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Determining the Criteria Related to the Preference of Contemporary Mosques by the Analytic Hierarchy Process (AHP) Method within the Context of User-centered Design

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Abstract

The concept of user-centered design has recently been accepted in contemporary design teachings and has created new perspectives in the design field. This article aims to evaluate the contemporary mosques built in Türkiye from a user-centered perspective. In this context, first of all, the concept of user-centered design was included and the necessity of a pluralistic environment in decision-making processes was emphasized in order to create an ideal publicity phenomenon. In the context of the conceptual framework created, contemporary mosque examples built in the 21st century were selected and presented to the preference of architect and non-architect participant groups. Decision criteria that are thought to affect the choice of participants are aesthetic value, material and workmanship, dimensions of the building, religious symbols in the building, and the brand value of the building. These factors, which may be effective in the choice of contemporary mosques, were evaluated with the Analytic Hierarchy Process method. Accordingly, it was observed that the main criteria constituting the contemporary mosque preferences of the architect group were aesthetics, the brand value of the building, material, and workmanship criteria. On the other hand, the main criterion constituting the contemporary mosque preferences of the non-architect group was the presence of religious symbols. Accordingly, it was observed that architectural profession ideologies affected and differentiated the reasons for preference. As a result, it was concluded that the ideology of the architectural profession is effective in the construction process of the contemporary built environment.

Keywords

analytic hierarchy process, contemporary architecture, mosque, user-centered design

1 Introduction

Basically, the user-centered design aims to ensure the best harmony between the user and the product and, accordingly, to improve the product. The initial stage in user-centered design includes users, resources, limits, and expectations (Jönsson, 2006; Öktem, 2014). On the other hand, user orientation has two meanings: theory and findings from the behavior of users, or the benefits to the design of inputs from theories and users' participation in the design. Here, user participation refers to physical and mental participation and the construction of how this participation will occur. Architectural design, by its nature, is a process that incorporates the elements of participation and creativity in it. In this relationship between architectural design and them, an aspect of the concept drives creativity, guides design, supports the idea generation process, and enriches design in terms of meaning (Onur, 2022). It is an accepted fact in the design literature that user participation can be beneficial for product development systems (Eason, 1994). Studies on design often show that the design process begins with a user requirement (Holt et al., 1984; Şen, 2015). Hasdoğan (1996) also states that design processes created with users are very important. In addition to the necessity of revealing user needs, the user-centered design method facilitates the participation of users in the design process together with the designer (Bruseberg and McDonagh-Philp, 2002). The user-centered design recognizes that user experiences affect the design process (Abras et al 2004). User experiences are related to how individuals feel when interacting with a product. In this context, user experience and usability are intertwined. The user-centered design theory prioritizes the provision of users' needs as the primary factor at

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every stage of the product (Norman, 1990). Putting users at the center of the product design project plays a significant role in meaningful product definition. In addition, the user-centered design approach prevents designers from creating dysfunctional products. User-centered design elements should be meaningful for users and lead to a positive change in the minds of users (Öktem, 2014) (Fig. 1). All disciplines that constitute the user-centered design approach are interested in the user. All of these disciplines aim to increase usability. The fact that the architect plays an active role in the design process alone limits the user only to the usage process, which leads to the transformation of design and usage actions into independent realities.

The independent realization of these stages in the production of space negatively affects the user-space relationship, especially in the usage process. Therefore, in the design process of the architectural act, it is necessary to determine the relationship between the architect and the user in the best way. In his study focusing on the distinction between the 'designer' and 'user' worlds, Passini (1977) states that designers, he defines as the 'Design God', live in the abstract solitude created by the design, and they work with imaginary characters and users in this abstract world instead of the real world and real users. Passini also emphasizes that because of this, the design that exists in the real world cannot be exactly as it should be (Lee, 2006; Şen, 2015). Kernohan et al. (1996) made a definition of "two different cultures" for "designers" and "users". The lack of partnership and communication between the two cultures causes contradictions and inconsistencies regarding "what is provided" and "what is needed" depending on supply and demand. According to Lang (1987), "to be able to understand the successful harmony or vice versa mismatch between the user and the space, it is necessary to interpret the relationship between the designer and the user first". Quoting Eaton (1969 cited in Lang, 1987: p. 141) states that the most successful examples of architectural structures realized throughout the century are private residences with specific users, and he bases these successes on the close relationship between the architect and the user during the design process. Lang (1987) attaches importance to this close relationship between the architect and the user by emphasizing the decisive effect of the relationship between the user and the architect on the final product, and he states that the act of architecture cannot achieve very successful results when values are diversified, differences increase, and there is no close working relationship with the architect and the user. The social infrastructure of user-focused design process approaches is based on the social movements that took place in the 1960's and their impact (Boudon, 1969: p. 53). In this period, space was being accepted as a social phenomenon beyond a physical object. On the other hand, it was thought that the user should be re-conceived as an active participant instead of his passive position in the process. Within the discipline of architecture, the idea of including the user as a participant in the design process more systematically and consciously started to be discussed in this period. In this sense, a diversity of definitions and approaches is observed in architecture. Some of these definitions are as follows:

- User-centered design: It suggests close relationships with the user and draws attention to user preferences.
- Community design: It proposes a design process by considering social values and behavioral characteristics.
- Collaborative design (cooperative design): It expresses the search for new tools and methods with the idea of obtaining the user's experiences in a correct and healthy way (Şen, 2015).

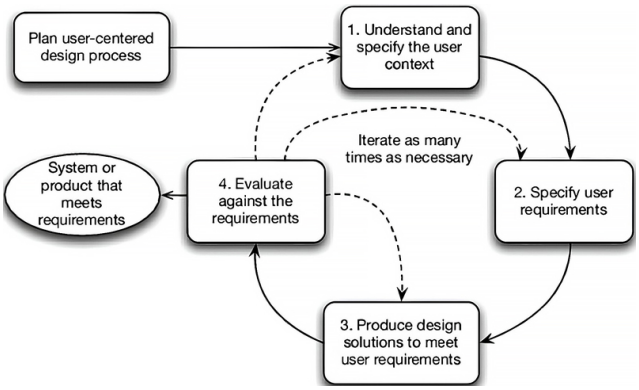

Fig. 1 The user-centered design process (Schulz et al., 2014)

After the theoretical evaluations mentioned above in the context of user-centered design and user-centered design concepts in architecture, the parameters of mosques as architectural spaces and today's contemporary mosque perception are examined in the following part of the study. In the context of the study, the parameters determined were presented to architect and non-architect user groups. The factor weights of the parameters selected by the determined user groups while choosing a contemporary mosque were determined by the AHP method. Thus, a base was created for the application part of the study in the user-space-mosque perception triangle.

2 Perception of the space and the contemporary mosque perception

Perception, which is one of the main study areas of psychology, has been a common study area of many disciplines. In studies on the city and architecture, the concept of perception is mostly encountered as environmental perception, space perception or spatial perception. The sensory information received regarding the intangible/concrete objects in the outside world is defined as perception (İnceoğlu, 2010: p.68). This sensory information is obtained through our five senses consisting of hearing, tasting, seeing, smelling and touching, and in addition to these, with the help of the sense of feeling. Perception is an active process that takes place in the form of reading environmental information through the senses and with a mental process (Özen, 2006) and in this process, the objective world is transferred to the subjective consciousness through the senses (Köktürk, 2010: p.2). In addition, it is known that the individual's needs and motives arising from them, the individual's knowledge and experiences play an important role in the processing of the perception process (İnceoğlu, 2010: p.73). In addition to these, the relationship of architectural space with the environment and other spaces are important parameters that affect the perceptual process. Beyond the three dimensions that make up the concrete existence of the space, spatial perception or environmental perception emerges as it begins to be defined by the senses. The perception process consists of four elements: symbolic, visual, emotional and selective perception (İnceoğlu, 2010: p.74).

The symbol, which represents one thing or is something else, directs people to a mental process of their own accord and directs them to find the whole of that symbol and what it represents. Symbol which is important data of symbolic perception, are learned "stimulant" with value and meaning for the individual, have an abstract feature and have a very close relationship with culture (İnceoğlu, 2010: pp.74–76). Because the meanings conveyed through symbols and symbols also reflect the common values and culture of the society in which the individual lives. About eighty percent of the first impressions related to the external environment are formed through sight. Visual perception is the acquisition of a mental image of any event or object with the data coming from visual sense, and elements such as color, texture, form in the space appeal to visual perception (Yıldırım Erniş, 2012). Visual perception is basically a biological process. Psychological factors are also effective in its functioning (Sarıçiçek, 2012). The visual perception process begins when the individual starts to perform the visual process by making a choice in line with the individual's needs and motives from the image complexity around him (İnceoğlu, 2010). Cognitive processes are also significantly effective in visual perception, and this process is also shaped by the individual's knowledge, experience, lifestyle and culture (Güleç Solak, 2017). Emotional attitudes and tendencies are also involved in the functioning of the perception process, and the perception of the object is like, dislike, good, bad, fear, etc. It takes place under the influence of some emotional impressions such as (İnceoğlu, 2010). In other words, all kinds of emotional and intuitive attitudes and tendencies of the individual emerge with this life experience and affect the perception process. Each individual perceives events, objects, situations, the social and cultural environment in which the person is born, the forms of interaction the person enters, individual needs, expectations, value judgments, and so on, and these perception tendencies are called "selective perception" (İnceoğlu, 2010). Cognitive/mental perception, on the other hand, is the process of perception that an individual creates by conceptualizing the information obtained by itself as a result of psychological and mental transformations and by coding, storing, remembering and analyzing (Özen, 2006). Senses and cognitive processes form a whole, not only with superficial images; with the simultaneity of all senses bodily constitutes the essence of spatial consciousness (Merleau-Ponty, 2008) (Fig. 2).

This perception process, which is a whole, includes the conceptual world as a product of the human life process and many emotional, semantic and cultural dimensions. This life cycle also takes place in an environment, and the environment-human interaction gains meaning with this perceptual process. One of the basic elements of environment-human interaction is spatial perception (Gutman, 1988: p.61). Spatial perception determines the level of knowledge of people about the physical properties of the place, and spatial perception has an important role in people's evaluation of that place. These evaluations affect and shape the behavior of the person in that place. The perception of space is related to the person's short or long-term experience in or around the space and to remember the space accordingly (Özen, 2006: p.2). In this direction, Merleau-Ponty (2008) also bases spatial perception on the concept of "experience" and states that the transformation of perception into knowledge occurs with certain references and that each perception takes place with

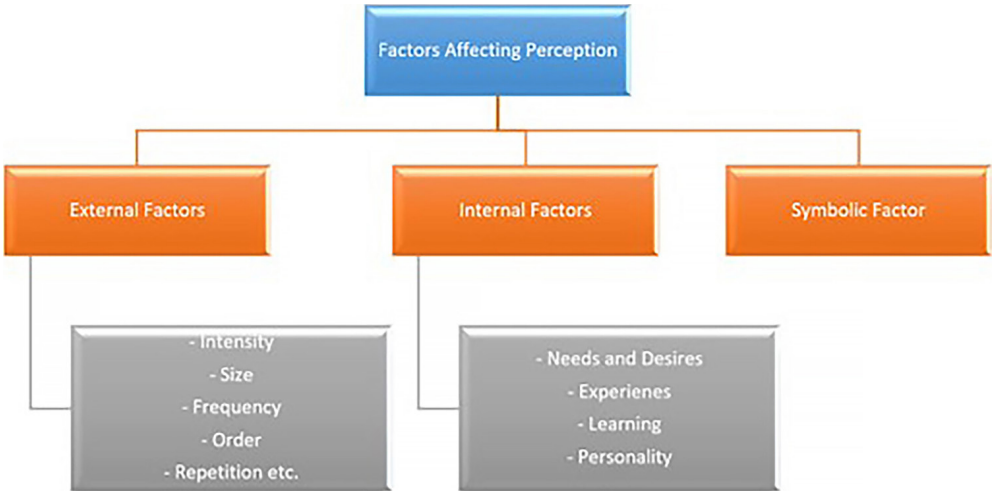

Fig. 2 Spatial perception process

references from the previous one throughout life. Two important names we encounter with spatial perception are Lynch and Norberg-Schultz. Kevin Lynch (2010) studied the concept of space perception at the urban scale, emphasizing the importance of urban perception and focused on the user's process of reading and making sense of the city. The city has gathered the components required for the perception of the space under five headings as urban image element / urban image components as roads, regions, borders, nodes / focal points and sign elements (Lynch, 2010: p.51–87) (Fig. 3).

Norberg-Schulz determined the elements of spatial organization that constitute spatial perception as "centre or place (approach), directions, roads and boundary" (Özen, 2006: pp.3–4) (Fig. 4).

Emphasizing the importance of spatial elements in people's experiences, he tried to understand the balance between the dynamic and passive forces of urban space through the elements that create spatial perception and provide spatial organization. As a result, the perception of space takes place after both a sensory and a mental process. Psycho-social status of people, including their culture and experiences, time spent in the space, light, heat, location, etc. Physical factors such as these directly affect the perception of the space. As a result of this perception, space is defined both physically and mentally in people's memories and cognitive maps of people are drawn. The physical environment is an environment that transmits and influences the traditions, cultures, values, judgments, worldviews of its inhabitants and embodies many meanings. In other words, the interaction with the living space is individual. For this reason, the meaning/meanings attributed to the space change according to time, situation and people. According to Gestalt theory, which is based on the principles of vision, perception is formed by the complementarity of sensory data. It is stated that a whole is related to the perception of its parts. When the mind encounters an unknown image, it perceives it by being guided by the patterns it knows. According to Aydınlı (1986), visual perception varies by the individual

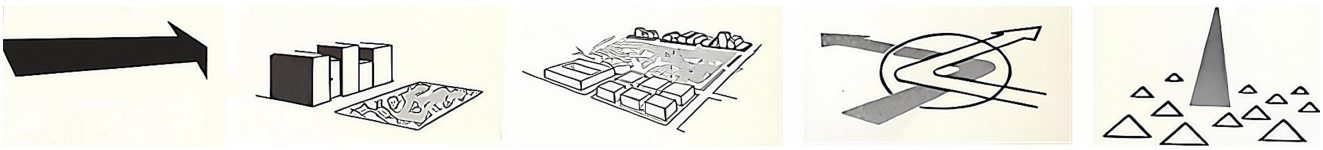

Fig. 3 Components that create spatial perception according to Lynch (Özen, 2006)

Fig. 4 Components that create spatial perception according to Norberg-Schulz (Özen, 2006)

depending on cultural differences, mental processes, and predefined stimulant factors (Aydınlı, 1986). The perception of the space is associated with the environment (Us, 2008; Sarıhan, 2015). Over time, culture was reflected in symbols and structures. The understanding and use of space is one of these symbols since it was created in accordance with the life of the period. Architecture adapted to a culture may not be compatible with the environmental change occurring over time in the same culture (Altan, 1993). The concept of time creates a difference in the perception of architectural space. The perception of the buildings carrying the architectural style of the period in their own time is different from the perception of them in today's conditions. According to Lynch (2010: p.64), "*Each person's perception is unique, however, this perception may have nothing to do with group images. It still approaches the 'folk image'*." Based on this statement, it can be said that different groups can perceive the same physical reality differently; however, they will approach a common perception. It is thought that the shaping of traditional religious architecture is formed by social character. Accordingly, it is necessary to observe how architecture, which reveals its shape in the changing time and architectural structures, is perceived in minds of the people over time. Lynch's urban space perception components in the perception of architectural space are border, node, landmark, region, entrance, transition space, courtyard, mass, and main volume (Lynch, 2010). In the context of this study, the components of the psychology of space perception and the perception of urban space were determined in the mosque structure, and the elements of the mosque image that were effective in perception were clarified. If the characteristics of the form that Lynch mentioned in his book "*The Image of the City*" are considered for the mosque structure, it can be said that the minaret and the dome are unique within the mosque form. That is, the absence of a similar structure around it and its thin, long, and opposite forms are recognizable. The dome form, which also provides dominance with its dimensions, points to the whole in the perception of the mosque. In addition, the mosques in the city squares further increase this dominance with the effect of square. Whether function or aesthetics is effective as a criterion of preference and taste varies depending on the education and cultural background of a person. The reflection of the culture shaped by the lifestyle of the people becomes ordinary for people who grew up in the same culture, and sometimes it is abstracted, and the details are not noticed (Kuban, 1984).

2.1 Mosques as architectural spaces

Mosques as places of worship are public spaces where the social and cultural characteristics of the society can be observed. It is possible to observe the social relations and belief systems of the citizens in these places. According to Longhurst (2012), Islam's place of worship is unique to Islam's own identity. This place means the place of sujud (prostration), not a stand-alone building (Longhurst, 2012).

Mosques and masjids, symbols of Islamic culture and civilization, are at the center of Islamic culture. Both are places of worship for Muslims. Mosque is an Arabic word of origin. "Cem" comes from the root of gathering, coming together. The word masjid is derived from the Arabic word prostration. It means the place to prostrate. Masjids are smaller-scale places of worship in terms of architecture, where Friday and Eid prayers are not performed. However, just because masjids are smaller than mosques do not mean that they do not have minarets. The only difference between the structures divided into mosques and masjids is that there is no pulpit in the masjid buildings. In other words, small temples that do not have a pulpit inside are called masjids. In addition to religious usage, mosques; social and cultural actions it also hosts. It is seen that units such as classrooms, multi-purpose halls, open spaces and libraries were added to the main function for accommodation, social and educational functions (Topraklı and Işıklar Bengi, 2019: p.377).

Within the scope of mosque perception, it can be said that "perception" is a mental phenomenon and occurs in two ways. Perception begins with sensation, then it is completed with matching based on our knowledge. It is realized by grasping in the mind what is felt with the sense organs. Visual perception in architecture occurs with human interpretation. A person's understanding differs depending on lifestyle, education, culture, and even gender. The mind analyzes every sensation it encounters with its previous knowledge. What we perceive is related to what we know (Roth and Akça, 2000; Sarıhan, 2015). Individuals perceive the environment with drivers such as experience, education, and goals. The order and organization of both the individual and the environment, the basis of experience, are explained by Gestalt Theory. Knowledge-based perception is the association of physical features perceived with the senses and information whose source is the environment with conceptual aspects, signs, and symbols.

2.2 Approaches to contemporary mosque architecture in Türkiye

The first examples of Ottoman mosque architecture are seen in Anatolia. These are generally mosques that reflect the traditions of the region where they are built in terms of construction technique, have small spaces, domes, and a narthex was added later. 15th century Ottoman architecture is a type of mosque with zawiya has developed. These structures were influenced by the four-iwan, courtyard madrasah and zawiya plan, and were gradually shaped in line with new designs. Traditional plan types of Ottoman architecture in the early 15th century. It has been tried to be changed and developed in line with the new emerging requirements. The dome, the most important element of Ottoman religious architecture, showed new experiments and breakthroughs in the mosques produced by Mimar Sinan and his assistants in the 16th century. The concept of domed space was dominant in small buildings as well as sultan mosques. In this century, the mosques, most of which were attributed to Mimar Sinan, have four legs, six legs and eight legs, etc. They are classified according to the number of columns supporting the dome. A significant portion of the mosques produced in Anatolia after the 18th century are structures with single domes and cubic spaces; the number of mosques with central domes is small. During this period, Western influence was weak in Anatolian mosques, and the influence of baroque and later styles was not seen on the exteriors. These structures are generally dominated by simplicity (Kuban, 1984).

From the emergence and spread of the religion of Islam to the present day, the mosque structure has not resisted changes over time. As mentioned before, it has become the type of building that represents the most advanced technology of its age by adopting the architectural style features of many cultures it has encountered (Güzer, 2009). Interactions between the disciplines at the time of the unfolding of modernist architecture, as well as in later periods of the 20th century, was revealed far beyond indirect analogies, and more explicitly than ever before in both their attitude and formal creativity (Üveges, 2017). In the 20th century, two approaches are faced in the mosque architecture of Türkiye especially since 1950. The first approach involves mosque structures that try to repeat the 17th century style, while the second approach involves mosque structures that try to move away from the traditional approach and search for new forms. In the literature, there are many studies examining these two approaches. Güzer (2009) stated that in mosques where the 17th century style was imitated, it was aimed to produce eclectic works instead of evaluating the conditions and possibilities of the day in terms of construction techniques and materials. The other approach raises the question of how Muslims will distinguish the place of worship without these symbols by drawing attention to the fact that elements such as the dome and minaret have been accepted as mosque symbols in the memory of the society over time and that they are found in many mosques from Indonesia to America (Khan, 2008). Although the covering systems in mosques are different from each other, it is observed that domes are used in contemporary mosque examples in Türkiye. Though none of the domes used are the same as the traditional examples, the traditional approach has been repeated only in terms of the use of the dome. There is no direct use of the dome in these mosques. However, the effort to ascend to the sky has been tried by creating different forms. In contemporary mosque structures in Türkiye, the minaret is interpreted and continues to be used in mosques. In the contemporary examples examined in Türkiye, the entrance is simpler and more modest than in the traditional example. In some mosques, there is at most one inscription on the entrance element. The tradition of central space in the harem scheme continues to be applied in general in mosques with a new approach in Türkiye. A few plan diagrams were tried in Ottoman mosque architecture (Fig. 5). In addition to mosques that form a dome directly on the ceiling of the harem, there are also examples that try to create a dome

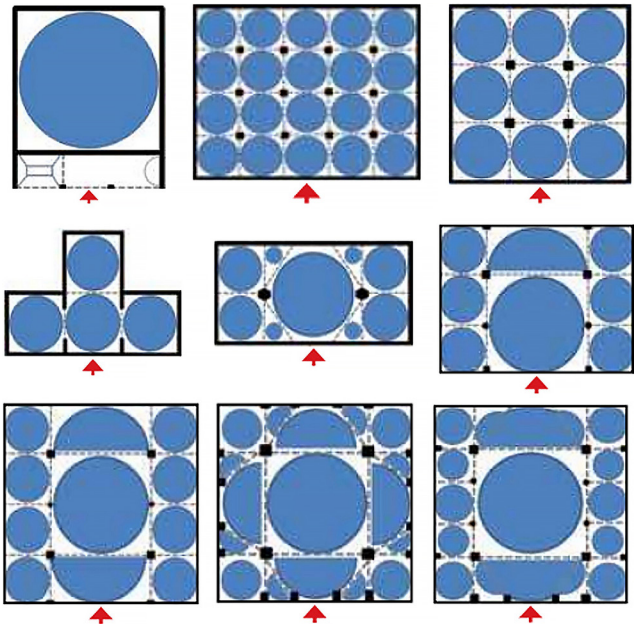

Fig. 5 Plan diagrams of Ottoman mosques (Kuban, 1984)

image by staggering the cover system or by raising the ceiling. As in the traditional examples, women's gathering place (mahfil) is located on the mezzanine floor in most of the mosques studied in Türkiye. In addition, in some examples, the women's mahfil is located on the lower floor. In Sancaklar Mosque, the women's mahfil is located in the men's section and are separated from each other by a curtain. There are also examples where there is no women's gathering place. Generally, with some exceptions in contemporary mosques studied in Türkiye, the mihrab is applied as a repetition or interpretation of the traditional example in terms of form, height, and decoration. In all samples, the concave niche was used in mihrab structures. Among the elements inside the mosque, the pulpit and the sermon pulpit are the basic elements found in Turkish mosques. In contemporary mosques studied in Türkiye, the pulpit is always on the right side of the mihrab. The pulpit is a design element with an upward orientation. In addition, the pulpit is another element used for giving speeches. Pulpits vary as a repetition or interpretation of the forms in the traditional example, but they are standard in all the mosques studied. In contemporary mosque examples of Türkiye, there are mosques where the fountain is used by interpreting it, as well as mosques where the fountain left its place to a pool. In some examples, it is observed that both a fountain and a pool were used (Sheibaniaghdam, 2019). According to Güzer (2009), mosques have existed for about 1400 years without changing their basic function and they are architectural products that can be discussed over the relations of history, place, culture, and architecture. In this direction, it is open to new research, experiments, and studies. In this context, this study examines the last period mosques in Türkiye. In this study, not only the architectural qualities of mosques are discussed, but also the reasons why contemporary mosques are preferred by the society are examined. In other words, the decision criteria that affect the contemporary mosque selection of society are revealed, and the weights of these decision criteria are determined.

3 Methodology

In this study, it was aimed to determine and evaluate the criteria for contemporary mosque taste in Türkiye by using the AHP method in the context of user-centered design. In order to make this evaluation, the appearances of both contemporary mosques and traditional-looking contemporary mosques were presented to architects and non-architect users (participants of the study).

In the context of the study, as the contemporary mosque samples, Sancaklar Mosque (A), Büyükada Çarşı Mosque (A), Malatya Mosque (D), Mogan Mosque (B), İmes Yeşil Mosque (A), Marmara Theology Mosque (A), Şakirin Mosque (A), Yeşil Vadi Mosque (A) Şeyh Abdurrahman Erzincani Mosque (E) and Derinkuyu Mosque (C) were selected (Fig. 6, Fig. 7). The society's decision criteria that are considered to affect the selection in the context of the preference of the contemporary mosque designs build in Türkiye recently are as follows:

- The aesthetic value of the mosque
- Material and Workmanship
- Dimensions of the structure
- Religious symbols in the building
- Brand value of the building.

In this context, the main criterion used to determine the participants of the study was whether they were architects or not. Survey questions were presented to seven architects and seven non-architect users. Thus, in the study, it was aimed to evaluate the role of the professional qualifications of participants in their preferences and attitudes.

3.1 AHP method and usage areas

AHP (Analytical Hierarchy Process) is a multi-criteria decision-making technique developed by Saaty in the 1970s (Wind and Saaty, 1980). In other words, AHP is a method that facilitates the decision-making process for complex problems, works numerically based according to multiple criteria, and obtains quantitative results from qualitative characteristics (Kurttila et al., 2000) (Fig. 8). AHP analysis is a systematic process that shows the order of importance of the elements that make up the problem and by analyzing different factors, it determines which one is more important. As a result of the evaluation, the most important factor is determined and alternative suggestions can be obtained (Xu, 2004). The most important reason for using this method in the selection

Fig. 6 Location of selected mosques in Türkiye map

Fig. 7 Selected contemporary mosque examples

process is that it involves the evaluation of more than one qualitative and quantitative criteria. With this method, problems that seem complex can be displayed in a hierarchical structure extending from the determined main target to sub-criteria (Saaty and Özdemir, 2003). The decision-making process to be made with AHP consists of 4 stages: decomposition of the problem, determination of priorities, synthesis, and sensitivity analysis (Forman and Selly, 2001). The important thing is that the determined evaluation criteria are clear and understandable. The goal takes place at the top of the hierarchy in the decision-making process. At a lower level of the hierarchy, there are criteria affecting this goal. At the bottom of the hierarchy, there are alternatives (Saaty, 2008). In the first stage of this method, the criteria that constitute the basis of AHP are compared within themselves. Existing alternatives are also compared based on the criteria. In the AHP method, since each of the effective criteria is compared with the others, the problem is systematically perceived. Decision-making criteria are determined, and it can be concluded which of these criteria is the most important (Lee and Walsh, 2011). If the A criterion is more important than the B criterion, a value from 1 to 9 is given to the degree of importance (Saaty, 2008). While the criteria

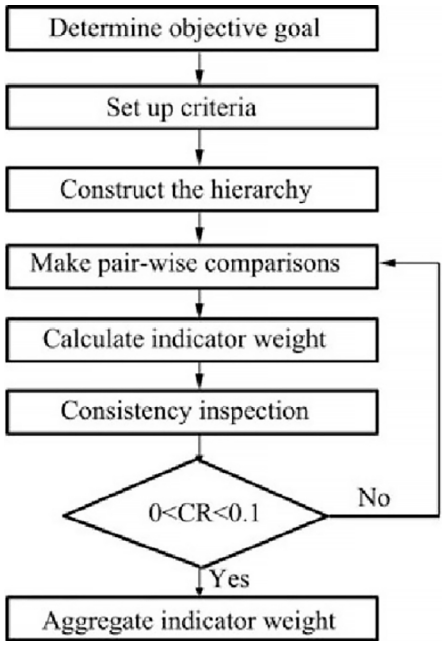

Fig. 8 Flow chart of the analytic hierarchy process (Kurttila et al., 2000)

were evaluated mutually within the scope of the study, their importance values were graded with coefficients from 1 to 9. If it is not possible to decide which value is appropriate in the evaluation, intermediate values from 2 to 8 can be preferred. The consistency ratio should be calculated to measure whether the decision maker behaves consistently when comparing criteria. In this calculation, n changes depending on the number of criteria. If the value found as a result of the calculations is below 0.10, it is concluded that the comparison matrix created is consistent (Timor, 2011). Consistency Indicator and Consistency Ratio are calculated with the help of the following formulas: Consistency Indicator = $(\lambda_{max} - n)/n - 1$, Consistency Ratio = Consistency Indicator/Randomness Indicator. The largest value among the eigenvalues of a square matrix is expressed by λ_{max}. In order to calculate λ_{max}, each element of the entire priority matrix is divided into the "priorities vector" elements, and the obtained new matrix elements are averaged (Timor, 2011). By comparing the determined values, it is checked whether it meets the consistency test. In case of failure, the decision maker is asked to review and correct his decision (Ömürbek and Tunca, 2013). Then the relative weights are calculated by using the pairwise comparison matrices. In the last stage, based on the general purpose at the highest level, the overall weights of the alternatives at the lowest level are obtained with the principle of hierarchical structure (Aslan, 2005; Özeren and Korumaz, 2019). The consistency ratio can be used by the decision maker in the evaluation stages based on each criterion and it is an important concept in terms of the quality and validity of the final decision. AHP method provided more confidence than other multi-criteria decision-making methods in terms of allowing consistency to be tested. In order for the decision matrix to be consistent, CR $R < 0.10$ is required. The closer the CR is to zero, the more consistent the comparison results will be. After these determinations, it is checked whether the comparisons provide the consistency rate.

3.2 Interpretation of survey results

As mentioned above, for the purpose of the study, the opinions of two different groups, architects and non-architects, were consulted to determine the selection criteria for contemporary mosque designs in Türkiye in the context of user-centered design. The main objective of identifying the participants of the face to face survey study as architects and non-architects was to determine the role of architectural education, professional experience, and professional ideologies in opinions regarding contemporary mosque preferences. Accordingly, the weight ratios of the preference criteria of the group, who were architects, on the contemporary mosques build in Türkiye in the recent periods are as shown in Fig. 9. Based on the information obtained in line with the opinions of the architect group, it was determined that the general ranking of the evaluation criteria in the preference of contemporary mosque designs in Türkiye was 0.03, while the weight ratios of aesthetic value, materials and workmanship, dimensions of the building, brand value, and religious symbols in the structure were 0.394, 0.279, 0.143, 0.098, and 0.087, respectively. Considering the consistency ratio, Sancaklar Mosque was preferred at the highest ratio compared to other suggestions. Following Sancaklar Mosque, Büyükada Mosque, Malatya Mosque, Mogan Mosque, İmes Yeşil Mosque, Marmara Theology Mosque, Şakirin Mosque, Yeşil Vadi Mosque, Şeyh Abdurrahman Erzincani Mosque, and Derinkuyu Mosque were determined as other mosques ranked depending on their preference weights. When the graph in Fig. 9 is examined by considering the decision-making criteria, it is seen that Sancaklar Mosque is preferred with a large margin (0.67), especially in terms of "aesthetic value". In addition, it is seen that the "brand value" criterion of the structure is prominent in user preferences (0.90). It is seen that the use of natural building materials comes to the fore in the general view, and the Büyükada Mosque and Malatya Mosque, which attract attention with their wooden structures, come to the fore

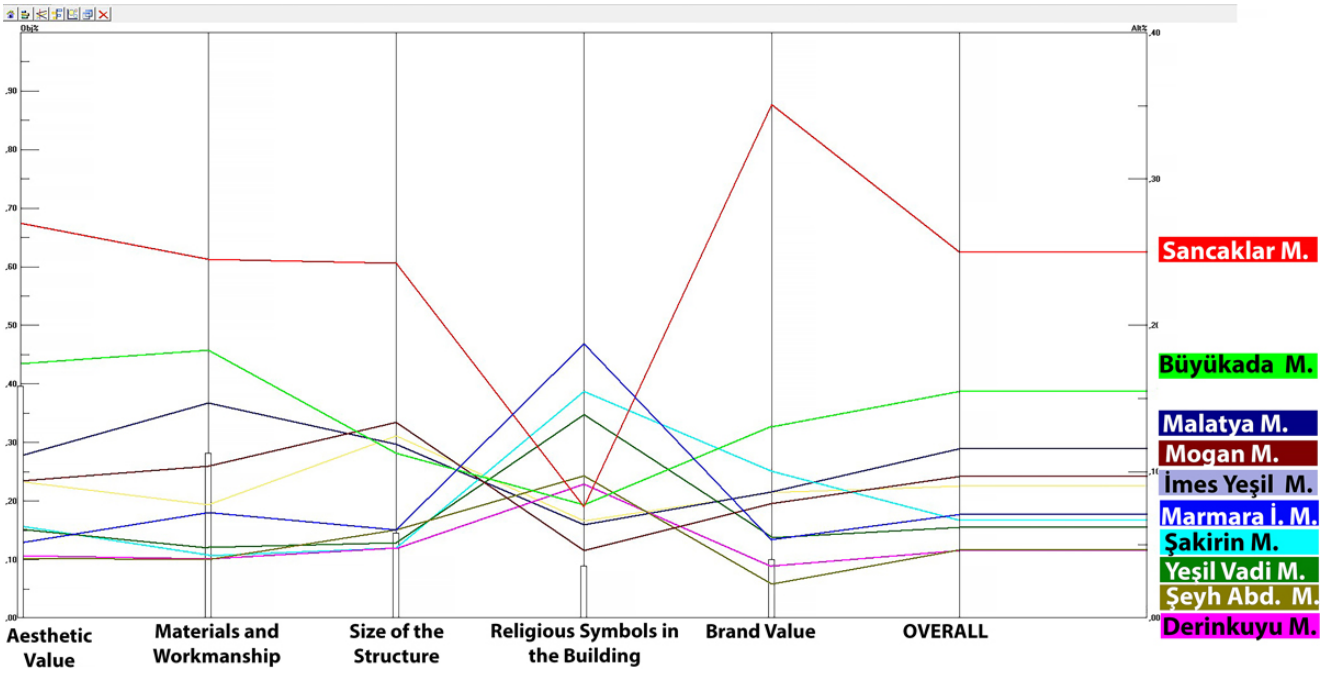

Fig. 9 Criteria for the taste of the contemporary mosque and the preferences of the architects

in this criterion. It is understood that the general preference tendency in terms of the building dimensions criterion is in favor of small-scale buildings. Regarding the criterion of religious symbols in the building, it is seen that the Marmara Theology Mosques come to the fore, while the Sancaklar mosque recedes to the lower ranks. The preference criteria of the non-architect user group on the contemporary mosques build in Turkey in recent years are presented in Fig. 10. In the context of user-centered design, it was determined that the overall ranking of the evaluation criteria in determining contemporary mosque preferences in Türkiye was 0.05. The factor weights of religious symbols in buildings, materials and workmanship, aesthetic value, dimensions of the building, and brand value

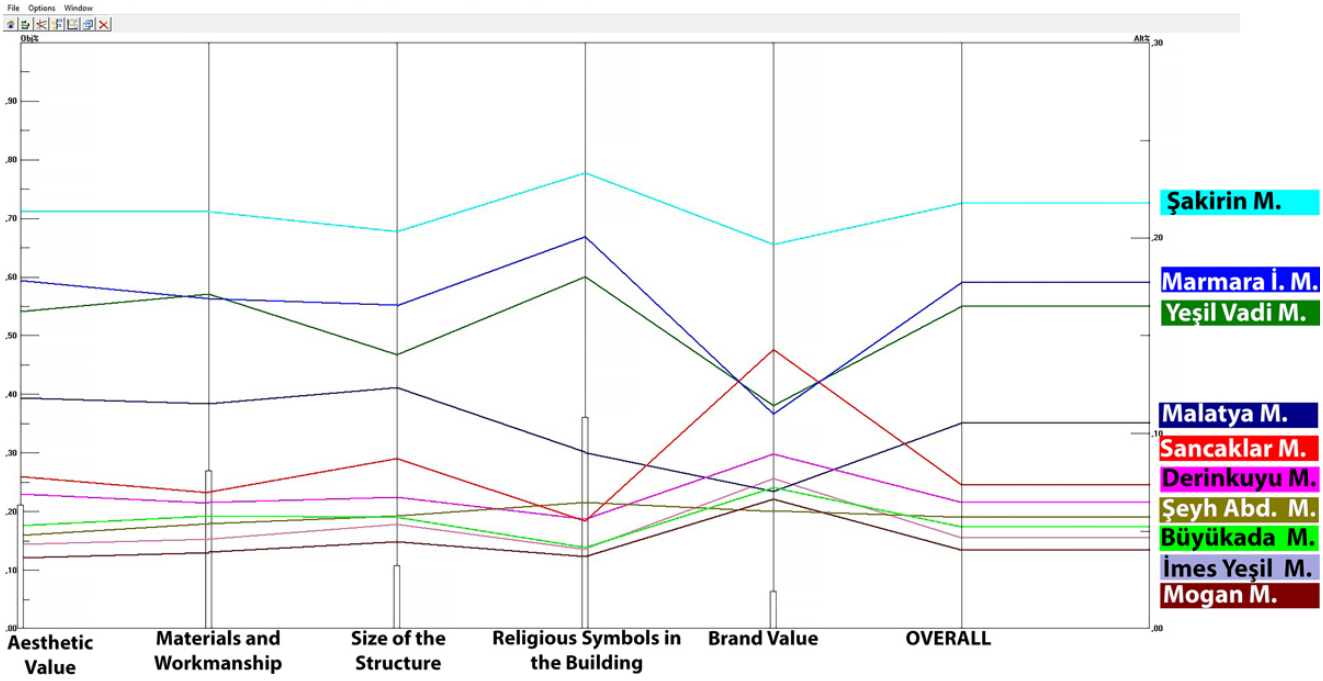

Fig. 10 Criteria for the taste of the contemporary mosque and the preferences of the non-architect group

were found as 0.358, 0.267, 0.209, and 0.105, respectively. The ranking of the alternatives had a consistency ratio of 0.03. Şakirin Mosque received the highest ratio compared to other suggestions. The criteria for the use of religious symbols in the building was an important factor in the preference of Şakirin mosque. Following this mosque, Marmara Theology Mosque, Yeşil Vadi Mosque, Malatya Mosque, Sancaklar Mosque, Derinkuyu Mosque, Şeyh Abdurrahman Erzincani Mosque, Büyükada Mosque, İmes Yeşil Mosque, and Mogan Mosque were preferred respectively. When the graph in Fig. 10 is examined, it is seen that according to the evaluation criteria, Şakirin Mosque was preferred more than the other alternatives in each criterion. Marmara Theology and Yeşil Vadi Mosques were preferred most after Şakirin Mosque by the non-architect group, especially according to the criterion of "use of religious symbols in the building". In addition, it is seen that non-architect participants prefer the domed building form. Considering the general results of the survey, the resulting graph is as in Fig. 11.

It was determined that in the context of user-centered design, the overall ranking of the criteria in determining contemporary mosque designs in Türkiye was at the consistency ratio of 0.04. As seen in the general graph, the rates of aesthetic value, materials and workmanship, religious symbols in the building, dimensions of the structure, and brand value were found as 0.307, 0.292, 0.188, 0.131, and 0.082, respectively. The rank of the alternatives was at the consistency ratio of 0.02. Sancaklar Mosque received the highest ratio compared to other suggestions. Following this mosque, Malatya Mosque, Şakirin Mosque, Marmara Theology Mosque, Yeşil Vadi Mosque, Büyükada Mosque, İmes Yeşil Mosque, Mogan Mosque, Derinkuyu Mosque and Şeyh Abdurrahman Erzincani Mosque were preferred respectively.

When the graph in Fig. 11 is examined, it is seen that in terms of "aesthetic" value, Sancaklar Mosque was preferred by a large margin compared to the others. Regarding the criterion of "religious symbols in the building", it is seen that Şakirin and Marmara Theology Mosques come to the fore, while the Sancaklar mosque recedes to the lower ranks. Based on this, it can be said that the dome architecture is seen especially as a religious symbol and is a reason for preference. The criterion of "brand value of the building" came to the fore in Sancaklar Mosque for both participant groups. The reason for this is the awareness created by the designer of the building; therefore, it is thought that the media factor is effective. In terms of the "material" criterion, it is seen that the use of natural building materials comes to the fore in the general view, and mosques that attract attention with their wooden structures stand out in this criterion. Finally, in terms of the criterion of "building dimensions", it was determined that general preferences were made on small-scale structures.

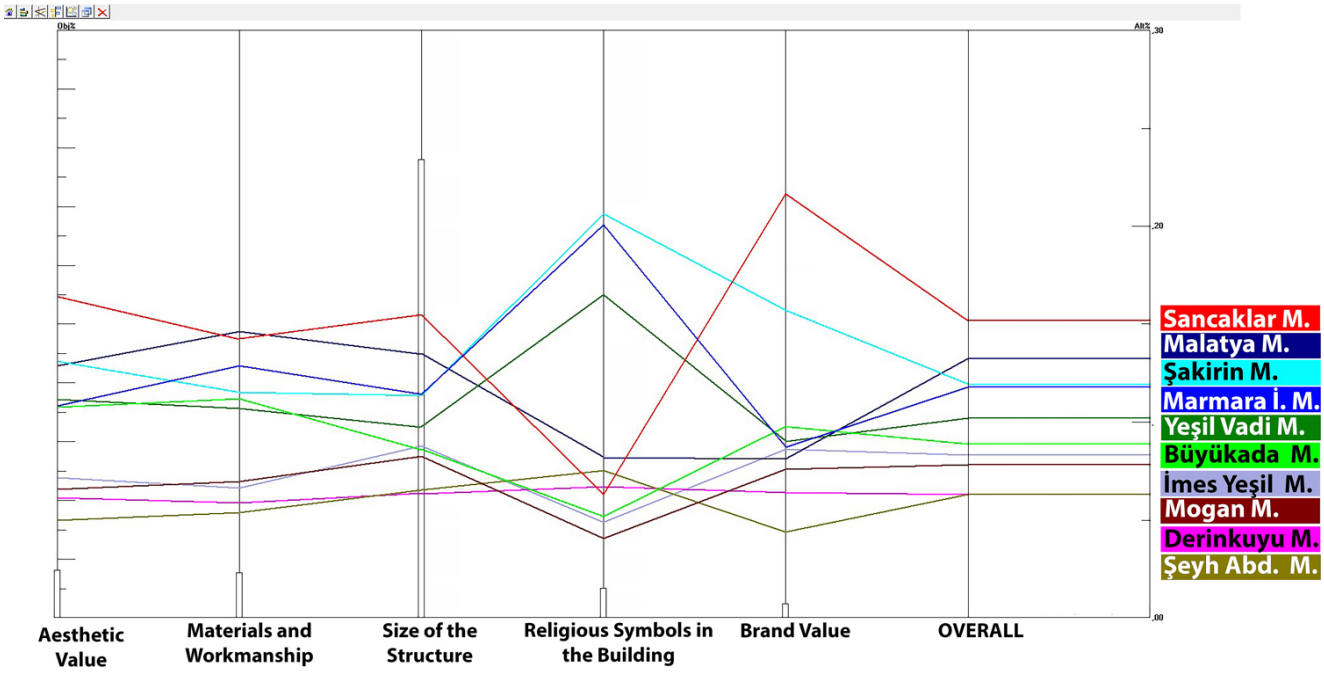

Fig. 11 Criteria for the taste of the contemporary mosque and the general preferences of the participants

4 Conclusion

In this article, designs of contemporary mosques build in Turkey in the 21st century were evaluated with a user-centered perspective. In order to make this evaluation, evaluation criteria were created first. These evaluation criteria were the aesthetic value of the building, materials and workmanship, dimensions of the building, the use of religious symbols in the building, and the brand value of the building. Then, to test these evaluation criteria and evaluate the factor weights, two different participant groups were determined: architects and non-architects. The main purpose of separating the participants of the study as architects and non-architects was to determine the evaluation perspective of the architects as a professional and the role of their professional ideologies in contemporary mosque preferences. As a result of the survey study, it was seen that the main criteria that determine the modern mosque preferences of the architect group were aesthetics, the brand value of the building, and material and workmanship. Considering these criteria, it was determined that the modern mosque preference of the architect group was Sancaklar Mosque. It is thought that the modern approaches adopted during architectural education, the choice of contemporary materials, the abundant and controlled use of light in the space, and the concept of simplicity in design were effective in this preference. In addition, it was observed that thanks to the recognition of the designer of the building in the field of national and international architecture, the brand value of the building came to the fore and was more easily adopted by the architects. On the other hand, it was determined that the non-architect group was more influenced by the presence of religious symbols while they preferred modern mosques. Based on this, it can be inferred that non-architect users prefer structures that refer to the traditional and especially adopt domed forms. When the preferences of the architects and non-architects are compared, it is possible to say that the architects prefer more minimalist mosque designs that do not refer to the past, whereas the non-architects prefer traditional designs. Based on this inference, it can be said that the professional ideologies provided by the architectural profession and architectural education can differentiate the preferences made. Considering that modern and minimalist forms have been at the forefront and designs that are not against nature and the use of contemporary materials have been adopted and taught in the education process in Turkey since the 20th century, it is expected that those who are architects will create decision-making systems according to these criteria. On the other hand, in the context of the study, participants who were not from the profession of architecture, preferred modern mosque designs with traditional religious building elements and remained within the framework of "resident urban memory". In this case, it can be emphasized that architects educated with the modern architectural education are needed in the creation of a modern built environment.

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