhibition?

Turkish and Islamic Art Works: Expert ( )
Great deal of knowledge ( )
Moderate ( )
Some knowledge ( )
Very little knowledge ( )

Ottoman Customs and Costumes: Expert ( )
Great deal of knowledge ( )
Moderate ( )
Some knowledge ( )
Very little knowledge ( )

15. On a scale of 5-1 (5=there are too many, 1= a few), how would you rate the number of the exhibits displayed per floor?

on the 1st floor: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )
on the 2nd floor: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )

16. On a scale of 5-1 (5=too crowded, 1=completely empty), how would you rate the density of visitors during your visit?

on the 1st floor: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )
on the 2nd floor: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )

17. Would your visit be easier if arrows were put up indicating the route your visit should take? To what extent would you be in favor of this?* (for Azaryan Yalısı building)

Very much in favor ( )
In favor ( )
Indifferent ( )
Not in favor ( )
Not at all in favor ( )

18. Approximately how many times do you visit a museum?*

Once a week ( )
Twice a month ( )
Once a month ( )
Three or four times a year ( )
Once a year ( )
Never ( )
Other ( ), please indicate:

THANK YOU FOR YOUR TIME

* Bourdieu and Darbel, 1997, p.120-125
** England, 2003, p.93

Turkish Version of the Questionnaire

Merhaba, ben Aslı Canan Yılmazsoy. Bilkent Üniversitesi, İç Mimarlık ve Çevre Tasarımı bölümünde yüksek lisans öğrencisiyim. Tezimin bir parçası olarak Sadberk Hanım Müzesi *Türk ve İslam Bölümü* ziyaretçileri ile ilgili bir anket çalışması sürdürüyorum.

Bu anketi tamamlamanız 5 dakikadan daha kısa bir sürenizi alacaktır. Cevaplarınız tamamen isimsiz ve gizli tutulacaktır.

Bu çalışmaya katılımınız ve katkınızdan dolayı teşekkür ederim.

LÜTFEN CEVAPLARINIZI YAZILI OLARAK VE/VEYA BOŞLUKLARI İŞARETLEYEREK (√) BELİRTİNİZ

Tarih:

Sabah ( ) Öğledensonra ( )

1. Yaşınız:

2. Kadın ( ) Erkek ( )

3. T.C. Vatandaşı ( ) Diğer ( ), lütfen belirtiniz:

4. Yaşadığınız ülke ve şehir:

5. Eğitiminiz:

Lise diploması veya daha az ( )
Üniversite diploması ( )
Yüksek Lisans diploması ( )
Doktora derecesi ( )

6. Mesleğiniz:

7. Bugün, müzeye

Organize edilmiş bir grupla geldim ( ) Yalnız geldim ( )
Ailemle geldim ( ) Arkadaş(lar)ımla geldim ( ) Diğer ( ), lütfen belirtiniz:

8. *Sadberk Hanım Müzesi*'ne ilk kez mi geliyorsunuz?

Evet ( ) Hayır ( )

9. Müzenin *Azaryan Yalısı binasını* ilk kez mi ziyaret ediyorsunuz?

Evet ( ) Hayır ( )

10. Azaryan Yalısı binasında *sergilenen eserleri* ilk görüşünüz mü?

Evet ( ) Hayır ( )

11. Müzeye gelirken, özellikle görmek istediğiniz bir eser/eser grubu varmıydı?

Evet ( ) , lütfen belirtin:

Hayır ( )

12. Lütfen aşağıdakilerden ziyaret nedeninize en uygun olan veya olanlarını işaretleyiniz:

Arkadaş(lar)ımla/ailemle birlikte olmak ( )
Yeni ve farklı bir deneyim yaşamak ( )
Dinlenmek-rahatlamak ( )
Entelektüel anlamda zenginlik kazanmak ( )
Arkadaş(lar)ımla/ailemle birşeyler yapmak/vakit geçirmek ( )
Genel bilgimi geliştirmek ( )
Stresten uzaklaşmak ( )
Tarih bilinci kazanmak ( )
Diğer ( ), lütfen belirtiniz:

13. Lütfen, sergilenen eserlerin konusuna olan ilginizin derecesini belirtiniz.

Türk ve İslam Sanatı eserleri: Çok fazla ( )
Oldukça çok ( )
Orta düzeyde ( )
Biraz ( )
Çok az ( )

Osmanlı gelenekleri ve kostümleri: Çok fazla ( )
Oldukça çok ( )
Orta düzeyde ( )
Biraz ( )
Çok az ( )

14. Lütfen, sergilenen eserlerin konusuna dair bilginizin derecesini belirtiniz.

Türk ve İslam Sanatı eserleri: Geniş ve detaylı bilgi ( )
Oldukça fazla ( )
Orta düzeyde ( )
Biraz ( )
Çok az ( )

Osmanlı gelenekleri ve kostümler: Geniş ve detaylı bilgi ( )
Oldukça fazla ( )
Orta düzeyde ( )
Biraz ( )
Çok az ( )

15. 5-1 ölçeği üzerinde *(5=Çok fazla, 1=Az)*, sergilenen eser sayısını nasıl değerlendiriyorsunuz?

birinci kattaki: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )
ikinci kattaki: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )

16. 5-1 ölçeği üzerinde *(5=Çok kalabalıktı, 1=Tamamen boştu)*, ziyaretiniz süresindeki ziyaretçi yoğunluk derecesini değerlendiriniz.

birinci kat: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )
ikinci kat: 5 ( ) 4 ( ) 3 ( ) 2 ( ) 1 ( )

17. Ziyaretiniz süresinde takip etmeniz gereken rotayı gösteren işaretler olması ziyaretinizi kolaylaştırırmıydı? Bu durumu ne ölçüde isterdiniz? (Azaryan Yalısı binası için)

Kesinlikle isterdim ( )
İsterdim ( )
Farketmez ( )
İstemezdim ( )
Kesinlikle istemezdim ( )

18. Yaklaşık olarak hangi sıklıkta bir müzeye gidiyorsunuz?

Haftada bir kez ( )
Ayda 2 kez ( )
Ayda bir kez ( )
Yılda 3-4 kez ( )
Yılda bir kez ( )
Hiç ( )
Diğer ( ), lütfen belirtiniz:

ZAMAN AYIRDIĞINIZ İÇİN TEŞEKKÜR EDERİM

APPENDIX E Correlation Matrix

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	day time																															
2	age	r	-0,269																													
		p (2-tailed)	0,053																													
		N	52																													
3	edu	r	-0,094	0,065																												
		p (2-tailed)	0,506	0,649																												
		N	52	52																												
4	social group	r	0,342	-0,277	-0,114																											
		p (2-tailed)	0,013	0,047	0,420																											
		N	52	52	52																											
5	stra.	r	-0,128	0,165	-0,088	**-0,501**																										
		p (2-tailed)	0,365	0,243	0,533	**0,000**																										
		N	52	52	52	52																										
6	motiv	r	0,153	-0,081	0,087	0,145	-0,092																									
		p (2-tailed)	0,280	0,566	0,542	0,304	0,515																									
		N	52	52	52	52	52																									
7	int1	r	0,101	-0,021	0,026	**-0,370**	0,275	0,199																								
		p (2-tailed)	0,477	0,883	0,852	**0,007**	0,049	0,157																								
		N	52	52	52	52	52	52																								
8	int2	r	0,232	-0,123	0,104	**-0,421**	**0,468**	0,098	**0,757**																							
		p (2-tailed)	0,098	0,384	0,465	**0,002**	**0,000**	0,489	**0,000**																							
		N	52	52	52	52	52	52	52																							
9	know1	r	0,059	-0,139	-0,149	**-0,392**	0,248	0,127	**0,661**	**0,594**																						
		p (2-tailed)	0,680	0,325	0,292	**0,004**	0,077	0,370	**0,000**	**0,000**																						
		N	52	52	52	52	52	52	52	52																						
10	know2	r	0,087	-0,088	-0,082	**-0,488**	0,353	-0,152	**0,447**	**0,665**	**0,708**																					
		p (2-tailed)	0,540	0,537	0,563	**0,000**	0,010	0,281	**0,001**	**0,000**	**0,000**																					
		N	52	52	52	52	52	52	52	52	52																					
11	dense1	r	0,264	-0,242	0,025	0,232	-0,160	-0,059	-0,166	-0,095	-0,127	-0,115																				
		p (2-tailed)	0,059	0,084	0,860	0,098	0,258	0,677	0,241	0,504	0,370	0,415																				
		N	52	52	52	52	52	52	52	52	52	52																				
12	dense2	r	0,224	-0,311	-0,165	0,154	-0,086	-0,039	-0,298	-0,179	-0,140	-0,078	**0,718**																			
		p (2-tailed)	0,111	0,025	0,242	0,277	0,542	0,784	0,032	0,204	0,322	0,583	**0,000**																			
		N	52	52	52	52	52	52	52	52	52	52	52																			
13	crowd1	r	0,182	-0,026	0,020	-0,211	0,071	-0,135	0,162	0,252	0,244	0,353	0,061	0,101																		
		p (2-tailed)	0,198	0,855	0,886	0,133	0,617	0,341	0,253	0,072	0,081	0,010	0,668	0,475																		
		N	52	52	52	52	52	52	52	52	52	52	52	52																		

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
14	crowd2	r	0,182	-0,026	0,020	-0,211	0,071	-0,135	0,162	0,252	0,244	0,353	0,061	0,101	1,000																	
		p (2-tailed)	0,198	0,855	0,886	0,133	0,617	0,341	0,253	0,072	0,081	0,010	0,668	0,475	.																	
		N	52	52	52	52	52	52	52	52	52	52	52	52	52																	
15	signs	r	-0,066	-0,012	0,081	-0,023	-0,044	0,101	-0,035	0,028	0,143	0,184	-0,195	0,038	0,048	0,048																
		p (2-tailed)	0,644	0,930	0,569	0,870	0,757	0,477	0,805	0,845	0,312	0,193	0,167	0,788	0,736	0,736																
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52																
16	visit	r	-0,105	0,198	-0,156	-0,112	0,159	-0,107	0,210	0,017	0,210	-0,022	-0,250	-0,207	-0,179	-0,179	0,041															
		p (2-tailed)	0,460	0,160	0,269	0,427	0,261	0,450	0,134	0,902	0,135	0,875	0,074	0,141	0,204	0,204	0,771															
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52															
17	turn1	r	-0,037	0,083	-0,132	-0,190	0,022	-0,038	0,130	0,106	0,079	0,132	0,062	-0,069	-0,042	-0,042	-0,206	0,111														
		p (2-tailed)	0,795	0,560	0,353	0,177	0,875	0,790	0,358	0,453	0,577	0,350	0,664	0,625	0,767	0,767	0,144	0,434														
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52														
18	turn2	r	-0,287	0,148	-0,001	-0,286	0,122	-0,009	0,063	-0,038	-0,053	-0,028	-0,101	-0,078	0,031	0,031	-0,166	0,122	**0,544**													
		p (2-tailed)	0,039	0,294	0,994	0,040	0,389	0,948	0,659	0,789	0,708	0,843	0,477	0,583	0,825	0,825	0,241	0,391	**0,000**													
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52													
19	order	r	-0,099	-0,107	-0,148	**-0,489**	0,172	-0,072	0,097	0,211	0,229	0,274	0,043	0,066	-0,113	-0,113	0,042	0,160	0,318	0,256												
		p (2-tailed)	0,483	0,448	0,297	**0,000**	0,223	0,614	0,492	0,134	0,103	0,050	0,764	0,644	0,424	0,424	0,769	0,257	0,022	0,067												
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52												
20	area	r	-0,003	-0,135	0,114	0,347	-0,112	-0,038	-0,212	-0,219	-0,289	-0,225	0,041	0,031	-0,178	-0,178	-0,210	-0,048	-0,062	-0,202	**-0,501**											
		p (2-tailed)	0,986	0,341	0,423	0,012	0,428	0,787	0,132	0,119	0,038	0,108	0,772	0,827	0,207	0,207	0,136	0,737	0,663	0,152	**0,000**											
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52											
21	area1	r	0,020	-0,131	0,138	0,292	-0,159	-0,025	-0,219	-0,197	-0,247	-0,165	0,104	0,087	-0,173	-0,173	-0,110	-0,136	-0,083	-0,254	**-0,452**	**0,924**										
		p (2-tailed)	0,887	0,355	0,329	0,035	0,260	0,859	0,119	0,162	0,077	0,242	0,462	0,541	0,220	0,220	0,437	0,336	0,561	0,069	**0,001**	**0,000**										
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52										
22	area2	r	-0,056	-0,030	-0,043	0,188	0,098	-0,038	-0,015	-0,088	-0,146	-0,183	-0,149	-0,133	-0,039	-0,039	-0,278	0,211	0,042	0,099	-0,198	0,339	-0,045									
		p (2-tailed)	0,691	0,832	0,763	0,182	0,487	0,787	0,918	0,536	0,302	0,195	0,291	0,349	0,786	0,786	0,046	0,134	0,770	0,484	0,160	0,014	0,750									
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52									
23	time	r	0,114	-0,114	-0,094	**0,491**	**-0,406**	-0,111	**-0,394**	**-0,401**	-0,266	**-0,363**	0,155	0,185	-0,015	-0,015	-0,239	-0,022	-0,024	-0,122	-0,322	**0,464**	**0,386**	0,264								
		p (2-tailed)	0,422	0,419	0,509	**0,000**	**0,003**	0,434	**0,004**	**0,003**	0,056	**0,010**	0,273	0,188	0,918	0,918	0,088	0,875	0,865	0,388	0,020	**0,001**	**0,005**	0,058								
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52								
24	time1	r	0,026	-0,138	-0,050	**0,427**	-0,303	-0,067	**-0,421**	**-0,373**	-0,279	-0,282	0,097	0,196	0,081	0,081	-0,154	-0,240	-0,112	-0,247	**-0,391**	**0,559**	**0,507**	0,214	**0,896**							
		p (2-tailed)	0,857	0,331	0,723	**0,002**	0,029	0,638	**0,002**	**0,006**	0,045	0,043	0,494	0,163	0,570	0,570	0,275	0,086	0,429	0,077	**0,004**	**0,000**	**0,000**	0,129	**0,000**							
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52							
25	time2	r	0,132	-0,061	-0,082	**0,452**	**-0,457**	-0,087	-0,279	**-0,352**	-0,186	**-0,396**	0,209	0,075	-0,232	-0,232	-0,229	0,175	0,145	0,041	-0,137	0,265	0,198	0,205	**0,820**	**0,515**						
		p (2-tailed)	0,352	0,668	0,563	**0,001**	**0,001**	0,538	0,045	**0,010**	0,186	**0,004**	0,137	0,596	0,098	0,098	0,102	0,214	0,304	0,771	0,332	0,058	0,160	0,144	**0,000**	**0,000**						
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52						
26	N of stops	r	0,169	-0,202	-0,183	**0,495**	-0,258	0,050	-0,259	-0,314	-0,289	**-0,393**	0,001	0,132	-0,042	-0,042	-0,273	-0,153	-0,145	-0,233	-0,341	**0,559**	**0,504**	0,220	**0,772**	**0,848**	**0,441**					
		p (2-tailed)	0,231	0,152	0,193	**0,000**	0,065	0,726	0,064	0,023	0,038	**0,004**	0,996	0,353	0,766	0,766	0,050	0,280	0,306	0,097	0,013	**0,000**	**0,000**	0,117	**0,000**	**0,000**	**0,001**					
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52					

			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
27	N of stops1	r	0,166	-0,237	-0,157	**0,474**	-0,271	0,005	-0,255	-0,294	-0,271	-0,344	-0,023	0,133	-0,003	-0,003	-0,173	-0,198	-0,159	-0,265	-0,343	**0,557**	**0,546**	0,111	**0,733**	**0,842**	**0,377**	**0,970**				
		p (2-tailed)	0,239	0,090	0,266	**0,000**	0,052	0,971	0,068	0,034	0,052	0,013	0,871	0,349	0,982	0,982	0,220	0,160	0,259	0,057	0,013	**0,000**	**0,000**	0,432	**0,000**	**0,000**	**0,006**	**0,000**				
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52				
28	N of stops2	r	0,137	-0,075	-0,200	**0,428**	-0,171	0,138	-0,208	-0,288	-0,263	**-0,414**	0,054	0,099	-0,120	-0,120	**-0,433**	-0,017	-0,079	-0,106	-0,259	**0,436**	0,295	**0,413**	**0,683**	**0,666**	**0,484**	**0,839**	**0,681**			
		p (2-tailed)	0,334	0,595	0,155	**0,002**	0,227	0,330	0,140	0,038	0,060	**0,002**	0,705	0,486	0,397	0,397	**0,001**	0,907	0,576	0,454	0,063	**0,001**	0,034	**0,002**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**			
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52			
29	stops time1	r	0,031	-0,087	-0,110	**0,439**	-0,297	-0,067	**-0,419**	**-0,394**	-0,297	-0,303	0,089	0,197	0,104	0,104	-0,129	-0,211	-0,132	-0,252	**-0,433**	**0,549**	**0,493**	0,222	**0,885**	**0,980**	**0,503**	**0,838**	**0,827**	**0,673**		
		p (2-tailed)	0,825	0,541	0,438	**0,001**	0,032	0,636	**0,002**	**0,004**	0,033	0,029	0,529	0,162	0,465	0,465	0,362	0,134	0,351	0,072	**0,001**	**0,000**	**0,000**	0,114	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**		
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52		
30	stops time2	r	0,114	-0,080	-0,155	**0,428**	**-0,518**	-0,075	-0,314	**-0,414**	-0,224	**-0,401**	0,126	0,088	-0,093	-0,093	-0,261	0,144	0,098	0,043	-0,159	0,235	0,167	0,202	**0,884**	**0,622**	**0,938**	**0,540**	**0,486**	**0,537**	**0,617**	
		p (2-tailed)	0,419	0,572	0,273	**0,002**	**0,000**	0,598	0,023	**0,002**	0,110	**0,003**	0,372	0,535	0,511	0,511	0,062	0,308	0,490	0,762	0,260	0,094	0,236	0,151	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	
31	stops time	r	0,079	-0,093	-0,146	**0,482**	**-0,449**	-0,079	**-0,410**	**-0,449**	-0,291	**-0,389**	0,119	0,161	0,010	0,010	-0,214	-0,044	-0,024	-0,122	-0,335	**0,442**	**0,374**	0,236	**0,984**	**0,898**	**0,792**	**0,772**	**0,737**	**0,676**	**0,907**	**0,891**
		p (2-tailed)	0,576	0,512	0,301	**0,000**	**0,001**	0,578	**0,003**	**0,001**	0,036	**0,004**	0,400	0,255	0,945	0,945	0,128	0,755	0,867	0,389	0,015	**0,001**	**0,008**	0,092	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**
		N	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52	52

APPENDIX F

Table F-1 Locality and Strategy Crosstabulation

			strategy-focused or unfocused		
			focused	unfocused	Total
locality	local	Count	9	17	26
		Expected Count	5,5	20,5	26,0
	foreign	Count	2	24	26
		Expected Count	5,5	20,5	26,0
Total		Count	11	41	52
		Expected Count	11,0	41,0	52,0

Table F-2 Locality and First Floor Knowledge Level Crosstabulation

			first floor knowledge level				Total
			great deal of knowledge	moderate	some knowledge	very little knowledge	
locality	local	Count	5	11	6	4	26
		Expected Count	3,5	6,5	9,0	7,0	26,0
	foreign	Count	2	2	12	10	26
		Expected Count	3,5	6,5	9,0	7,0	26,0
Total		Count	7	13	18	14	52
		Expected Count	7,0	13,0	18,0	14,0	52,0

Table F-3 Locality and Second Floor Knowledge Level Crosstabulation

			second floor knowledge level					Total
			expert	great deal of knowledge	moderate	some knowledge	very little knowledge	
locality	local	Count	3	12	9	1	1	26
		Expected Count	1,5	7,0	7,5	7,0	3,0	26,0
	foreign	Count	0	2	6	13	5	26
		Expected Count	1,5	7,0	7,5	7,0	3,0	26,0
Total		Count	3	14	15	14	6	52
		Expected Count	3,0	14,0	15,0	14,0	6,0	52,0