

# Application of Structural Equations in Sustainable Urban Neighborhood Planning with Emphasis on the Spatial Justice Approach; Case Study: Mesbah Neighborhood, Karaj\*

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## ABSTRACT

The rapid growth of urbanization in recent decades has led to social inequality, poverty, and the physical manifestation of this issue in accessing urban capital. Therefore, the most important mission of urban experts is to eliminate these disparities to achieve urban capital for different social groups. This study addresses the issue of spatial justice in the Mesbah neighborhood of Karaj, explaining its components and how they influence each other. The research method is quantitative and utilizes structural equation modeling through SmartPLS software. By reviewing the theoretical literature, the concept of spatial justice and its criteria and indicators were defined. Then, the extracted indicators were quantitatively assessed and analyzed in the case study. For this purpose, a questionnaire was prepared based on the identified indicators and was randomly distributed among 372 residents of the neighborhood. The data were analyzed using structural equation modeling. The results showed that the security factor, with a regression coefficient of 0.764 and a coefficient of determination of 0.583, has the most significant influence on the perception of spatial justice in this neighborhood. The access and public transportation network component ranks second in importance, with a regression coefficient of 0.668 and a coefficient of determination of 0.446. The access to public services and facilities component ranks third, with a regression coefficient of 0.659 and a coefficient of determination of 0.435. Other components include public health (regression coefficient: 0.656), urban management (0.643), sense of place belonging (0.623), identity and culture (0.592), and housing evaluation (0.581), respectively. Therefore, through proper planning of local access, public transportation, and access to local facilities and services, significant improvements can be made in enhancing spatial justice in the Mesbah neighborhood.

**Keywords:** Planning, Sustainable Development, Urban Neighborhoods, Spatial Justice, Mesbah Neighborhood of Karaj.

\* This article is an excerpt from the first author's master's thesis entitled "Sustainable Development Planning of Urban Neighborhoods with a Spatial Justice Approach (Case Study: Mesbah Neighborhood, Karaj City)", which was conducted at Imam Khomeini International University under the guidance of the second author.

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## 1. INTRODUCTION

The advent of the Industrial Revolution, improvement in living standards, the invention of the automobile, and advancements in transportation technology led to the significant expansion of cities after the World Wars and the emergence of environmental issues, pollution, traffic, poverty, and so forth (Ziyari, Mahdinejad, and Parhiz 2009). On the other hand, with the rapid growth of the global population and its concentration in cities, the concept of sustainable development emerged in the 1990s as a fundamental and influential component in the long-term vision of human societies (Gharakhloo and Hosseini 2006).

The pursuit of justice, or the reduction of injustice, is the main goal of all societies and is regarded as a fundamental principle in preserving human dignity and fairness (Soja 2009, 1). The discourse of justice, as one of the pillars of sustainable development in urban issues, plays a vital role in better provision of necessary services and facilities for citizens in a way that ensures equitable access for all. This, in turn, prevents the waste of citizens' time and resources and contributes to urban sustainability (Movahed et al. 2014). Sustainable development based on justice aims to meet the present needs of the world without compromising the ability of future generations to meet their own needs (Badi, Dankoub, and Khouzin 2010).

The application of principles of sustainable neighborhoods and spatial justice in the urban planning process and utilization of neighborhood potentials is essential as a new approach toward promoting spatial justice in neighborhoods. Mesbah neighborhood is among the older areas and one of the foundations of the formation of Karaj city. Therefore, the replacement of various urban land uses has not been carried out through specific planning, which has led to inequalities in access to various services

in this neighborhood. Given that the concept of spatial justice emphasizes equitable distribution of urban facilities, amenities, and services, this study focuses on the issue of spatial justice in the Mesbah neighborhood of Karaj, identifies its components, and investigates how they influence each other.

## 2. RESEARCH METHODOLOGY

The present study is applied in terms of the research objective, as it is used to achieve spatial justice in the sustainable development of the Mesbah neighborhood. In terms of nature, the research is quantitative. To collect data, various library sources—including books, theses, and articles—were used. In addition, field observations including direct observation and distribution of a questionnaire based on selected indicators among neighborhood residents (selected as a sample from the statistical population) were conducted. The resulting data for each indicator were documented accordingly. For this purpose, a questionnaire comprising 42 questions was designed. The sample size and required number of questionnaires were calculated using Cochran's formula. The population of the neighborhood in 2016 was 11,666 people, and with an acceptable error rate of 0.05, the sample size was determined to be 372 individuals. The questions of the questionnaire were derived from the theoretical literature for each indicator and were designed to assess residents' satisfaction levels, structured on a 5-point Likert scale. The sampling method was random. Initially, to assess the validity of the questionnaire for the statistical population, its reliability was measured. For this purpose, Cronbach's alpha was used, and the obtained reliability coefficient of 0.887 indicated acceptable reliability for the research questionnaire.

**Table 1. Overall Reliability Test of Questionnaire Questions**

| Validity Test Result |                  |
|----------------------|------------------|
| Number of Questions  | Cronbach's Alpha |
| 34                   | 0.887            |

In the next section, data obtained from the questionnaire were first examined using inferential statistics in SPSS software to assess normality. Subsequently, structural equation modeling, as one of the most advanced multivariate analysis methods, was employed using SmartPLS software to validate the operational model derived from the theoretical framework and to identify factors influencing sustainable development planning with a spatial justice approach.

## 3. THEORETICAL FOUNDATIONS

This section of the article presents the theoretical concepts of the study, including sustainability and sustainable neighborhoods, spatial justice, and spatial justice in sustainable urban neighborhoods.

### 3.1. Sustainability and Sustainable Neighborhood

An urban neighborhood is a place and region where the dimensions of the subject are highly concentrated.

For example, household reorganization, increases or decreases in mobility, sensitivity to environmental issues such as open spaces, degradation of natural elements, and the growing consumption of resources are all characteristics whose effects can be sensed at the neighborhood scale. In the physical dimension and the quality of life index, aspects such as access to services and facilities, access to the workplace, housing quality, efficiency in the transportation network and its impact on the fabric of communication networks, the image of street networks, the realization of urban design concepts, various construction methods, and the implementation of urban planning regulations can be mentioned (Hajipour 2006).

In general, the important dimensions of people, society, and activity can be observed at the neighborhood scale. In the people dimension, indicators such as population level, trend, and social, economic, and racial groups are expressed. In the social dimension, indicators such as residents' perception of the local community, provision and replacement of services, group activities of residents, and their participation in local policy processes are discussed. The activity dimension includes issues such as local services (position of groups and institutions), economic activities (such as employees and employers, occupations), and mobility and its requirements (vehicular and pedestrian flows, public transportation, speed, and accidents) (Barton 2003). Since sustainable development is the balance between environmental, economic, and social issues, its establishment is also associated with increasing the quantity and quality of dealing with resources, skills, and society (Alihesabi, Hosseini, and Nasbi 2011). In 2005, at the Bristol International Conference, sustainable neighborhoods were defined as: "places where people want to live and work, both now and in the future, and where they work together to improve the quality of life. These sustainable neighborhoods are safe and offer equal service opportunities for all" (Maleki 2011).

### 3.2. Spatial Justice

Since the formation of civilization, cities have faced numerous challenges, among the most important of which are realities such as social inequality, polarization, poverty, and their physical manifestations, such as unequal access to urban assets. In response to these challenges and problems, the discussion of justice entered urban planning (Fainstein 2014).

In the field of spatial justice, two major approaches can be identified: (1) Spatial distribution, and (2) Decision-making processes (Marcuse et al. 2012; 2009; Soja Dufaux et al. 2009). The first approach focuses on questions related to the geographic distribution of resources and amenities — or more precisely, spatial-social distribution — and aims to achieve a form of geographic balance based on the

needs and demands of citizens. This view considers aspects such as equitable access to urban public services, job opportunities, health care, desirable environmental quality, and other basic needs. In contrast, the second approach concentrates on decision-making processes and how they are shaped within social and spatial contexts. This view also includes concepts such as spatial and locational representations, urban identities, and social actions, particularly when these processes are accompanied by discrimination or structural inequality. In other words, spatial justice can be examined both as an "outcome" (product) and as a "process" (procedure) (Dufaux et al. 2009; Soja 2009; Fainstein 2014).

### 3.3. Spatial Justice in Sustainable Urban Neighborhoods

In the first approach, fair distribution of resources can take four forms: equal-based (providing equal services to all people), compensatory/need-based (people who need more services receive more), demand-based (people who have more demand for services benefit), and market system (services are provided based on the market system) (Heckerta and Rosan 2016, 265). Distributive justice, which is based on the principles of equality, has occupied a significant part of the articles with a distributive approach. This type of justice emphasizes the distribution of equal shares and especially equality of opportunities. On the other hand, need-based justice in the distribution of resources pays more attention to social and economic deprivations and the distribution of services according to needs. Also, two market-based and demand-based approaches can be defined within the framework of distributive justice, which has not been addressed in many studies. One reason for this could be the limitation in measuring the indicators of these two types of distributive justice (Dadashpoor and Rostami 2011). Numerous criteria such as land use systems, movement and access systems, identity and culture, economic efficiency, etc. are also used in interpreting spatial justice with an emphasis on fair outcomes in each of these forms (Dadashpoor and Rostami 2011). Therefore, this study examines the indicators of these criteria such as the condition of the road network, distribution of service uses, etc.

The structural justice approach can also be divided into two types of research based on liberal/socialist management ideas and Islamic ideas; among them, research based on liberal/socialist ideas has made a greater contribution to research in the field of structural justice. This approach has a structural view of justice and examines fair processes for achieving spatial justice in the city. Therefore, criteria such as freedom, equal opportunity/equality, difference/diversity, need, participation in public interests, and entitlement are used in the interpretation of spatial justice (Dadashpoor and Alvandipour 2016).

It is noteworthy that although issues related to

distributive justice and access to services and public benefits have been highly significant in urban studies, in recent years, urban researchers have increasingly focused on the factors and causes of unequal urban access (Maly 2016). The importance of these discussions lies in the fact that the second perspective on spatial justice considers it as a critical discourse aimed at countering discrimination, reducing poverty, eliminating social exclusion, and resisting domination. In this interpretation, achieving spatial justice in urban environments requires a proper understanding of the roles of power players in various social and political arenas, as well as an analysis of the interactions of power, governing structures, and processes related to urban planning (Dadashpoor, Alizadeh, and Rostami 2015). Therefore, in this study, urban management indicators such as active public participation, equal citizen choice, etc., have been examined. Figure 1 illustrates the conceptual model of spatial justice in sustainable urban neighborhoods.

#### 4. THEORETICAL FRAMEWORK

After extracting the criteria and indicators based on the concepts of spatial justice from the theoretical sources of the study, in this section — considering the

goals of policymakers, the existing managerial and executive structure, the geographical location of the study area, the economic capacities, and the cultural and social characteristics of space users, as well as taking into account limitations related to time and data access — criteria and indicators were formulated, which are presented in the following table for evaluating the sustainable development of the Mesbah neighborhood in Karaj city to achieve spatial justice. To this end, in the physical dimension, criteria such as land use system, transportation and accessibility, access to public services and facilities, and housing evaluation were considered. In the socio-cultural dimension, criteria such as identity and culture, sense of place, and security were used. In the economic dimension, the criterion of economic efficiency was used. In the environmental dimension, criteria such as natural disasters and environmental pollution were applied. Finally, in the urban management dimension, criteria such as urban environmental management and urban social management were considered, each of which can lead to spatial justice in a sustainable neighborhood. In fact, given the compatibility of the indicators with the target community and the limitations in access to data and information, the assessment of some indicators was excluded.

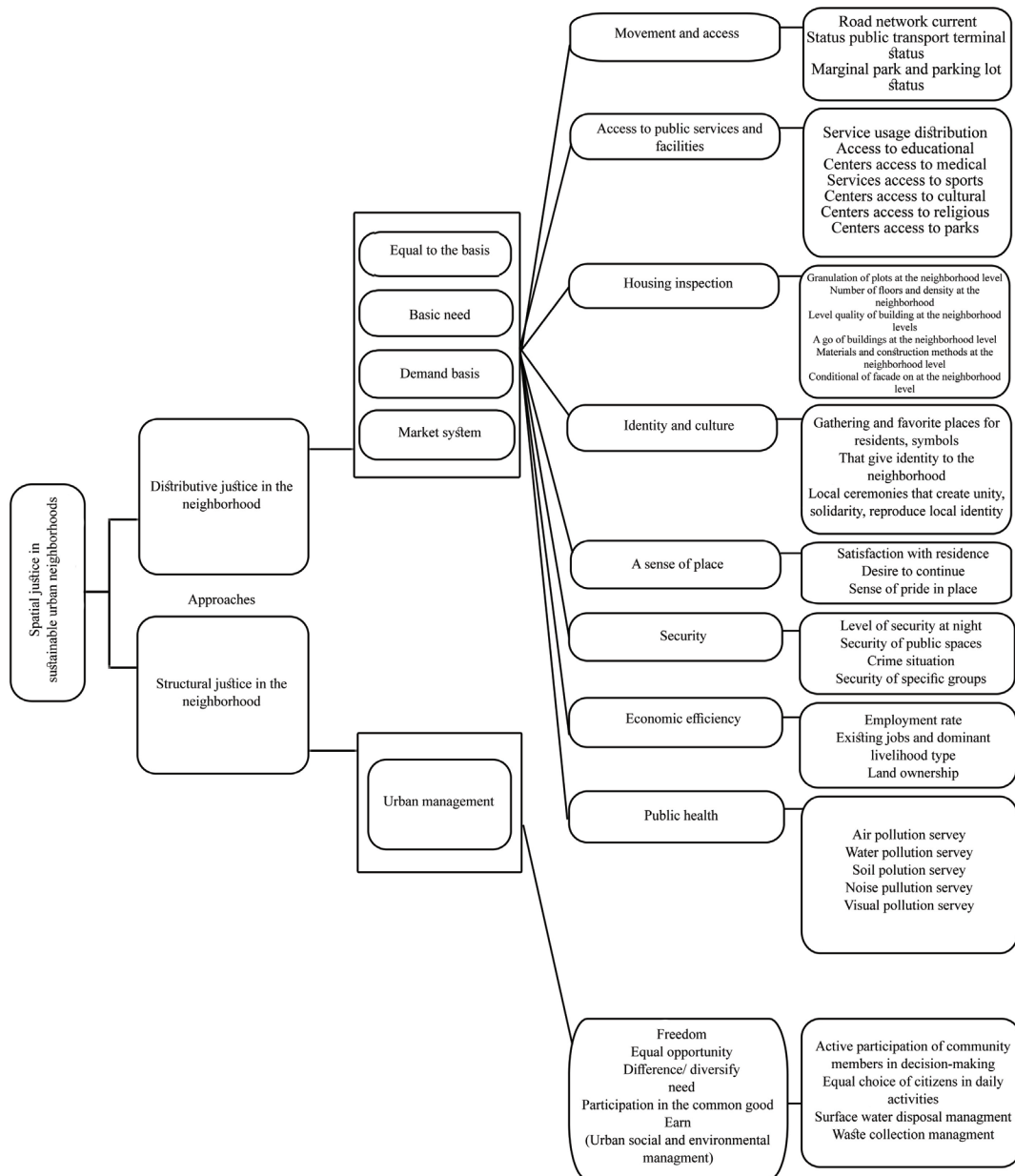


Fig. 1. Conceptual Model of Spatial Justice

(Derived from Alihesabi, Hosseini, and Nasbi 2011; Dadashpoor and Alvandipour 2016; Heckerta and Rosan 2016, 265; Dufaux et al. 2009; Soja 2009; Fainstein 2014)

**Table 2. Criteria and Indicators of Spatial Justice in the Study**

| Dimension  | Criterion  | Indicator   |
|--|--|---|
| Physical   | Mobility and Access (Access to Appropriate Urban Infrastructure)                 | Existing Street Network and its Hierarchy                   |
|  |  | Condition of Public Transportation Terminals                |
|  |  | Condition of Curbside Parking and Public Parking Facilities |
|  | Access to Public Services and Facilities (Equity)                                | Distribution of Service Land Uses                           |
|  |  | Access to Educational Centers                               |
|  |  | Access to Healthcare Services                               |
|  |  | Access to Sports Centers                                    |
|  |  | Access to Cultural Centers                                  |
|  |  | Access to Religious Centers                                 |
|  | Housing Assessment   | Access to Parks   |
| Lot Subdivision Pattern at Neighborhood Level      |  |   |
| Number of Floors and Density at Neighborhood Level |  |   |
| Quality of Buildings at Neighborhood Level         |  |   |
| Building Age at Neighborhood Level                 |  |   |
| Identity and Culture                               | Materials and Construction Methods at Neighborhood Level                         |   |
|  | Façade Condition at Neighborhood Level   |   |
|  | Gathering Places and Residents' Favorite Spots                                   |   |
|  | Symbols Defining Neighborhood Identity   |   |
| Sense of Place Attachment                          | Local Ceremonies Promoting Unity, Solidarity, and Reproduction of Local Identity |   |
|  | Satisfaction with Residence  |   |
|  | Willingness to continue Living in the Area                                       |   |
| Security   | Sense of Pride in the Neighborhood   |   |
|  | Level of Security at Night   |   |
|  | Safety of Public Spaces  |   |
|  | Crime Rate Situation   |   |
| Economic Efficiency                                | Security of Vulnerable Groups  |   |
|  | Economically Active Population, Employment Rate, and Dependency Ratio            |   |
|  | Existing Occupations and Dominant Livelihood Type                                |   |
| Environmental Pollution                            | Land Ownership   |   |
|  | Natural Hazards  |   |
|  | Risk of Earthquake Occurrence  |   |
|  | Risk of Flood Occurrence   |   |
|  | Assessment of Air Pollution  |   |
|  | Assessment of Water Pollution  |   |
| Urban Environmental Management                     | Assessment of Soil Pollution   |   |
|  | Assessment of Noise Pollution  |   |
|  | Assessment of Visual Pollution   |   |
|  | Management of Surface Water Drainage   |   |
| Urban Social Management                            | Solid Waste Collection Management  |   |
|  | Active Community Participation in Decision-Making                                |   |
|  | Equal Right of Citizens to Choose in Daily Activities                            |   |

## 5. CASE STUDY IDENTIFICATION

The city of Karaj is currently divided into 10 municipal districts, with the study area located in District 2, situated in the southeastern part of the city. District 2 of Karaj Municipality is bordered to the north by Ghods and Belal Boulevards, to the south by the boundary of Fardis City, to the east by Shora, Chamran, and Sarhadabad Boulevards, and to the west by Fahmideh Boulevard and Mahdasht Road.

One of the prominent characteristics of this district is the widespread presence of deteriorated urban fabric, particularly in its residential areas. The specific study area of this research is the Mesbah neighborhood of Karaj. Geographically, the Mesbah neighborhood is located at 51°11'11" east longitude and 35°31'61" north latitude. It is considered one of the prominent neighborhoods of Karaj, with a population exceeding 11,666 people.

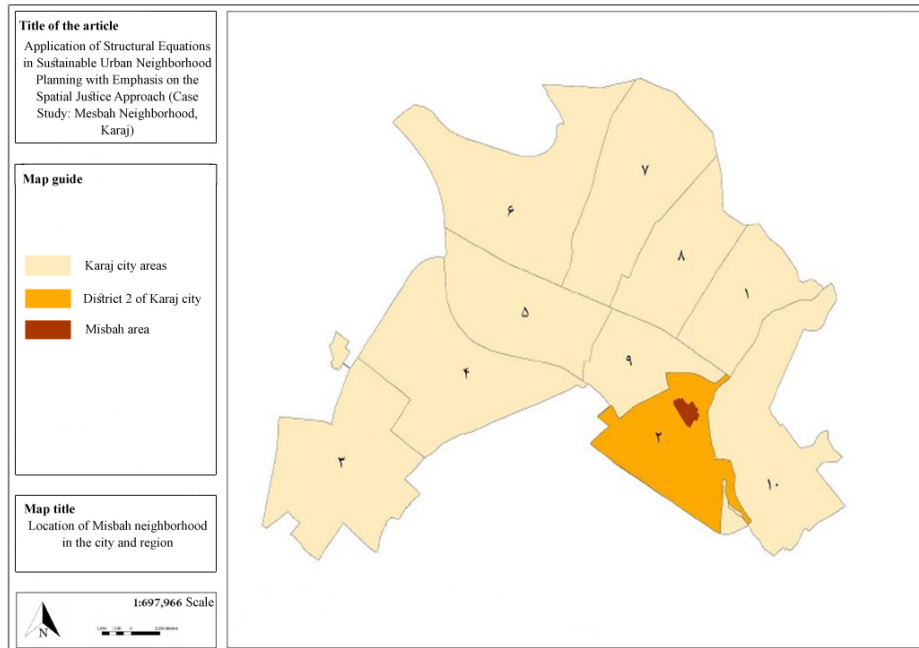


Fig. 2. Location of Mesbah Neighborhood within the City and District

## 6. FINDINGS

This section of the article examines the theoretical model of the research in the Mesbah neighborhood through structural equation modeling (SEM). The structural model includes eight dimensions: the access and mobility system, housing evaluation, identity and culture, sense of place attachment, access to public services and facilities, managerial and environmental factors, security, and public health. These dimensions were entered into the model as independent variables, and the effect of each dimension and its corresponding

indicators on the research dependent variable (spatial justice) was analyzed. To validate the model, confirmatory factor analysis (CFA) was employed. According to the results of the factor loadings, all latent variable indicators had factor loadings greater than 0.4. Among them, only the item corresponding to Question 33 from the managerial dimension had a factor loading below 0.4 and was therefore removed from the model, while the rest of the items were retained. The results of the acceptable factor loadings in the operational model are presented in Figure 3 and Table 3.

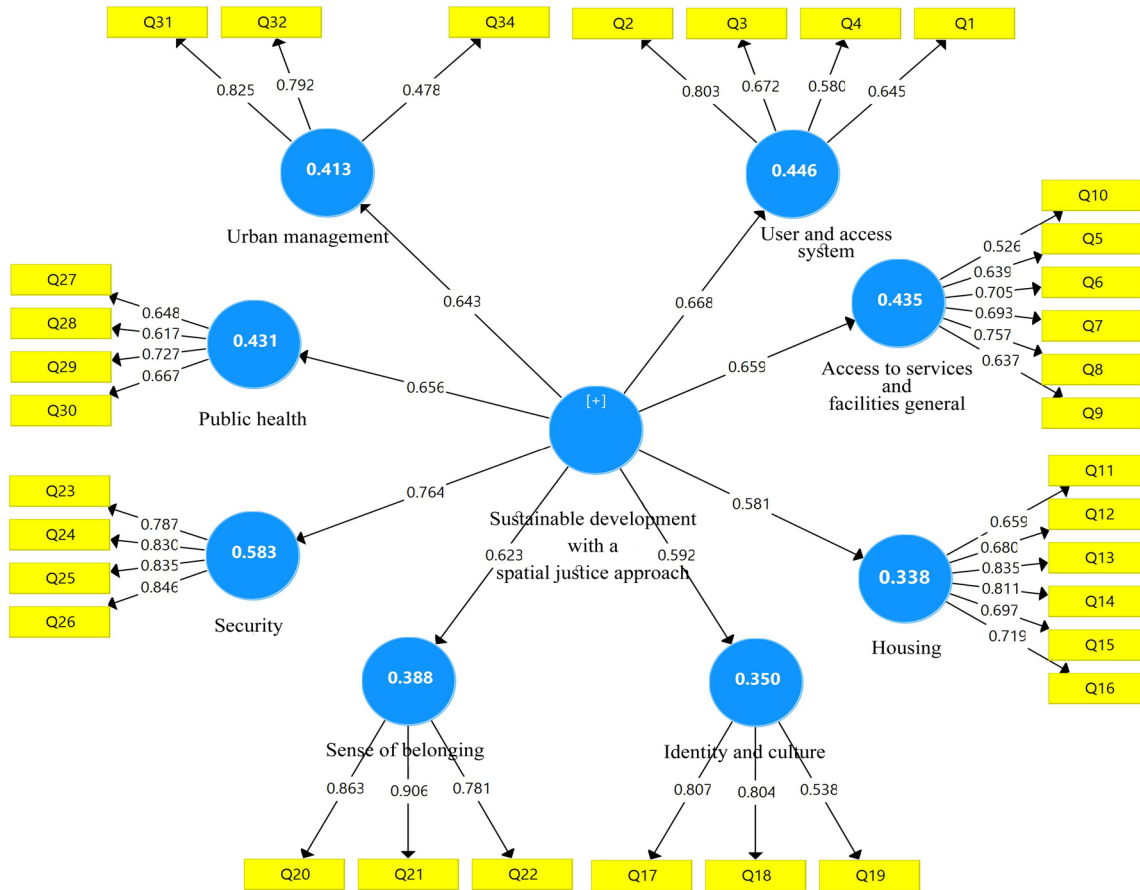


Fig. 3. Regression Coefficients, Factor Loadings, and Coefficient of Determination for the Research Model

Table 3. Acceptable Factor Loadings in the Research

| Research Components                      | Item Description   | Item Code | Factor Loading |
|--|--|-----------|----------------|
| Access and Mobility System               | Diversity of land uses (commercial and residential) in the neighborhood    | Q1        | 0.645          |
|  | Easy access to the main roads of the neighborhood                          | Q2        | 0.803          |
|  | Accessibility to public transport stations                                 | Q3        | 0.672          |
|  | Adequacy of parking space for cars in the neighborhood                     | Q4        | 0.580          |
| Access to Public Services and Facilities | Adequacy and accessibility of educational centers in the neighborhood      | Q5        | 0.639          |
|  | Adequacy and accessibility of medical centers and health facilities        | Q6        | 0.705          |
|  | Adequacy and accessibility of sports centers in the neighborhood           | Q7        | 0.693          |
|  | Adequacy and accessibility of cultural centers in the neighborhood         | Q8        | 0.757          |
|  | Adequacy and accessibility of religious centers in the neighborhood        | Q9        | 0.637          |
|  | Availability of green spaces and parks in the neighborhood                 | Q10       | 0.526          |
| Housing Assessment                       | Satisfaction with the size of the residential unit                         | Q11       | 0.659          |
|  | Satisfaction with the number of floors in the residential unit             | Q12       | 0.680          |
|  | Satisfaction with the quality of the residential unit                      | Q13       | 0.835          |
|  | Satisfaction with the age of the residential unit                          | Q14       | 0.811          |
|  | Satisfaction with the materials and structure used in the residential unit | Q15       | 0.697          |
|  | Satisfaction with the façade of the residential unit                       | Q16       | 0.719          |

| Research Components  | Item Description  | Item Code | Factor Loading |
|----------------------|---|-----------|----------------|
| Identity and Culture | Satisfaction with gathering places in the neighborhood                        | Q17       | 0.807          |
|                      | Attention to old and identity-giving symbols in the neighborhood              | Q18       | 0.804          |
|                      | Willingness to participate in rituals and ceremonies                          | Q19       | 0.538          |
| Sense of Belonging   | Satisfaction with living in the neighborhood                                  | Q20       | 0.863          |
|                      | Willingness to continue living in the neighborhood                            | Q21       | 0.906          |
|                      | Sense of pride and emotional attachment to the neighborhood                   | Q22       | 0.781          |
| Security             | Security while walking at night in the neighborhood                           | Q23       | 0.787          |
|                      | Security in public environments such as parks and public spaces               | Q24       | 0.830          |
|                      | Perceived safety (lack of crime) due to absence of drug users                 | Q25       | 0.835          |
|                      | Level of security for women, children, and the elderly in the neighborhood    | Q26       | 0.846          |
| Public Health        | Air quality in the neighborhood   | Q27       | 0.648          |
|                      | Water quality in the neighborhood   | Q28       | 0.617          |
|                      | Lack of noise and sound pollution in the neighborhood                         | Q29       | 0.727          |
|                      | Lack of visual pollution in the neighborhood                                  | Q30       | 0.667          |
| Urban Management     | Condition of surface water and sewage collection in the neighborhood          | Q31       | 0.825          |
|                      | Condition of garbage collection and environmental hygiene in the neighborhood | Q32       | 0.792          |
|                      | Level of participation in neighborhood management                             | Q34       | 0.478          |

Based on the results obtained from the implemented model, all the values related to composite reliability and convergent validity fell within the acceptable

range; therefore, the reliability and validity of the model were confirmed.

**Table 4. Results of Convergent Validity and Composite Reliability in the Research Model**

| Research Component         | Cronbach's Alpha | Composite Reliability | Average Variance Extracted (AVE) |
|----------------------------|------------------|-----------------------|----------------------------------|
| Sense of Place Attachment  | 0.81             | 0.888                 | 0.726                            |
| Security                   | 0.843            | 0.895                 | 0.68                             |
| Access to Public Services  | 0.741            | 0.823                 | 0.44                             |
| Public Health              | 0.582            | 0.761                 | 0.444                            |
| Urban Management           | 0.505            | 0.75                  | 0.512                            |
| Housing                    | 0.828            | 0.876                 | 0.542                            |
| Land Use and Accessibility | 0.604            | 0.772                 | 0.462                            |
| Identity and Culture       | 0.545            | 0.766                 | 0.529                            |

Table 5 shows the results of examining the divergent validity of the latent variables. The values entered in the main diagonal of the matrix were greater than the correlations in the cells downstream and to the

left of them. Therefore, it can be concluded that the divergent validity of the model under study has been confirmed.

**Table 5. Discriminant Validity Matrix of Latent Variables**

|                            | Sense of Place | Security | Public Services | Public Health | Urban Management | Housing | Accessibility | Identity |
|----------------------------|----------------|----------|-----------------|---------------|------------------|---------|---------------|----------|
| Sense of Place Attachment  | 0.852          |          |                 |               |                  |         |               |          |
| Security                   | 0.825          | 0.441    |                 |               |                  |         |               |          |
| Public Services            | 0.663          | 0.374    | 0.257           |               |                  |         |               |          |
| Public Health              | 0.666          | 0.301    | 0.427           | 0.324         |                  |         |               |          |
| Urban Management           | 0.716          | 0.564    | 0.356           | 0.394         | 0.228            |         |               |          |
| Housing                    | 0.736          | 0.308    | 0.291           | 0.213         | 0.3              | 0.308   |               |          |
| Land Use and Accessibility | 0.68           | 0.332    | 0.346           | 0.285         | 0.465            | 0.425   | 0.347         |          |
| Identity and Culture       | 0.727          | 0.306    | 0.102           | 0.353         | 0.38             | 0.395   | 0.423         | 0.343    |

Next, the significance of the relationship between the variables was examined, the results of which are presented in Table 6, and based on the results, all hypotheses of the research model are approved. In other words, it can be acknowledged that the eight components of the access and mobility system, housing survey, identity and culture, sense of place, access to public services and facilities, management and environmental factors, and public safety and health as independent variables, have a significant relationship with the dependent variable of the research, which

is the sustainable development planning of Mesbah neighborhood with a spatial justice approach. This relationship will be approved, given that the significance of p-values in all relationships is less than 0.05, and given that the t-values have values greater than 1.96, it indicates the validity of the relationship in the structures. Therefore, the research assumptions in the structural model will be approved. Also, the value of the coefficient of determination (R<sup>2</sup>) of the model structures is at a relatively favorable level.

**Table 6. Results of the Significance of Research Hypotheses and the Coefficient of Determination of Constructs in the Structural Model**

| Research Hypotheses  | Standard Deviation (STDEV) | T Statistics ( O/STDEV ) | P Values | Hypothesis Test | R-square | R <sup>2</sup> Strength |
|--|----------------------------|--------------------------|----------|-----------------|----------|-------------------------|
| Sustainable Development with a Spatial Justice Approach → Sense of Place Attachment                | 0.044                      | 14.193                   | 0.00     | Confirmed       | 0.388    | Moderate                |
| Sustainable Development with a Spatial Justice Approach → Security                                 | 0.025                      | 30.481                   | 0.00     | Confirmed       | 0.583    | Strong                  |
| Sustainable Development with a Spatial Justice Approach → Access to Public Services and Facilities | 0.041                      | 16.008                   | 0.00     | Confirmed       | 0.435    | Strong                  |
| Sustainable Development with a Spatial Justice Approach → Public Health                            | 0.035                      | 18.628                   | 0.00     | Confirmed       | 0.431    | Strong                  |
| Sustainable Development with a Spatial Justice Approach → Urban Management                         | 0.032                      | 19.8                     | 0.00     | Confirmed       | 0.413    | Strong                  |
| Sustainable Development with a Spatial Justice Approach → Housing                                  | 0.049                      | 11.96                    | 0.00     | Confirmed       | 0.338    | Moderate                |
| Sustainable Development with a Spatial Justice Approach → Land Use and Accessibility System        | 0.032                      | 21.095                   | 0.00     | Confirmed       | 0.446    | Strong                  |

Based on the results obtained from the software output, the  $Q^2$  index, shown in Table 7, indicates that the model enjoys good quality. In other words,

the obtained values of this index suggest that the structural model's fit is acceptable and desirable.

**Table 7. Results of the Predictive Relevance Values ( $Q^2$ ) in the Structural Model**

| Research Components                      | $Q^2 (=1-SSE/SSO)$ | Strength |
|--|--------------------|----------|
| Sense of Place Attachment                | 0.264              | Strong   |
| Security                                 | 0.371              | Strong   |
| Access to Public Services and Facilities | 0.177              | Moderate |
| Public Health                            | 0.179              | Moderate |
| Urban Management                         | 0.201              | Strong   |
| Housing                                  | 0.17               | Moderate |
| Land Use and Accessibility System        | 0.187              | Moderate |
| Identity and Culture                     | 0.177              | Moderate |

After the model was validated and fitted, the final model was confirmed and the hypotheses were extracted accordingly. Based on the results of the regression coefficients, the most significant impact on sustainable neighborhood development planning with a spatial justice approach in the Mesbah neighborhood is related to the security factor, with a regression coefficient of 0.764, indicating a greater influence compared to other research components in this neighborhood. Moreover, this factor, with a determination coefficient ( $R^2$ ) of 0.583, has the highest explanatory power of the dependent variable in the study. Among the indicators of the security factor, item Q26, titled "Security for women, children, and the elderly," has the highest factor loading value at 0.846, representing the greatest impact and importance in the neighborhood's security. Following that, items Q24, Q25, and Q23, titled "freedom from criminality," "security in public spaces," and "security while walking at night," respectively, have higher factor loadings and should be prioritized in planning. The second most influential component in sustainable development planning in this neighborhood relates to the component of land use and accessibility systems. With a regression coefficient of 0.668 and a coefficient of determination of 0.446, it ranks second in importance. This component is introduced with four indicators, which, in order of importance, are: easy access to the neighborhood's main streets (factor loading 0.803), access to public transportation stations (factor loading 0.672), diversity of land use (factor loading 0.645), and finally, adequacy of car parking spaces (factor loading 0.580). These indicators hold the greatest importance in this neighborhood from the perspective of sustainable development planning with a spatial justice approach. Following this, the component access to public services and facilities is placed next, with a regression coefficient of 0.659 and a coefficient of determination of 0.435, as displayed in the empirical model resulting from the research's

operational model. This component highlights the significance of public services and facilities in this neighborhood, which should be addressed and planned through its related indicators. Accordingly, access to public services and facilities must be considered through its six indicators, based on their factor loadings in descending order: adequacy and access to cultural centers, adequacy and access to healthcare and sanitation facilities, adequacy and access to sports centers, adequacy and access to educational centers, adequacy and access to religious centers in the neighborhood, and the amount of green space and parks in the neighborhood.

The next component is public health, with a regression coefficient of 0.656 and a coefficient of determination of 0.431. This component is defined by four items: lack of noise and sound pollution, absence of visual pollution in the neighborhood, air quality, and water quality in the neighborhood, which have factor loadings of 0.667, 0.727, 0.648, and 0.617 respectively. These items have the highest significance in explaining the public health of the Mesbah neighborhood. Following public health is the component of urban management, which ranks next with a regression coefficient of 0.643 and a coefficient of determination of 0.413. Since one item of this component was removed during the confirmatory factor analysis process for being inappropriate, the remaining three items are: the status of garbage collection and environmental hygiene in the neighborhood, the status of surface water and sewage management, and the level of participation in neighborhood management, which have higher factor loadings in that order.

Finally, three components—the sense of place attachment (regression coefficient 0.623), identity and culture (regression coefficient 0.592), and housing evaluation (regression coefficient 0.581)—each play a role in explaining the structural model of the research and in sustainable development planning with a spatial justice approach. The sense

of place attachment component has a coefficient of determination of 0.388, indicating that 38.8% of sustainable development planning in the Mesbah neighborhood is explained by this component and its indicators, including satisfaction with the desire to continue living, satisfaction with residence in the neighborhood, and a sense of pride and emotional attachment to the neighborhood. Next is the identity and culture component, defined by three indicators: satisfaction with gathering places in the neighborhood, maintenance of historical and identity-giving symbols, and willingness to participate in rituals and ceremonies, which contribute to explaining the dependent variable. Finally, the housing component is identified as the last influential factor in this neighborhood through its six items: satisfaction with the quality of the residential unit, satisfaction with the age of the unit, satisfaction with the façade, satisfaction with the materials and structure used in construction, satisfaction with the number of floors, and satisfaction with the floor area of the unit.

## 7. CONCLUSION

Spatial justice is a concept that refers to equal access to opportunities and the equitable distribution of public resources and services. This concept analyzes the spatial conditions of neighborhoods by examining how services are distributed and the level of benefit received from various indicators. Sustainable neighborhoods are spaces where residents are willing to live in the present and future and collectively strive to improve their quality of life. Such neighborhoods typically enjoy high levels of safety, appropriate design, and equal access to services for all citizens.

In this study, the indicators obtained within the examined area were evaluated and analyzed using a combination of quantitative and qualitative methods.

For this purpose, questionnaires based on selected indicators were distributed among neighborhood residents, who were selected as a sample of the statistical population. The resulting data were quantified and analyzed using structural equation modeling. Accordingly, the most significant factor in sustainable development planning with a spatial justice approach in the Mesbah neighborhood was found to be security, with a regression coefficient of 0.764, indicating the greatest influence among the study's components. This factor also had the highest explanatory power of the dependent variable in the study, with a coefficient of determination of 0.583. The second most influential component in sustainable development planning in this neighborhood is the land use and accessibility system, with a regression coefficient of 0.668 and a coefficient of determination of 0.446. Following that is the access to public services and facilities component, with a regression coefficient of 0.659 and a coefficient of determination of 0.435, as shown in the empirical model derived from the operational model of the study. This component emphasizes the importance of public services and facilities in the neighborhood, which should be addressed through its indicators. The next component is public health, with a regression coefficient of 0.656 and a coefficient of determination of 0.431. Following public health is the component of urban management, which ranks next with a regression coefficient of 0.643 and a coefficient of determination of 0.413. Finally, the three components—the sense of place attachment (regression coefficient 0.623), identity and culture (regression coefficient 0.592), and housing (regression coefficient 0.581)—each contribute, in sequence, to the explanation of the structural model of the research and in sustainable development planning with a spatial justice approach.

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## **CONFLICT OF INTEREST**

The authors have no conflicts of interest to declare.

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## **PARTICIPATION PERCENTAGE**

The authors state that they have directly participated in the stages of conducting research and writing the article.

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