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Biyofilik Tasarım Parametrelerinin Ağırlıklarının SWARA Yöntemi ile Belirlenmesi

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ABSTRACT:

This study is conducted to determine the weights of biophilic design parameters created by empirical experiments in the literature and the effects of the human-space-nature relationship in human psychology, due to the recent COVID-19 pandemic that the whole world has been exposed to. It is aimed to calculate the weights of biophilic design parameters, that are discussed under 3 main headings and 14 basic parameters in the literature by using the SWARA method, which is used to determine criteria weights in decision making and performance evaluation processes. Accordingly, a survey has been conducted on 40 national and international architects working for both academic and non-academic environments. The survey results are used in the SWARA method and the weights of the biophilic design parameters are determined. According to the results obtained, prospect (wide panorama), visual connection with the nature and connection with the natural system parameters and processes are determined as the most important design parameters to determine the effects of human-space-nature relationship in human psychology. It is also aimed to use these results in further studies to establish and to develop the concepts like "Biophilic Footprint" or "Biophilic Efficiency Coefficient" in the architectural literature.

KEYWORDS: Biophilic Design, Biophilic Design Parameters, SWARA, Biophilic Efficiency Coefficient.

ÖZ

Bu çalışma son dönemde tüm dünyanın maruz kaldığı COVID-19 pandemisi ile birlikte insan-mekan-doğa ilişkisinin insan psikolojisindeki yeri ve etkileri üzerine literatürde yer alan ampirik deneylerle oluşturulmuş biyofilik tasarım parametrelerinin ağırlık katsayılarının ölçülmesi üzerine kurgulanmıştır. Karar verme ve performans değerlendirme süreçlerinde kriter ağırlıklarının belirlenmesi için kullanılan SWARA yöntemi ile, literatürde 3 ana başlık ve 14 temel

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parametre altında ele alınan biyofilik tasarım parametrelerinin ağırlıklarının hesaplanması amaçlanmıştır. Bu maksatla, 40 kişilik ulusal ve uluslarası düzeyde akademik ve uygulama yapan mimara bir anket çalışması yapılmıştır. Elde edilen anket sonuçları SWARA yönteminde kullanılmış ve biyofilik tasarım parametrelerinin ağırlıkları belirlenmiştir. Elde edilen sonuçlara göre literatürde yer alan parametrelerden manzara (geniş görüş alanı), doğa ile görsel bağlantı ve doğal sistem ve süreçlerle bağlantı parametreleri en önemli tasarım parametreleri olarak belirlenmiştir. Ayrıca elde edilen bu sonuçların ilerleyen çalışmalarda kullanılması ve "Biyofilik Ayaz İzi" veya "Biyofilik Yeterlilik Katsayısı" gibi kavramların literatüre kazandırılması amaçlanmaktadır.

ANAHTAR KELİMELER: Biyofilik Tasarım, Biyofilik Tasarım Parametreleri, SWARA, Biyofilik Yeterlilik Katsayısı.

"Determining The Weights Of Biophilic Design Parameters Via SWARA Method"

INTRODUCTION

After the Covid 19 period all over the world, the use of public and living spaces have been questioned with the start of "social distance", "complete closure" issues and the rules required by the process. Accordingly, the approaches in the basic research areas of architecture and social sciences have changed with the process. There are some points that need to be reconsidered in the principles of spatial design with the change in the use and perception of daily life. The urbanized people necessarily have tried to strengthen their relationship with the nature in this crisis environment, and this situation has led to transformations in various scales, from decentralization at macro scale to the pointwise transformations of the living space at micro scale. On the other hand, the effects, and pressures of concepts such as the "speed of global life", "consumption" have brought with them the signals given to urban life by these rapid transformation models, which are implemented as "mandatory" today. The concept of sustainability has been defined by the capitalist system through the motto of "the world is sinking" (Eris & Basyazici, 2013) and the "green is the new black" (Cetin, 2013) discourse long before the pandemic period. It has been already started with the system becoming a fashion concept by instrumentalizing these concepts and turning into a kind of marketing strategy. The consumption culture of the period has brought with its antithesis and has caused the re-emergence of ecological village designs, sustainable settlements, and design approach theories of biophilic design. However, in the context of the importance of the issue, these concepts are being transformed into a kind of consumption and it has become inevitable to turn them into a marketing strategy by using only greening surfaces, energy efficient materials, and even certification to reduce energy consumption on a micro scale (Eris & Basyazici, 2013). It would not be wrong to say that the importance of the need for living in nature and strengthening the relationship with nature have increased with the pandemic. Considering the current situation within this framework, beyond the slogans/mottos of energy saving and nature-friendly settlements, the current situation and the problems reactivate the instinctive tendencies that people have towards nature which they forgot/ignored/alienated with the life situations imposed by the urbanization. In this context, the subject of "biophilic design", which is a design approach that leads to a nature-based dialogue between a series of innate human characteristics in the architectural literature, gains great importance in the above-mentioned inquiries, rethinking and production processes. On the other hand, although there are some biophilic design evaluation parameters categorized in the literature, there has been no quantitative calculations and evaluations about the degree to which building structures are biophilic and which biophilic design parameters should be considered. In this context, this study claims to introduce the concepts of biophilic footprint and biophilic proficiency coefficient by investigating this question: "Could the biophilic design parameters in the literature be evaluated with objective or subjective methods?". Additionally, there are 14 basic principles in the literature as biophilic design parameters besides the concept of sustainability. The question of whether a more holistic perspective can be established to handle with the issue of the predominance/presence of sensory qualities also needs detailed investigation. Considering the hypotheses/approaches put forward to explain the biophilic design; definitions can be seen such as "an approach that aims to improve people's feelings of physical and mental health and well-being by re-establishing the relationship between human and nature in the modern urban space" (Kellert & Calabrese, 2015); "attraction to everything that is alive (Fromm, 1964), "innate tendency to focus on life and a lifelike processes" (Wilson, 1984), "innate emotional affiliation of human beings to other bodies" (Wilson, 1993), "inborn affinity human beings have for other forms of life, an affiliation evoked, according to the circumstances by pleasure, or a sense of security, or awe, or even fascination blended with revolution" (Wilson, 1994), " deep familiarity of humans to nature and their biology originate from biological production" (Wilson, 1984), "the structure of our brains at least partially at the time of birth contains certain basic mental facilities that develop with contact with the external environment in a somewhat predictable fashion" (Krcmarova, 2009).

Therefore, in this study, the design evaluation parameters are discussed with the claim that the biophilic design parameters have increased their weights in the literature increases as a result of the re-remembering the instinctive natural environment relations that people have existentially during the pandemic period and attention is drawn to the increase in awareness of the biological-based attractiveness towards certain aspects of the environment. Although a psychological disposition on sensory relationship construction is mentioned, it is aimed to present the parameters as a concept with the aim of enabling the "biophilic efficiency coefficient" to be calculated objectively beyond the subjective measurement criteria, and the very first attempt to be able to calculate "biophilic footprint". For this reason, within the scope of the study, it was considered to conduct a survey to evaluate the evaluation criteria of the subject, especially to a group of academic and practicing architects. SWARA technique, which is a scientific criterion weighting method used in the decision-making process and performance evaluation process in almost every sector. It has been directed to the group of architects who have potential to assume a decision-making role to evaluate the biophilic design parameters in the architectural literature and to calculate the importance and weights of the parameters. It is foreseen that this study, the technique, which has not been used before in the context of architectural design criteria in the literature, is conceptually discussed in the context of revealing the biophilic design valuation system. It is predicted that this study can provide a basis for the creation of a weighting method in the context of valuation in future studies. For this reason, the handling of the SWARA method in the literature is also in the main axis of the study.

This study was conducted on the determination of the importance levels of the fourteen basic parameters defined by the designers in biophilic design, and the SWARA technique was used to determine the weights of these criteria. SWARA technique is one of the most frequently employed tool in solving complex multi-criteria decision-making problems. It is used in a wide range of areas such as the selection of clean technologies, sustainable energy resources, successful logistics activities, personnel and machinery selections.

Jaber (2019) has used the SWARA method in his study to determine and evaluate risk criteria for construction projects in Iraq. He has determined ten criteria for risk assessment and calculated the weights of these criteria using the method. He has concluded that the most important risk assessment criteria are threat, consequence and risk conjunction, respectively (Jaber, 2019). Zavadskas and his colleagues have added rough numbers to the traditional SWARA method and tested this new approach for logistics activities. In addition, they have analysed the accuracy of the weight results obtained with the new model they have developed by making sensitivity analysis and evaluating them with Rough Best Worst method and Rough Analytic Hierarchy Process (Zavadskas et al., 2018).

In present conditions, where human is the most important capital, the SWARA method has been used to determine which criteria are important and weight in the selection of personnel to work in the IT department. Subject competency has been determined as the most important selection criterion and grey additive ratio assessment (ARAS-G) method has been used to determine the best among five different candidates (Heidary Dahooie et al., 2018). In a combined model, SWARA and fuzzy VIKOR methods were used together to solve the supplier selection problem. In the study conducted in Iran, three suppliers have been evaluated according to five different criteria. While delivery has been determined as the most important criterion, the best supplier providing the best delivery has been determined as the first supplier (Ajalli et al., 2019). Bas and his colleagues (2020) used ARAS and TOPSIS methods together with the SWARA method in order to determine the effects of the changes in the financial structures of the companies traded on the Istanbul stock exchange as being used in 2016, 2017 and 2018 on their financial performance. Financial ratios obtained from the balance sheets and income statements have been taken as evaluation criteria and their weights have been calculated with SWARA (Bas et al., 2020). In recent years, interest in renewable energy resources has increased. Yucenur and Ipekci, on the other hand, have discussed the location selection problem of the marine current energy plant. Four main criteria and 12 sub-criteria have been weighted according to the SWARA method and three different alternatives have been evaluated by using WASPAS method for the best facility location selection (Yucenur & Ipekci, 2021). Karabasevic et al. (2017) have conducted a study on the weights of the evaluation criteria of sales managers by using integrated DELPHI and the adapted SWARA methods. Communication and presentation skills, relevant work experience, CV and personal presentation have been determined as the most significant criteria (Karabasevic et al., 2017). A study by Khalili and Alinezhad (2020) has conducted to measure the performance of aggregate production planning for the auto parts manufacturing industry in Iran. Performance evaluation criteria have been defined and weighted using the SWARA technique. The ratio efficiency dominance (RED) method has been used for the performance measurements of the decision-making units (Khalili & Alinezhad, 2020). In a study in the literature, SWARA and SMAA-2 methods have been used together to determine the drug benefit risk analysis. The SWARA method has been preferred due to its ease of use and determination of criterion weights in a short time (Durmaz & Gencer, 2019). The SWARA method has been used to evaluate the criteria and the sub-criteria that affect the farmers mentally. Afterwards, Quality Function Deployment (QFD) technique has been used to suggest design parameters to minimize work stress on farmers (Chauhan et al., 2021).

As seen on the literature review above, SWARA method could be used to evaluate the criteria and to determine their weights in many sectors from health to production, from construction to finance. In this study, this technique has been used to evaluate the biophilic design parameters in the architectural field due to its relatively shorter calculation time and its ease of use.

MATERIALS and METHODS

A total of 14 basic parameters forms the basis of biophilic design and could be encountered in the projects of many architects in recent years. The flow chart of this study which has been conducted for determining biophilic design parameters' weights is given in Figure 1.

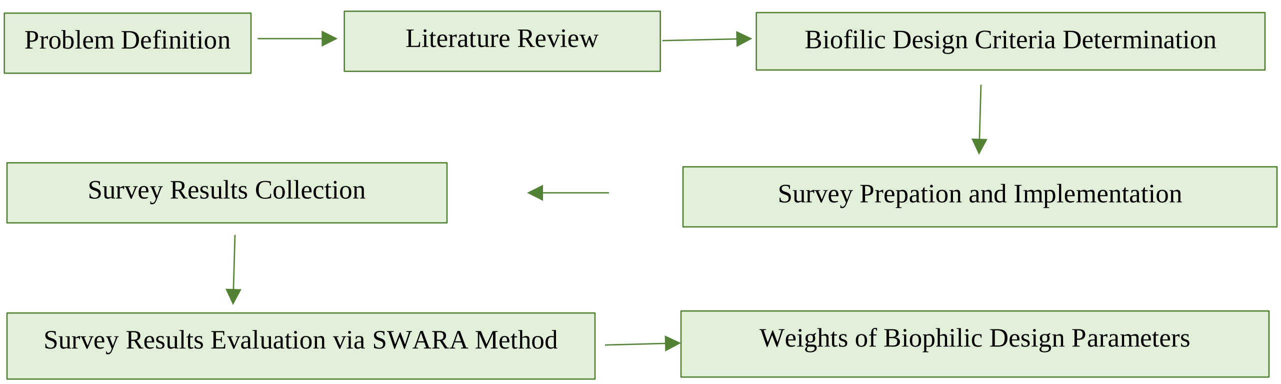

Figure 1. Flow chart of the study

In this section, biophilic design parameters, which are the subject of the study, will be explained in detail. Afterwards, these design parameters will be evaluated with a small-scale survey study. The results obtained by making use of the survey results will be used in the SWARA method, which is one of the subjective weighting methods, and the weights of the biophilic design parameters will be determined depending on their importance levels. In this section, detailed information about the SWARA method used and the steps of the algorithm will be explained.

1. Biophilic Design Parameters

Design parameters, which are claimed to be supported by empirical data in the literature and classified into fourteen items in terms of their functions and domains, have been defined and represented briefly in Table 1. Defined models are discussed under three main categories in order to be clearer: nature in the space, natural analogues and nature of the space. Among the parameters categorized under these three main categories, the issue of nature in space, which is discussed under the first heading, deals with the direct, physical and temporary presence of nature in a space or area, includes plant life, water and animals as well as breezes, sounds, smells and other natural elements (Browning et al., 2014). Nature in the space is handled in seven items: visual connection with nature, non-visual connection with nature, non-rhythmic sensory stimuli, thermal and airflow variability, presence of water, dynamic and diffuse light, connection with natural systems. The subject discussed in the second title is Natural analogues, in which the organic, inanimate and indirect connotations of nature are discussed. The parameters under this title are discussed in the literature under three sub-titles: biomorphic forms and patterns, material connection with nature, complexity and order. Biophilic design parameters, which are considered as the third main topic, are the nature of the space, which is described as the reflection of spatial structures in nature, which includes our innate and learned desires to see beyond our immediate environment, our admiration for the somewhat dangerous or unknown, and fear or confidence-inducing elements. Under this main heading, it is seen that there are four different sub-parameters: prospect, refuge, mystery, and risk/peril factors

Table 1. Categories and definitions of biophilic design parameters

Main Category	Design Parameters	Definition
Nature in the Space	Visual connection with nature	Green space and sea view, green roofs, a wide range of views
	Non-visual connection with nature	Auditory, tactile, olfactory, or gustatory stimuli.
	Non-rhythmic sensory stimuli	The sounds of leaves with the wind or the sound of waves in the water.
	Thermal and airflow	Subtle changes in the air temperature, relative humidity, airflow through the skin and surface temperatures that mimic natural environments.
	Presence of water	Seeing, touching, and hearing the water in the environment.
	Variability dynamic and diffuse light	Copying light and shadow intensities and natural light conditions.
	Connection with natural systems	Awareness of the natural process (like the seasons)
Natural Analogues	Biomorphic forms and patterns	The use of shapes and patterns that are similar to nature.
	Material connection with nature	The use of natural material in designs as it is in the nature or with a little change.
	Complexity and order	The use of the elements/concepts in designs such as symmetry and hierarchy existing in nature.
Nature of the Space	Prospect	The use of large glass surfaces, wide field of view, skylights.
	Refuge	The use of an area in the design where the person can take shelter by escaping from intense activities.
	Mystery	The use of designs that will arouse more curiosity in person.
	Risk/peril	The use of hazards that a person may encounter in the natural environment, if safety precautions are taken, in the design. (Such as high walking and water walking places)

2. Survey and Participants

The survey has been prepared and applied to the participants for the evaluation of all existing parameters, without classification under three main categories, in which the substances in the literature have been discussed as biophilic design parameters. In this context, it is planned to evaluate all biophilic design parameters on the one hand, and to calculate the weights of the subject classified under three main categories in the decision-making process of the participants, on the other hand. In this study, a small questionnaire is designed to rank the biophilic design parameters according to their importance levels and to score according to this order. The prepared questionnaire consists of two stages. In the first stage of the questionnaire, the participants rank the fourteen biophilic design parameters in order of importance from the most important to the least important. In the second stage of the questionnaire, the participants have been asked to give points to the design parameters. They are asked to give 1 point to the parameter in the first place and then score the other parameters as a multiple of five, respectively (The parameters were asked to be scored between 0 and 1). Within the scope of the study, which argues that the SWARA method, which is used as a measurement and evaluation criterion in the article, is a decision-making method and that it should be considered as a holistic approach from land selection to the integration of the criteria to be included in the system in the context of the application of biophilic design principles; It has been decided to apply the questionnaire to the designer-architect group who take part at the beginning of design process. The questionnaire has been sent to a group of 40 people consisting of architects living in different countries in electronic environment. 57.5% of the group consists of women. In addition, the education levels of the group members also show differences. 62.5% of the group completed their master's education and 22.5%

of them completed their doctoral education. Almost half of the group is in the 30-39 age range. 40% of them are between the ages of 20-29.

3. Stepwise Weight Assessment Ratio Analysis (SWARA)

There are objective and subjective techniques used to determine criteria and sub-criteria weights in the literature. SWARA (Stepwise Weight Assessment Ratio Analysis) is also known as an expert-focused method that gives the decision maker the chance to choose their priorities. The main feature of this method is the ability to estimate the expert opinions on the importance ratios of the criteria during the determination of criterion weights (Aytac Adalı & Tus Isık, 2017). Thanks to this simple method, results are achieved in a short time. The basic logic of the method is that the most important criterion is placed first and the highest score is given to it (Sarfaraz Hashemkhani Zolfani & Saparauskas, 2014). In this method, the role of decision makers is important at the stage of evaluating the criteria and determining their weights. Decision makers rank the criteria from the most important to the least important. At this point, since the criteria are evaluated according to the knowledge and experience of the decision makers, different results could be obtained for each decision maker (Violeta Keršulienė et al., 2010).

The steps of the algorithm of the SWARA method are as follows (V. Keršulienė & Turskis, 2011; Stanujkic et al., 2015; Yurdoglu & Kundakcı, 2017; S. H. Zolfani & Banihashemi, 2014):

Step 1. First of all, it is aimed to determine the criteria related to the problem. A team of decision makers is formed, which will then evaluate these criteria. They are evaluated by all decision makers. Each decision maker ranks the criteria according to their importance and puts the most important criterion to the first place. All the criteria are ranked accordingly. After all the rankings are determined, decision makers are asked to give one point to the criterion in the first place. Then, they give points to the following criteria in a multiple of five between 0 and 1. The final scores of the criteria are determined by taking the geometric average of the scores given to each criterion by all decision makers.

Step 2. By starting with the second criterion, relative importance levels are determined for each criterion. In this step, the j criterion is compared with the previous criterion (j-1). S_j values are calculated, defined by decision makers or experts as "the comparative significance of the mean value".

Step 3. The coefficient k_j is calculated using the first equation given below.

$$k_j = \begin{cases} 1 & j = 1 \\ S_j + 1 & j > 1 \end{cases} \quad (1)$$

Step 4. In this step, recalculated weight qj are determined by using equation 2.

$$q_j = \begin{cases} 1 & j = 1 \\ \frac{q_{j-1}}{k_j} & j > 1 \end{cases} \quad (2)$$

Step 5. The relative weights of the evaluation criteria are determined using the following equation.

$$w_j = \frac{q_j}{\sum_{k=1}^{n} q_k} \quad (3)$$

where w_j is the relative weight of the j_{th} criterion, n refers to the number of such criteria.

RESULTS

In this section, the results of the SWARA method will be detailed step by step to determine the weights of biophilic design parameters. To minimize the deviation in the results obtained by the group of 40 architects, the geometric mean of these results has been taken. The design parameters have been reordered according to the obtained values. The criteria code, order of design principles and their scores are given in Table 2.

Table 2. Geometric mean of biophilic design principles

Criteria Code	Criteria Name	Geometric Mean	Rank
CR1	Visual connection with nature	0.706120	2
CR2	Non-visual connection with nature	0.541117	10
CR3	Non-rhythmic sensory stimuli	0.601131	9
CR4	Thermal and airflow	0.608335	8
CR5	Presence of water	0.658902	5
CR6	Variability dynamic and diffuse light	0.680237	4
CR7	Connection with natural systems	0.694872	3
CR8	Biomorphic forms and patterns	0.331048	14
CR9	Material connection with nature	0.617980	7
CR10	Complexity and order	0.454993	12
CR11	Prospect	0.713513	1
CR12	Refuge	0.657972	6
CR13	Mystery	0.473149	11
CR14	Risk/peril	0.426614	13

All criteria have ordered from largest to smallest according to their relative geometric mean importance scores, and the comparative importance (s_j) values of the geometric mean value for the criteria have been calculated as seen in Table 3. The order of importance of the criteria has been obtained as CR11 > CR1 > CR7 > CR6 > CR5 > CR12 > CR9 > CR4 > CR3 > CR2 > CR13 > CR10 > CR14 > CR8.

Table 3. The comparative importance (s_j) values for all criteria

Criteria Code	The Geometric Mean Value	The Comparative Importance (s_j)
CR11	0.713513	
CR1	0.706120	0.007393
CR7	0.694872	0.011248
CR6	0.680237	0.014635
CR5	0.658902	0.021335
CR12	0.657972	0.000930
CR9	0.617980	0.039992
CR4	0.608335	0.009645
CR3	0.601131	0.007204
CR2	0.541117	0.060014
CR13	0.473149	0.067968
CR10	0.454993	0.018156
CR14	0.426614	0.028379
CR8	0.331048	0.095566

By using Equation 1 and 2, the coefficient (k_j) of each criterion and recalculated weight (q_j) have been calculated and results have been shown in Table 4.

Table 4. The coefficient (k_j) and recalculated weight (q_j) for all criteria

Criteria Code	Coefficient (k_j)	Recalculated Weight (q_j)
CR11	1	1
CR1	1.007393	0.992661
CR7	1.011248	0.981620
CR6	1.014635	0.967461
CR5	1.021335	0.947252
CR12	1.000930	0.946371
CR9	1.039992	0.909980
CR4	1.009645	0.901287
CR3	1.007204	0.894840
CR2	1.060014	0.844178
CR13	1.067968	0.790452
CR10	1.018156	0.776357
CR14	1.028379	0.754933
CR8	1.095566	0.689080

At the last step, by using Equation 3, final criteria weights have been calculated and represented in Figure 2.

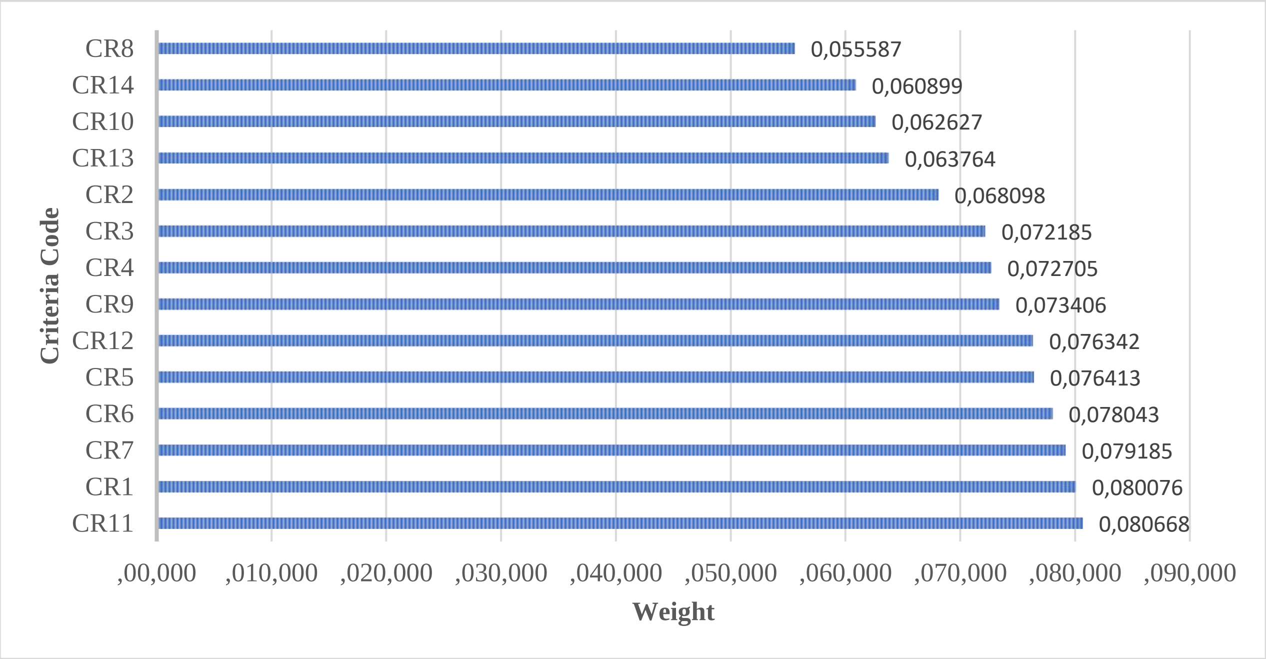

Figure 2. Final weights of criteria

When Figure 2 is examined, the criterion with the greatest weight (0.080668) is CR11, followed by CR1 (0.0801), CR7 (0.0792) and CR6 (0.0780) criteria, respectively. Based on above calculation, prospect is the most important parameter for biophilic design. Architects should firstly consider it. The second important design parameter is visual connection with nature (CR1). Connection with natural systems (CR7) and variability dynamic and diffuse light (CR6) are the other significant parameters.

CONCLUSION

With the COVID-19 pandemic process, which effects the whole world, people whose free movements are restricted have sought new places where they can be intertwined with nature. In this sense, biophilic design parameters, theorized on the relationship between human psychology and space and nature, emerge as a subject that needs to be reinterpreted, especially during this pandemic period.

In this study, biophilic design parameters' weights have been determined using the SWARA method, which is a scientific weighting method. It is thought that these determined weights can be a guide for architects who consider biophilic design parameters in their design processes in architectural projects. In addition, it is aimed to introduce the concepts of "Biophilic Efficiency Coefficient" or "Biophilic Footprint" to the literature with these weights and different scientific techniques to be used later, and it is possible to transform these concepts into a building valuation system with further studies.

At the first step, a group of 40 architects living in various countries participated in the survey conducted to evaluate the criteria. In fact, this number is a limiting factor for this study. To obtain more accurate results, this questionnaire can be applied to individuals who are architects or interior designers in different parts of the world.

While the prospect parameter (CR11) has the highest weight value, on the other hand biomorphic forms and patterns parameter (CR8) has the lowest weight value. The main categories of biophilic design parameters, nature in the space and the nature of the space, have been determined as the most important design parameters in consequence of the weighting method, visual connection with nature (CR1) and prospect long-distance and unobstructed field of view. The relationship established with the natural systems in the sub-title of nature in the space, the reflection of light and shadow conditions on the design are the other most important parameters, respectively. As a result of the weighting study, it can be concluded that one of the important points in the field of architecture is that the weight of organic, biomorphic forms and patterns, which are associated with nature in general, have the least importance among all design parameters. In this context, the findings obtained according to the weight results obtained as a consequence of the SWARA method bring to mind the question that the selection of the place to be designed and the physical properties of the place are much more important than the materials and designed forms that can be came into mind at a very first glance.

As can be seen from Figure 2 above, especially the biophilic design parameters, biomorphic forms and patterns (CR8), complexity and order (CR10), mystery (CR13), and risk/peril (CR14), which are the parameters associated with architectural form and order, seem to have the least importance as a result of the evaluation made by the designers of the questionnaire. The strong visual and/or perceptual relations within the nature system carried the relevant parameters to the primary level by the participants. Therefore, the study reveals that the analogy with nature and the search for form are the biophilic design criteria that have the least weight on the survey result, and the relationship between the nature abstractions used by the architect in the production of space and the biophilic design is a matter to be reconsidered. In this context, in line with the data obtained as a result of this study, in which the study was built on limited architects and only on the ranking of the criteria, in further studies, this study should be done by asking much larger groups of architects, and the criteria weights in the results obtained should be compared with this study. In addition to this, it is thought that a comprehensive study should be done to find out that the aforementioned form searches are at the lowest weights.

In the future, biophilic design parameters can be determined using different criteria weight determination techniques and the results can be compared. In addition, biophilic designs available in different contexts can be evaluated using different scientific techniques according to these criteria.

Compliance with Ethical Standard

Conflict of Interests: The authors declare that for this article they have no actual, potential, or perceived conflict of interests.

Ethics Committee Approval: This study was carried out by the permission of Fenerbahçe University Academic Research and Publication Ethics Commission (with the unanimous vote of the participants) that information can be obtained through online survey (Session number: 2021-6 and date: 06 October 2021).
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