

Recognizing the Pattern of Hamedan Neighborhood Center in Accordance with the Needs of Women

Seyedeh Faezeh Etemad Sheykholeslami^{a*} - Seyed Majid Mofidi Shemirani^b - Seyed Reza Mortezaei^c

^a Assistant Professor of Architecture, Faculty of Civil Engineering and Architecture, Malayer University, Malayer, Iran (Corresponding Author).

^b Assistant Professor of Urban, Faculty of Architecture and Environmental Design, University of Science and Technology, Tehran, Iran.

^c Assistant Professor of Industrial Design, Faculty of Architecture and Environmental Design, University of Science and Technology, Tehran, Iran.

Received 26 August 2019;

Revised 17 January 2022;

Accepted 17 March 2022;

Available Online 21 June 2022

ABSTRACT

The local neighborhood open spaces of Hamedan are considered semi-private/semi-public yards for the local neighborhoods of the city and a dynamic pause space for interaction and presence of the women and children in the neighborhood. Since the apartment culture has transformed private open spaces into pedestrian and vehicle spaces, recognizing and reviving the pattern of local neighborhood open spaces of Hamedan (Chaman pattern) can allow the presence and interaction of women in safe open spaces of the neighborhood and promote the dynamism of the neighborhood and the social health of women and children. The current study aimed to explore and restore the physical structure of the Chaman pattern as an efficient pattern in accordance with the women's needs. The method is the case study of fifty local neighborhoods in Hamedan with a historical-interpretational approach and then a field investigation of ten more original neighborhoods with the observation approach based on preparing an identity repertoire. Based on the results, the structural form of these fields is reported as a flat quadrilateral with an area between 1000 and 1280 meters with a north-south extension or with a slight rotation around this axis. The quadrilateral space with a longitudinal length of 42 to 65 meters, an average width of 19 to 25 meters, and a height of 3 to 7 meters are more prevalent. The total number of trees and shrubs in this local open space is between 20 and 30, with the prevalence of mulberry and ash trees among the trees and pine among the shrubs. The neighborhood's water supply system has been with aqueducts in larger neighborhoods and springs in smaller neighborhoods. The number of commercial units is 11 to 23 production workshops and trade unions in accordance with the dimensions of the neighborhood. The Chaman-based neighborhood model can comprehensively meet women's environmental, socio-cultural, and economic needs.

Keywords: Neighborhood-Centered, Neighborhood Center, Chaman Pattern, Hamedan, Women.

* E_mail: f_etemad@malayeru.ac.ir

1. INTRODUCTION

In the neighborhood-centered pattern of the Iranian urban planning, the neighborhoods are the centers of the women's social interactions, a place for quick access to the religious-cultural paces, the pace to meet the hygiene needs, and a safe and dynamic environment for the children. Among the most successful examples of the centrality of the neighborhood is an indigenous pattern called the "Chaman pattern" in the Hamedan's neighborhoods, which has transformed this historical city into a garden city. Some of these local neighborhood centers of Hamedan have survived and maintained their initial dynamism. The morphology of the local neighborhood open spaces (the neighborhood centers) of Hamedan has not been addressed by the macro and micro-references, and a few studies have introduced only some of the cultural aspects of this space. Therefore, the typology of the local neighborhood open spaces of Hamedan with a focus on women's use is important and innovative. From the Ashkanian Dynasty until the early Pahlavi Era, the historical city of Hamedan was composed of intertwined neighborhoods based on a neighborhood-centered pattern (Mostafavi, 2002, p. 65). The two linear and central patterns formed the structure of these neighborhoods (Gharagozloo, 2009). About two-thirds of the neighborhoods had a central structure formed around the open space of the fields. These local open spaces in Hamedan are known as 'Chaman' (local neighborhood centers in Hamedan) in Hamedan (Gharagozloo, 2009, p. 47; Azhang, 2008, p. 84; Ghadakchi, 2008, p. 32; Zand, 2008, p. 75; Sehzadeh, 2009, p. 122). These neighborhood centers are the resorts for the social interactions, meeting the economic needs, and preparing the welfare conditions for the residents in the open space of the neighborhood, especially the women and children who have higher social and safety needs and subsequently are more inclined to a familiar and safe environment. With the revival of the neighborhood-centric pattern based on the neighborhood's center, this group of citizens can enjoy a safe, familiar, and efficient open space for many hours to meet their physical and mental needs. What is the structure used in the local neighborhoods of Hamedan? And is the Iranian pattern of grass space the most suitable structure of urban open space to meet the women's needs in the Iranian city? These questions are among the most important questions and challenges raised. The neighborhood-centered can meet the women's environmental comfort, sociocultural, and economic needs. It is the hypothesis of the current study. The study of how the neighborhood centers in Hamedan are formed, positioned, and oriented leads to the provision of solutions for designing the neighborhood's center and restoring referral forms and patterns.

2. THEORETICAL FRAMEWORK

The neighborhood, as the main pillar of the urban structure, plays an important role in establishing the social life balance in the cities. If the quality of life in the neighborhoods is changed, it would rapidly affect the whole city. Therefore, the strong and weak points of the neighborhoods can extend to the entire city in different dimensions and affect its efficiency (Mofidi Shemirani & Moztarzadeh, 2014).

The results of the studies show that the percentage of women's functionality in the public arenas is low despite the familial and private arenas (Naderi, 2014). Gender spaces are a title that indicates the unequal access of men and women to urban spaces. Today, the undesirable urban places and the masculine urban planning have led to a decrease in women's enjoyment of the urban public spaces (Naghdi & Darabi, 2014). The urban spaces have restrained the women's access to the public spaces due to alienation and insecurity (Mehidzadeh, 2008). Spin's studies indicate that the gender urban spaces are very influential for the public domain since these spaces, besides preparing a safe space, give an identity to the women outside the home and family (Naghdi & Darabi, 2014). The neighborhood-centered pattern increases the women's presence in the urban spaces by significantly decreasing the alienation and insecurity in the neighborhood. From the sustainability point of view, the neighborhood-centered city is a suitable response to the women's environmental, cultural, and economic needs (Gulland & Akcakaya, 2001, p. 56).

2.1. Iranian Local Neighborhood Centers

In the Iranian indigenous architecture, the main elements and urban neighborhood centers are formed based on the residents' social, environmental, and economic status (Tavassoli & Bonyadi, 2007, p. 10). The field was an inevitable element of each neighborhood placed at its center, mainly taking the same name as the neighborhood (Pakzad, 2006, p. 69). Neighborhood centers were the most common local arena, social hub, and meeting place for fellow neighborhoods (Habib, 2007, p. 113) because activities and spaces related to the daily life of the residents in these centers were located. Generally, several vital elements, such as the mosque, public baths, water reservoirs, several shops, etc., gathered around the open space of the neighborhood, which was considered an effective factor in attracting residents to the local field. Therefore, after the necessity to gather at the field was created, the continuance of this presence made the local field a gathering place for the residents in a way that they considered their local field a second yard they shared with their fellow citizens. This sharing increased the residents' sense of belonging to the neighborhood (Pakzad, 2006, p. 69). Generally, one of the clear examples of collective

urban spaces is the open neighborhood space that has been introduced by words such as the neighborhood center, field, and square. These open spaces exist in most ancient Iranian cities, including Hamedan. The neighborhood centers have been open spaces at the junctions of the main roads of the city, having the best access position to meet the daily needs of the residents (Kiani, 1988, pp. 372-377). From some researchers' perspectives (Thomas, 1999, p. 51; Pakzad, 2009, p. 86; Zucker, 1970, p. 86), the term 'field' has been used at the neighborhood and city scales. At the neighborhood scale, from ancient times until now, the collective life has been considered to gather the houses or neighborhood and urban elements (Tavassoli & Bonyadi, 2007, p. 43). Some researchers have introduced the junctions or openings in the neighborhood's pathways as the fields around which the service and commercial uses (mosque, bazaar, water reservoirs, public baths, Takyeh (a building where Shia Muslims gather to mourn Imam Husayn's death in the month of Muharram), Saqakhaneh and Husseiniah) are located and have been among the most common Iranian urban spaces that meet the needs of the residents (Naghizadeh, 2010, p. 124).

2.2. Hamedan's Local Neighborhood Centers

Hamedan's local neighborhood center is a wide area or field, generally with a specific geometry, where the neighborhood's uses, such as the mosque, public bath, and bazaar, are located. The Chaman space includes the features of the first three types of fields in Zucker's categorization (Zucker, 1970). This space has the physical features of the field, including the space openness and urban junction, uniting the peripheral spaces, and the intersection of the pathways. The Chaman space of the neighborhood space has social, cultural, environmental, economic, and physical

values that are among the Square neighborhood centers types. The Chaman provides a comprehensive range of the necessary daily needs of the neighborhood residents and a place for social interactions and most static connections and activities. Hossieniah, Imamzadeh, and Saqakhaneh are among the most common cultural spaces around the Chaman; bakery, butcher shop, groceries, and small manufacturing workshops such as shoemaking and carpentry have been the most common commercial spaces adjacent to the Chaman. Fountains and aqueducts have also been the main Chaman elements covered today (Table 1).

3. LITERATURE REVIEW

The macro-references (books and theses) that have dealt with the local-neighborhood open space keyword are few, which are themselves concise, scattered, and limited (Azkaei, 2001; Mostafavi, 2002; The Geographical Organization of the Armed Forces, 2001; The Geographical Organization of the Army, 1952; Gharagozloo, 2009). Hamedan's neighborhood centers have been discussed in a limited number of micro-references entitled "A Report on the Cultural-Historical Axis of Hamedan" (Consulting Engineers of Housing Construction, 1992), "Introduction to the Historical Role of Neighborhoods" (Qadakchi, 2008, pp. 22-37), "Chamans in Hamedan Neighborhoods" (Azhang, 2008, pp. 84-85), In the Quarterly Journal of People's Culture, "Perceptual Geometry Diagram of the Evolution of the Iranian City in Different Periods of Urban Development (Case Study: Hamedan)" (Farshchian & Balali Oskooi, 2015, pp. 53-68) and "From Yesterday's Chaman to Today's Collective Spaces" (Abdoli, 2012).

Table 1. The Neighborhood-Centered Pattern, Meeting the Environmental, Cultural, and Economic Needs of Women

	Macro-Scale	Micro-Scale
Environmental-Climatic Features	Reduction of Environmental Pollution	- Reducing intercity travel - Creating a green neighborhood open space (Altavila et al., 2004, pp. 39-46)
	Increasing Environmental Comfort	- Comfort at all times of the year (Tahbaz, 2007, p. 28) - Meeting daily needs (Razjouyan, 2009) - Improving the quality of the neighborhood by increasing comfort (Nikolopoulou, 2007; Bahraini & Tabibian, 1998) (Hur & Morrow -Jones, 2008) - Reducing the heating and cooling needs of surrounding buildings (Tahbaz, 1998)
Socio-Cultural Features	Meeting the Physical, Spiritual, and Religious Needs	- Physical and mental comfort with water and trees (Zand, 2008) - Meeting the religious needs (mosques, public baths, and Hosseiniah) (Azhang, 2008, p. 43) - Satisfying the needs of material life with the market (Zarei, 2011)

	Macro-Scale	Micro-Scale
Socio-Cultural Features	Dynamism by Stimulating Social Interactions	- Dynamism throughout the year (Qadakchi, 2008) - Joint interactions of neighborhood residents (Azhang, 2008a, pp. 84-85)
	Sense of Belonging to the Place and Having an Identity	- Urban sign (Mehryar, 1999) - Identity in all areas (Abdoli, 2012) - Communication node (M. M. Khanehsazi, 1992)
	Protecting the Neighborhood, Making it t, and Increasing the Efficiency	- Neighborhood privacy (Azkaei, 2001) - Being anti-stranger (M. M. Khanehsazi, 1992) - Sense of belonging and responsibility (Qadakchi, 2008) - Security and crime reduction (Qadakchi, 2008)
Economic Features	Decreasing the Family Costs by Reduction of the Urban Travels	- Access to safe and easy shopping (Garussian, 2008)
	Neighborhood Self-Sufficiency, Neighborhood Employment, and Income Generation	- Employment in the market - Preventing the migration - Finding a job through notifications by the locals - Existence of different economic strata (Qadakchi, 2008)
	Reduction of Financial Loss	- Derived from the air pollution (Sam Daliri, 2013)
Physical Features	Climate Design Solutions of the Neighborhood Center	- Climate-friendly design
	Preserving the Historical Identity of the City and Preventing its Destruction	- Revitalizing the open space of the neighborhood center - Preserving the nature and preventing its destruction or change
	Provide Restoration of Referral Templates and Patterns	- Providing a referral template - Providing a neighborhood center template

The antiquity that has been mentioned for Chaman spaces as the center of historical green neighborhoods of Hamedan dates back to the Ashkanian period (third century BC) (Mostafavi, 2002, p. 65) (Fig. 1). Also, Hamedan was mentioned in the Sixth and seventh centuries (Azhang, 2008, p. 43). In the Safavid era, the mosques, alongside the public baths and bazaars, were the main elements of the Chaman space (Zarei, 2011, p. 70). After the invention of the Sangaki bread by Sheikh Bahaei with the order of Shah Abbas (Blockbashi, 1969), the Sangaki bakery also became an important element of the bazaar. The peak and prosperity of Hamedan neighborhood centers were in the late Qajar period (1250-1300 A.H), and the number of neighborhoods reached 51 neighborhoods (M. M. Khanehsazi, 1992). The 51 neighborhoods before 1285 A.H (Fig. 1), which were decreased to 42 in 1352 A.H (M. M. Khanehsazi, 1992, p. 87), and

finally, the identification of 25 existing or damaged neighborhoods in 1371 A.H indicates the process of demolition of Hamedan neighborhoods with frequent street markings (M. M. Khanehsazi, 1992). This process continues rapidly with the demolition of valuable and even nationally registered buildings and the creation of multi-story car parks in valuable neighborhoods such as Kababian, Golpa, and Aghajani Beig in a way that only a few neighborhoods have remained with the original identity.



Fig. 1. Hamedan Pre-Islam, from Early Islam to Safavid era, from Safavid era to Qajar (from Left to Right)
 (Sehizadeh, 2009, p. 116)

4. METHODOLOGY






To study the cases of Hamedan's local neighborhoods, the observation-based field study (directly with identity repertoire and the device) and the survey method with the questionnaire. The statistical population was selected using the results obtained from the initial investigation. The first and second-grade neighborhoods of Hamedan, which are more original, are considered the research samples. The independent variables in the current study include the features of the environmental, cultural, and economic pillars, which are the main pillars of a sustainable city, and the dependent variable is the neighborhood center body. The sample size was 384 questionnaires calculated by Cochran's formula, distributed in eleven neighborhoods in the statistical population. The correlation between thermal comfort and neighborhood open spaces and the comparison of economic, cultural, and safety aspects in neighborhood open spaces for women with other urban open spaces is questioned and evaluated in the questionnaire. The questions confirm the validity of the questionnaire in the present study with a spectral range. The validity of the nominal questions was assessed in three stages by testing the questionnaire in the first-grade neighborhoods.

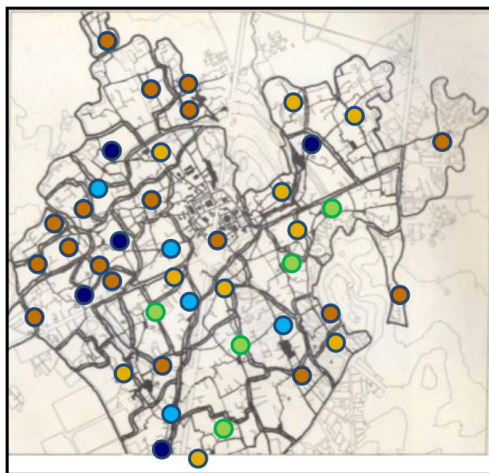
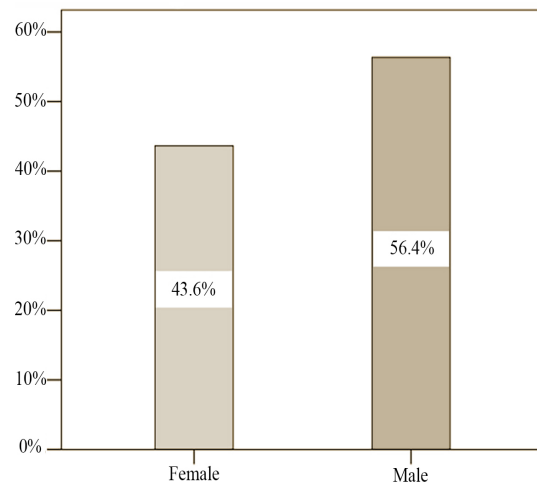
The heat balance (Fanger, 1970) and adaptive approach (Van Hoof, 2008, pp. 182-201) were used to assess thermal comfort. Therefore, a questionnaire was used to compare the level of satisfaction with thermal comfort conditions in Hamedan's local neighborhood centers with other urban open spaces, using an Effective Standard Temperature (SET) and instrumental measurement with an environmental meter.

4.1. Research Area

The neighborhood sampling from the whole statistical population of Hamedan's neighborhoods was done based on their originality rating (Table 2). Finally, to assess Hamedan's neighborhood centers based on the originality and preservation of the physical structure features and identification of the neighborhoods with a specific identity, the features such as the centrality (central yard), green area, masque (old or newly-constructed), commercial spaces (small manufacturing or service workshops), public bath (inactive, use-changed, active), bakery (especially Sangaki), fame, and other religious and cultural uses such as the Imamzadeh, Saqakhaneh, Hosseiniyah, and school have been used. In this regard, Hamedan's neighborhood centers have been divided into five grades (Fig. 2) (Mofidi Shemirani et al., 2021).

Table 2. Rating of Chaman Spaces based on the Originality of the Physical Features

Originality	Index	Neighborhood's Name				
First Grade		Haji	Golpa	Kababian	Aghajani beig	Pay-e mosalla
Second Grade		Hammam ghal-e	Imamzadeh Yahya	Dorood Abad	Koolanaj	Chaman Choopanha
Third Grade		Sabadbafan	Howz Agha	Varmaziar	Ghashogh Tarashan	Nazar Beig
Fourth Grade		Saregozar	Chorchoreh	Shalbafan	Molla Jalil	Sizdah Khaneh
		Zul-Riasatein	Ghal-e Sabzi	Toot Qomi	Joolan	Chaman Imamzadeh
Fifth Grade		Boneh Bazar	Haj Ahmad	Gazaran	Borj-e-Ghorban	Doguran
		Chehel Pelleh	Zobeideh Khatoon	Mir Aghil	Pir Gorg	Namazgah
		Mokhtaran	Ghazian	Baba Taher	Sporoon Gotha	Darwish Abad
		Pirwadi	Toot Foroosh	Goharvand	Kheirieh	Haft Pestan

**Fig. 2. Rating of Hamedan's Neighborhoods (Base Map: Mandala Candilis Consulting Engineers, 1973)****Fig. 3. Gender Frequency**

5. FINDINGS

First, the demographic data and then the physical and non-physical features of the studied neighborhoods are evaluated based on the results obtained from the identity repertoire of Hamedan's local neighborhood centers (Table 3).

5.1. Demographic Data

A traffic counter was used to obtain the demographic data of the residents, and the spectral options were used in the mid-seasons of 2014 in three intervals morning, noon, and evening. Among a total of 4158 traffic counts, 43.6% belonged to the women, indicating this statistical population's importance

(Fig. 3). Comparing the age distribution of the women, it was revealed that the highest frequency belonged to the 20-30 years old age group, with the years old group being the second most frequent (22.1%). In fact, the 20-40 years old age group made up half of the female commuters in these open spaces (Fig. 4).

5.2. The Physical Features of Hamedan's Neighborhood Open Space

Based on the observations, the morphologic type of Hamedan's local neighborhood open space is quadrilateral with a north-south stretch or an approximate rotation of 30 to 40 degrees around this axis. The area of this quadrilateral is about 1200

meters, with an average width of 19 to 25 meters, a stretch of 42 to 65 meters, and a height of 3 to 7 meters. The longitudinal-latitudinal stretch ratio of the field ranges from 2-to1 to 3-to-1. The Chamans are mainly located with a slight slope or with no slope, and the outdoor views of brick and stone have been reported.

The proportion of the dimensions of the open space of the neighborhood is compared with the golden proportion of Iran, which was used in the plan of the rooms, courtyard, Panj-Dari (five doors), Se-Dari (three doors), and other elements (Pirmia, 1999, p. 159). The length-width ratio of a neighborhood open space is one of the two ratios obtained from the Iranian golden ratio that can be seen in Figure 5. On the other hand, the east-west stretch is not seen due to the unfavorable west wind.

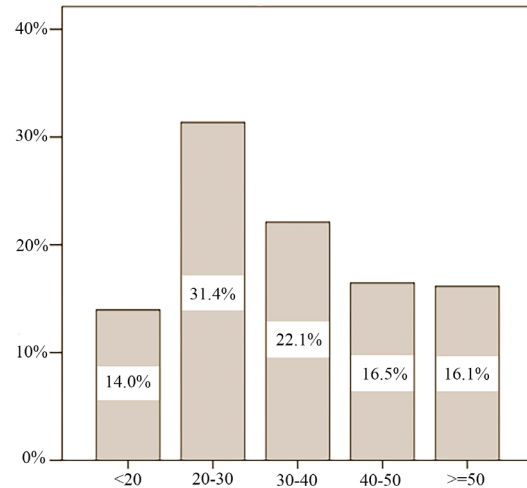


Fig. 4. Age Distribution of Female Participants

Table 3. The physical features of Hamedan's local neighborhood centers

Neighborhood Center Plan	Image	Area and Dimensions of the Open Space	Façade's Slope and Materials	Shape and Stretch of the Neighborhood Center	Neighborhood Center Name
		Area: 1260m ² Dimensions: 21*60*4	Slope: 0% Material: bricks	Shape: quadrilateral Stretch: northwest-southeast	Haji
		Area: 1174m ² Dimension: 26*42*7.5	Slope: 0% Material: bricks	Shape: quadrilateral Stretch: north-south	Golpa
		Area: 1260m ² Dimensions: 19*65*6	Slope: 1% Materials: bricks and stones	Shape: quadrilateral Stretch: Northeast-Southwest (40 degrees deviation from the north axis)	Pay-e Mosalla
		Area: 1280m ² Dimensions: 25*50*4	Slope: 0% Materials: bricks and stones	Shape: quadrilateral Stretch: northwest-southeast	Kababian
		Area: 1265m ² Dimensions: 23*50*7	Slope: 2% Material: bricks	Shape: quadfrilateral Stretch: Northeast-Southwest (30 degrees deviation from the north axis)	Aghajani Beig



Fig. 5. Length-width Ratio in Hamedan's Local Neighborhood Centers based on the Iranian Golden Ratio

5.3. The Environmental-Cultural-Economic of Hamedan's Local Neighborhood Centers to Meet the Women's Needs

Based on the sustainability indicators, the current study has dealt with the environmental, social, and economic features of Hamedan's neighborhood centers.

5.3.1. Environmental Features of Hamedan's Local Neighborhood Open Spaces

The total number of trees and shrubs in Hamedan's neighborhood centers mainly ranges from 20 to 30. Mulberries with the role of fruiting and profitability, the ash tree are more common among trees, and pine is the most common shrub. The water supply system of the neighborhood has been mainly the aqueducts in larger neighborhoods and springs in smaller

neighborhoods. The intelligent combination of water and plants in the open space of the neighborhood and the close and continuous contact with nature meets the conceptual, functional, and aesthetic needs. One of the secrets of the sustainability of Hamedan neighborhoods is the natural elements that had turned this city into a garden city. Comparison of thermal comfort of Hamedan neighborhoods with other urban open spaces based on the SET (Standard Effective Temperature) comfort index explains the statistically significant difference between the average set of 1st, 2nd and control neighborhoods. Kruskal-Wallis test and one-way Analysis of Variance Test (Tables 4 and 5) show a statistically significant difference between the mean SET of neighborhoods at the error level of 5% in winter, summer, and autumn. Therefore, research hypotheses have been confirmed in winter, autumn and summer.

Table 4. Results of One-Way Variance Analysis for Comparison of the Neighborhoods by Seasons in Terms of the Mean SET

Season	Sources of Changeability	Degree of Freedom	Sum of Squares	Mean Square	F	p-Value
Summer	Inter-Group	2	101.06	50.53	3.06	0.055*
	Intragroup	49	806.73	16.46		
	Total	51	907.79			
Autumn	Inter-Group	2	383.53	191.77	10.65	0.000*
	Intragroup	31	558.01	18.00		
	Total	33	941.55			

Based on Table 5, there is a significant difference between the first and second-grade neighborhoods and the control neighborhood in terms of the mean

SET value in the winter. The results show that the first and second neighborhood centers were slightly cool while the control neighborhood center was very cold.

Table 5. Results of Mann-Whitney U Test for Comparison of Neighborhoods by Seasons in Terms of the Mean SET Value

Season	Neighborhoods Comparison		p-Value	U
Winter	First Grade	Control	0.011*	1.00
	Second Grade	First Grade	0.227	89.50
	Second Group	Control	0.025*	4.00

*Significance at 0.05 level

Results of the evaluations indicate that based on the comfort indicators, the hypothesis of a significant difference between Hamedan's local neighborhood centers and other urban open spaces in terms of the thermal comfort in the autumn and the winter is confirmed. There is a significant difference between the first and second-grade neighborhoods and the control neighborhood in terms of thermal comfort, and the first. Then, second-grade neighborhoods provide the best comfort conditions in the Hamedan climate. Compared to other urban open spaces, these neighborhood centers enjoy more desirable comfort conditions in all seasons, especially the cold and windy seasons.

A field observation using the multifunction meter - airVelocity, humidity, light & temperature model LM-8000 environmental meter was conducted to test this hypothesis. The survey study was done using a questionnaire to collect the data, and the SPSS was used to analyze the collected data based on the SET thermal comfort. The inferential statistics results

obtained from the one-way variance analysis and the Kruskal-Wallis test indicate that statically, there is a significant difference between the winter, autumn, and summer in terms of the mean SET value at the 5% error level.

The first and second-grade neighborhoods are slightly cooler in the spring, and the control neighborhood is cold. In the summer, the first-grade neighborhood is slightly warm, and the second-grade neighborhood is warm. In autumn, the first-grade neighborhood is cold, the second-grade neighborhood is cool, and the control neighborhood is very cold. In winter, the first and second-grade neighborhoods are slightly cold, while the control neighborhood is very cold. Therefore, the local neighborhood centers enjoy higher thermal comfort in all seasons, especially the cold seasons.

The local neighborhood centers are shady in summer and sunny in winter (Fig. 6), while the squares with high buildings do not enjoy the suitable shade in the summer and sunlight in the winter (Fig. 7).

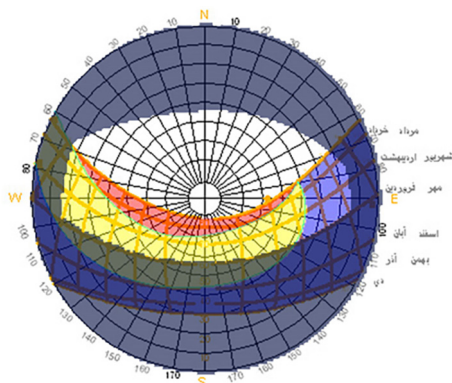


Fig. 6. Chaman Space Shadow

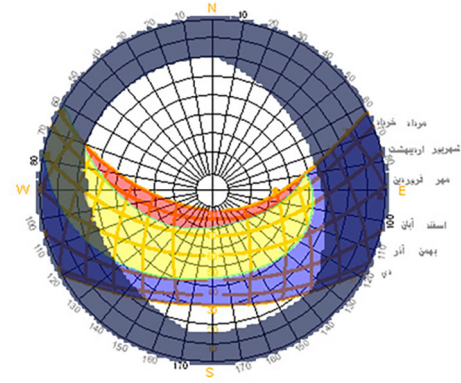


Fig. 7. Shadow Mask in Squares with tall Buildings Around

■ Needs shade in two seasons ■ Needs shade in one season ■ Needs sunlight in two seasons

5.3.2. Socio-Cultural Features of Hamedan Neighborhood

According to Chapman, the physical features of space can affect the behavior since the state and shape of the space can be effective in comfort or discomfort (Chapman, 2008, p. 179). Based on Newman's theory (1973), the spaces that are more visible and provide little opportunity to escape provide less potential for criminal activity, and therefore the presence of signs of public surveillance in the neighborhood can increase the sense of security (Schweitzer, 1977, p. 11; Newman, 1996).

The diversity of religious, guild and social, and cultural status of the neighborhood index has expressed the unique characteristics of each neighborhood according to the location, race, religion, class, and culture (Table 6). Residents' overlook to the neighborhood, the confinement of the open

space of the neighborhood (Cozens, 2005), and the identity formed based on the exclusive and specific characteristics of each neighborhood (Jenkins, 2003) increase the security of women in this space. Also, socio-cultural spaces increase women's presence in the neighborhood instead of the whole city. Because women have more security in the neighborhood than in other parts of the city, they will have more presence and participation outside the home.

Table 6. Socio-Cultural Features of Hamedan Neighborhood Centers

Chaman Name	Trade Sect	Religious Sect	Ethnicracial Group	Prominent Cultural Features	Social Position in the City
Haji	Gro-cery	Shiite	Hamedani	Commercial- residential; Located in the crowded texture close to the city center	Religious function due to its proximity to the seminary of Molla Jalil neighborhood and the seminary of Mullah Ali Masoumi
Golpa	Car-pentry	Shiite	Christians (past)	Residential-administrative-educational; Adjacent to the Central Post, Justice and the Treasury	Taziyeh, carpet distribution center and proximity to the historical monument of Ghorban Tower Adjacent to Hejazi Library and several schools
Pay-e Mosalla	Comb-maker	Shiite	Turk	Commercial-residential-repair (Repairs: bicycles and motorcycles; Commerce: Rural Services)	The commute route for some villagers due to the existence of car stations to villages such as Shurin
Kababian	Car-pentry	Shiite	Sadat	Residential-Commercial-Educational; Adjacent to the city center	Religious-educational
Aghajani Beig	textile	In the past, Christians	Zandi	Adjacent to Imamzadeh Yahya and performing Taziyeh	Commercial-residential-administrative; Proximity and access to the city center

Based on the questionnaire, the women's referral to the bazaar and cultural-religious spaces and their presence in the Chaman space is very significant, and as seen in the diagram, 58% of the women have greatly used the Chaman space for shopping, 47% have greatly used this space to be present at it, and 38% have used the Chaman's religious and cultural space

on an average scale. The questionnaire analysis results indicate that based on the correlation, the women and children's security and the local neighborhood open spaces are significantly correlated. 33.3% of the women have used the Chaman space on an average scale, while 35.5% have used it on a high and very high scale (Fig. 9).

**Fig. 8. Taziyeh in the Golpa Neighborhood**

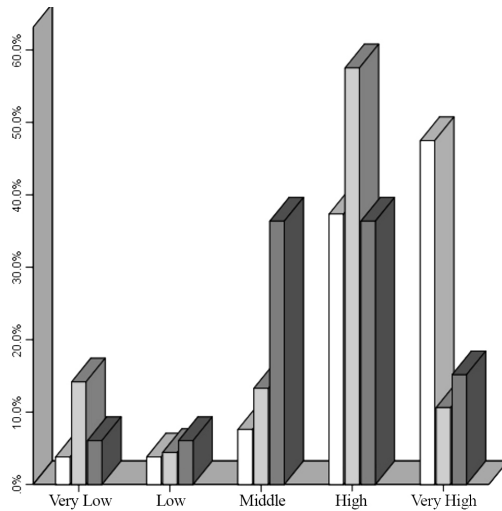


Fig. 9. Rate of the Use of Chaman Usages (from Right to Left: Cultural, Commercial, and Interaction)

The past and present jobs have been allocated based on the daily needs of the residents and obviation of the need for intracity movements. The manufacturing workshops and the guilds used to be more prevalent in the past; however, nowadays, they have been replaced with service jobs. The car parks are among the unresolved problems of the neighborhoods, and the policy of Hamedan's municipality has been focused on constructing multi-story car parks. Existing caravanserais and local markets in neighborhoods that play an important role in the city's economy meet the daily business needs of people, a high share of which belong to women. In addition to reducing transportation costs and pollution from intracity movements, this decentralized role-playing will lead to self-sufficiency and decentralization of neighborhoods. In neighborhoods where more commercial units are needed, a caravanserai is built around the neighborhood. Pay-e Mosalla Caravanserai is a clear example of such usage.

5.3.3. Economic Features of Hamedan Neighborhoods:

The number of the commercial units in Hamedan's neighborhoods has been reported to range from 11 to 23, based on the neighborhood dimensions (Table 7).

Table 7. Economic Features of Hamedan's Neighborhood Centers

Chaman Name	Dominant Job		Commercial Units		Religious-Social Units		Scope of Services
	Now	Past	Type	frequency	Type	frequency	
Haji	Sangaki Bakery, Grocery, Welding, Confectionery, Hairdresser, Food preparation, Healthcare, Laundry	Butcher, cafe, bakery, shoe store, pastry shop, quilt em-broidery, vegetable shop, grocery store	Shop Traditional restaurant	17 1	Mosque Hosseinieh Museum	3	City
Golpa	Grocery, bakery, vegetable shredder, clothing store, language school, real state, dairy shop, and confectionery	Bakery, carpentry, perfumery, butcher, grocery store	Shop	11	City Mosque Saqa-khaneh Holding a Taziyeh		City
Kab-abian	Three carpentries, car rental, Sangaki bakery, dairy shop, real estate, grocery, chain makers, hairdresser, shoemaker	Bakery, grocery store, carpentry, perfumery, butcher, shoemaker, equipment repair	Shop	11	Mosque		City
Pay-e Mo-salla	Sangaki bakery, grocery, bicycle repair, motorcycle repair, welding, baguette bread bakery	Bakery, Comb maker, Cafe, perfumery, Blacksmith, Fruit Shop, Dairy shop, Hairdresser, Butcher, Confectionery, Kebab Shop, Warehouse, oil making	Shop	11	Mosque Imam-zadeh		Province

Chaman Name	Dominant Job	Commercial Units	Religious-Social Units	Scope of Services
Aghajani Beig	Sangaki bakery, 3 grocery stores, clothing store, Barbari bakery, cafe (traditional canteen), confectionery, hairdresser, health & cosmetics, fruit shop, diet products, butcher, laundry, tailor-ing, paint shop, carpentry	Bakery, Butcher, Brokerage, Haberdashery, Grocery, Confectionery, Hairdresser, Bank, Cafe, Laundry, Black-smith, Dairy, Textile, and Tailoring Workshop	Shop 23 Saqakhaneh Mosque	City

Physically, the most important problem of Chaman is commutation and transportation from the perspective of 38% of the users. The car park shortage, inadequate flooring, and abandoned spaces have been other problems mentioned for Chaman. 44% of users think that green space is needed.

6. DISCUSSION AND CONCLUSION

The results obtained in the current study are different from those of related literature in this field. Many articles have dealt with one or two case studies, and the results cannot be generalized to the whole local texture of Hamedan (Khaki & Habibian, 2016; Najafi, Zarrin & Jameh Bozorg, 2017; Naghdi, Sajjadzadeh, & Rezaei, 2015; Soroush & Joudaki, 2014). Some articles have dealt with the place satisfaction indicators (Pirbabaei & Sajjadzadeh, 2011; Shahabi, Pashmakian, & Zarei Hajiabadi, 2013; Asefi Moghadas, Zaker Haghighi, & Naghdi, 2014; Goudarzi Sorouyeh, Safavi, & Mahfouzian, 2019; Mahmoudzadeh, Mohamadi Sardarabadi, & Vahedi, 2018) in which one or several place indicators have been considered to be independent variables, and other variables have not been considered, so the obtained results were not consistent with the existing reality. For example, in Hatami's study (Hatami & Zaker Haghighi, 2020), the urban structure and access have been mentioned as the factors of security in the Rokni neighborhood compared to the Khezr neighborhood, while the field investigation indicates that the social texture is the main differentiation factor between these two neighborhoods from past until now. Therefore, it is suggested to first obtain a comprehensive recognition based on the common features of the neighborhoods through field observation and identify the main indicators of each place so that the obtained results are consistent with the existing reality and can be cited. In some other articles in which the majority of the neighborhoods have been investigated, the historical trends of the city have been studied (Jameh Bozorg et al., 2020; Zarei, 2011; Farshchian & Balali Oskuei, 2015; Alitajer & Sahraei, 2017).

In the current study, it has been emphasized that the neighborhood-centered pattern in the city, among which the Chamans in Hamedan are a good example, can meet women's environmental, social, cultural, and

economic needs. The neighborhood-centered pattern guarantees the women's social life and physical and spiritual well-being by providing for their physical and spiritual needs. Therefore, the introduction of the Chaman neighborhood-centered pattern leads to the preservation of the historical identity of the neighborhoods and the prevention of its destruction. Recognition of the neighborhood local space pattern would lead to the achievement of climatic design solutions and the provision of a climatic design pattern of the neighborhood space. This pattern can be used to plan new towns in Hamedan's suburbs. This neighborhood-centered provides the neighborhood design solutions in the Iranian city and solutions for designing newly-built cities with an Islamic-Iranian pattern, such as Hura City in Hamedan's suburbs. Since the women make up half of the users of these neighborhood open spaces, restoring such spaces can play an effective role in meeting women's physical and spiritual needs and pave the way for their higher presence in the city. The principles and strategies used in Hamedan's local neighborhood centers have been formed based on human physical and spiritual needs. The neighborhood-centered pattern reached its peak in Hamedan's neighborhoods from 1250 to 1300 A.H (late Qajar era), and the number of these neighborhoods was mentioned to be 51.

To study the cases of Hamedan's local neighborhoods, the observation-based field study (directly with identity repertoire and the use of the device) and the survey method with the questionnaire. The sample size was 384 questionnaires calculated by Cochran's formula, distributed in eleven neighborhoods in the statistical population. The collected data were analyzed by the SPSS Ver.24.

Based on the observations, the morphologic type of Hamedan's local neighborhood open space is quadrilateral with a north-south stretch or an approximate rotation of 30 to 40 degrees around this axis. The area of this quadrilateral is about 1200 meters, with an average width of 19 to 25 meters, a stretch of 42 to 65 meters, and a height of 3 to 7 meters. The longitudinal-latitude stretch ratio of the field ranges from 2-to-1 to 3-to-1. The total number of trees and shrubs in Hamedan's neighborhood centers mainly ranges from 20 to 30. Mulberries with the role of fruiting and profitability, the ash

tree are more common among trees, and pine is the most common shrub. The water supply system of the neighborhood has been mainly the aqueducts in larger neighborhoods and springs in smaller neighborhoods. These neighborhood local open spaces in Hamedan confirm the neighborhood-centered pattern.

The inferential statistics results obtained from the one-way variance analysis and the Kruskal-Wallis test indicate that statically, there is a significant difference between the winter, autumn, and summer in terms of the mean SET value at the 5% error level. Hamedan's local neighborhoods have higher thermal comfort than other urban open spaces in all seasons, especially the cold seasons.

The identity formed based on the specific and exclusive characteristics of each neighborhood has increased the residents' overlook to the neighborhood, the confinement of the open space of the neighborhood, and the security of women in open urban spaces. Also, socio-cultural spaces increase women's presence in the neighborhood instead of the whole city. Because women have more security in the neighborhood than in other parts of the city, they will have more presence and participation outside the home. The questionnaire analysis results indicate that based on the correlation, the women and children's security and the local neighborhood open spaces are significantly correlated. 33.3% of the women have used the Chaman space on an average scale, while 35.5% have used it on a high and very high scale.

The number of the commercial units in Hamedan's neighborhoods has been reported to range from 11 to 23, based on the neighborhood dimensions (Table 7). The past and present jobs have been allocated based on the daily needs of the residents and obviation of the need for intracity movements. The manufacturing workshops and the guilds used to be more prevalent in the past; however, nowadays, they have been replaced with service jobs. The car parks are among the unresolved problems of the neighborhoods, and the policy of Hamedan's municipality has been focused on constructing multi-story car parks. Existing caravanserais and local markets in neighborhoods that play an important role in the city's economy meet the daily business needs of people, a high share of which belong to women. In addition to reducing transportation costs and pollution from intracity movements, this decentralized role-playing will lead to self-sufficiency and decentralization of neighborhoods. In neighborhoods where more commercial units are needed, a caravanserai is built around the neighborhood.

Physically, the most important problem of Chaman is commutation and transportation from the perspective of 38% of the users. The car park shortage, inadequate flooring, and abandoned spaces have been other problems mentioned for Chaman. 44% of users think that green space is needed. Therefore, appropriate reconstruction and restoration of the neighborhood's

local open spaces can create safe, happy, and efficient spaces that can guarantee the women and children's comfort.

REFERENCES

- Abdoli, Z. (2012). *From Yesterday's Chaman to Today's Public Spaces*. Tabriz: The First Conference on New Thoughts and Technologies in Architecture. com/doc/279754/
- Alitajer, S., & Sahraei, Mina. (2007). Analysis of the concept of spatial structure coherence in historical neighborhoods with the method of space syntax (case study: historical neighborhoods of Hamedan). *Geography and urban space development*, 4(2), 205-219. https://jgusd.um.ac.ir/article_26743.html
- Altavila, F., Vicari, B., Hensen, J. L. M., & Filippi, M. (2004). Simulation tools for building energy design, Modelling and simulation for environmental engineering. *Czech Technical University*, 39-46. <https://www.researchgate.net/publication/254902421>
- Asefi Moghadas, A., Zaker Haghighi, K., & Naghdi, A. (2014). *Measuring satisfaction with living in traditional neighborhoods Study sample: Golpa neighborhood of Hamedan*. the first national conference on urban planning, urban management, and sustainable development. <https://civilica.com/doc/360788/>
- Azhang, N. (2008). Chamans of Hamedan neighborhoods (their social function). *Hamedan Special Culture of the People*, (26), 84-85. <https://www.noormags.ir/view/fa/articlepage/488074>
- Azkaci, P. (2001). *Hamedannameh (twenty articles about Madestan)*. Hamedan: Madestan.
- Blockbashi, Ali. (1969). The term Sangak and the history of Sangak bakery in Iran. *Art and People*, (74-75), 18-23. <http://ensani.ir/fa/article/269281> <http://ensani.ir/fa/article/269281>
- Chapman, D. (2008). *Creation of neighborhoods and places in man-made environment* (Faryadi, Sh., & Tabiban, M., Trans.). Tehran: University of Tehran Press.
- Cozens, P. M., Saville, G., & Hillier, D. (2005). Crime prevention through environmental design: a review and modern bibliography. *Journal of Property Management*, 23, 328-356. https://www.researchgate.net/publication/239746349_Crime_Prevention_through_Environmental_Design_CPTED_A_Review_and_Modern_Bibliography
- Fanger, P. O. (1970). *Thermal comfort: Analysis and applications in environmental engineering*. New York.
- Gulland, E. J. M., & Akcakaya, H. R. (2001). Sustainability indices for exploited populations. *Trend in Ecology and Evolution*, 16 (12). <https://citeseerx.ist.psu.edu>
- Farshchian, A. H., & Balali Oskoei, A. (2015). A report on the Hamedan cultural-historical axis and diagram of perceptual geometry on the evolution of Iranian city in different periods of urban planning (Case study: Hamedan city). *Urban Studies*, 4(15), 53-68. https://urbstudies.uok.ac.ir/article_13803.html?lang=fa
- Garoussian, H. (2008). The name of Hamedan markets. *Hamedan Special People Culture Quarterly*, (26), 60-72. <https://www.noormags.ir/view/fa/creator/121619>
- Geographical Organization of the Armed Forces. (1380). *Geographical encyclopedia of the cities of the country: Hamedan city*. Tehran: Geographical Organization of the Armed Forces of the Ministry of Defense.
- Geographical Organization of the Army. (1331). *Geographical encyclopedia of Iran*. Tehran: Geographical Organization of the Army.
- Gharagozloo, Gh. H. (2009). *Hegmataneh to Hamedan*. Tehran: Iqbal Publications.
- Goudarzi Soroush, M. M., & Joodaki, S. (2014). *The architecture of the organic neighborhood center and its correlation with the needs of the individuals in the community (a case study of Golpa neighborhood of Hamedan)*. the first national conference on architecture, civil engineering, and urban environment. <https://civilica.com/doc/270057>
- Habib, F. (2007). Sustainability approach in the context of urban planning. *environmental science, and technology*, 1(9), 111-120. <https://www.sid.ir/FileServer/JF/69213863212>
- Hatami, Y., & Zaker Haghighi, K. (2020). The effect of physical spaces on social security in urban areas; Case study: Hamedan city. *geographical planning of space*, 10 (36). <http://ensani.ir/fa/article/429943>. http://gps.gu.ac.ir/article_117954.html
- Iran Housing Development Consulting Engineers. (1992). *The historical and cultural axis of Hamedan*. Hamedan: Housing and urban development of Hamedan.
- Jameh Bozorg, Z., Najafi, A., Fakhar, Z., & Heidari Babakmal, Y. (2020). A Study of the Spatial and Physical Organization of Historical Neighborhoods in Hamedan during the Qajar Period and Their Impact on the Development of Social Relations. *Parseh Archaeological Studies*, 4(14), 203-222. <http://journal.richt.ir/mbp/article-1-379-fa.html>
- Jenkinz, R. (1381). *Social identity* (Yarahmadi, T., Trans.). Tehran: Shirazeh Press.
- Khaki, S. H., & Habibian, H. (2015). *Study of principles and criteria of sustainability in residential neighborhoods to achieve a sustainable neighborhood (Case study: Kababian neighborhood of Hamedan)*. International Congress of Sustainability in Architecture and Urban Planning. <https://www.tpbin.com/article/59295>

- Kiani, M. Y. (1989). *Iranian architecture (Islamic period)*. Tehran: Mohammad Yusef Kiani.
- Mahmoudzadeh, M., Mohammadi Sardarabad, I., & Vahedi, M. (2018). *Vitality and happiness in urban neighborhoods: A case study of neighborhoods of Hamedan city*. Conference on Civil Engineering Architecture and Urban Planning of Islamic world countries. <https://civilica.com/doc/775662/>
- *Mandala Candilis Consulting Engineers*. (1973). Hamadan: Bu-Ali Sina University.
- Mehryar, M., Fathollahief, Sh., Fakhari Tehrani, F., & Ghadiri, B. (1999). *Visual documents of Iranian cities during the Qajar period*. Tehran: Shahid Beheshti University.
- Mofidi Shemirani, S. M., & Moztarzadeh, H. (2014). Development of criteria for the structure of sustainable urban neighborhoods. *Bagh-e Nazar*, 11(29), 59-70. http://www.bagh-sj.com/article_5712.html
- Mofidi Shemirani, S. M., Etemad Sheikh al-Islami, S. F., Zarei, M. I., & Mortezaei, S. R. (2021). A study on the ancient local open spaces of the Hamedan neighborhood. *Archaeological Research in Iran*, 11(29), 165-182. https://nbsh.basu.ac.ir/article_4113.html
- Mustafavi, M. T. (2002). *Hegmataneh historical monuments of Hamedan*. Tehran: Association of Cultural Works and Honors.
- Naderi, S. (2014). *An Introduction to the Female Narrative of the City*. Tehran: Tisa.
- Naghdi, A., & Darabi, S. (2014). Women's access to urban spaces (Case study: Women of Ilam). *Women in Culture and Art*, 6(4), 461-470. https://jwica.ut.ac.ir/article_56020.html
- Naghdi, A., Sajjadzadeh, H., & Rezaei, M. (2015). *Security and Social Interactions (Case Study: Hesar and Shokreh neighborhoods of Hamedan)*. the first annual conference on architectural, urban planning and urban management research. <https://civilica.com/doc/544289/>
- Naghizadeh, M. (2010). *Analysis and design of urban spaces*. Tehran: Jahad Danshgahi Publishing Organization..
- Naghizadeh, M. (2006). Reflections on the Transformation of the field in Iranian Cities. *Fine Arts*, 25(25), 15-24. https://journals.ut.ac.ir/article_12305_2115129b5897e705ec6d7dae0853933a.pdf
- Najafi, A., Zarrin, F., & Jameh Bozorg, Z. (2017). *Neighborhood in the Islamic Iranian city and its functions (a case study of Golpa neighborhood in Hamedan)*. Fifth International Congress of Civil Engineering, Architecture and Urban Development. <https://civilica.com/doc/735751/>
- Najafi, A., Zarrin, F., & Jameh Bozorg, Z. (2017). *The physical structure of urban neighborhoods in Iran (a case study of Kababian neighborhood in Hamedan)*. 4th International Conference on Sustainable Architecture and Urban Planning - Dubai and Masdar. <https://civilica.com/doc/744574/>
- Nikolopoulou, M., & Lykoudis, S. (2007). Use of outdoor spaces and microclimate in a Mediterranean urban area. *Building and Environment*, 10(42), 3691-3707. <https://www.sciencedirect.com/science/article/abs/pii/S0360132306002800>
- Pakzad, J. (2006). *Theoretical foundations and urban design process*. Tehran: Shahidi.
- Pakzad, J. (2009). *The course of ideas in urban planning from space to place*. Tehran: Shahidi.
- Pir Babaei, M. T., & Sajjadzadeh, H. (2011). Collective belonging to a place, realization of social housing in a traditional neighborhood. *Bagh-e Nazar*, 8(16), 28-17. http://www.bagh-sj.com/article_2.html?lang=fa
- Pirnia, M. K. (1999). *Research in the Past Architecture of Iran*, edited by Gholam Hossein Memarian. Tehran: Iran University of Science and Technology.
- Qadakchi, I. (2008). An Introduction to the Historical Role of Neighborhoods. *Hamedan Special People Culture Quarterly*, (26), 37-22. <https://www.noormags.ir/view/fa/article page/488069>
- Razjouian, M. (2009). *Comfort under the shade of climate-friendly architecture*. Tehran: Shahid Beheshti University.
- Sehzadeh, M. (2009). *City Transformation: An interpretive analysis of change in an historic city center: the case of Hamadan in Iran*. PhD Dissertation, School of Architecture, Planning and Landscape, Faculty of Humanities and Social Sciences, Newcastle University.
- Soroush, Kh., Safavi, S. A., & Mahfouzian, M. (2019). A comparative study of livability in old, newly built, and marginal urban neighborhoods; Case study of Haji, Etemadiyeh, and Mazdaqineh neighborhoods of Hamedan. *Urban Design Discourse (Review of Contemporary Literature and Theories)*, 1(1), 30-44. <http://ensani.ir/fa/article/429943>
- Tahbaz, M. (2007). Outdoor Shadow Design. *Fine Arts*, 31, 27-38. <https://www.sid.ir/FileServer/JF/53313863102.pdf>
- Tahbaz, M. (1998). Behesht Mosque, the heaven on Earth. *Seffeh*, 8(1-2), 84-93. https://soffeh.sbu.ac.ir/article_99797.html
- Tavassoli, M., & Bonyadi, N. (2007). *Design of urban spaces (urban spaces and their role in city life and appearance)*. Tehran: Iran Urban Planning and Architecture Studies and Research Center..

Etemad Sheykholeslami, S. F. et al.

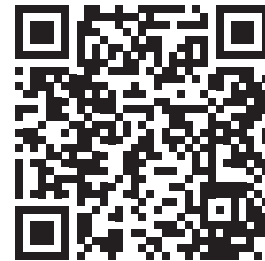
- Thomas, Th.-E. (1999). *Archetypes of Urbanism: A Method for the Esthetic Design of Cities*. Universitetsforlaget.
- Van Hoof, J. (2008). Forty Years of Fanger's Model of Thermal Comfort: Comfort for All. *Indoor Air*, 18(3), 182-201.
- Zand, Abbas. (2008). Qanats and springs of Hamedan, the culture of special people of Hamedan, (26), 83-73. Tehran: Ministry of Culture and Arts. [488073https://www.noormags.ir/view/fa/articlepage/](https://www.noormags.ir/view/fa/articlepage/488073)
- Zarei Hajiabadi, F., Pashmakian, N., & Shahabi, S. (2013). Measuring the level of satisfaction of residents of historical contexts; Case study of the historical context of Haji neighborhood of Hamedan. *Environmental planning*, 6(22), 101-119.
- Zarei, M. E. (2011). The physical-spatial structure of Hamedan from the beginning of the Islamic period to the end of Qajar. *Iranian Archaeological Research*, 1(1), 57-82. [html 320 https://nbsh.basu.ac.ir/article_](https://nbsh.basu.ac.ir/article.html)
- Zomorodian, Z. S., Aminian, S., & Tahbaz, M. (2016). Assessment of thermal comfort in the classroom in hot and dry climates; Field Studies: Girls' Elementary School in Kashan. *Fine Arts*, 21(4). https://jfaup.ut.ac.ir/article_61653.html
- Zucker, P. (1970). *Town and Square; from the agora to the village Green*. Massachusetts : The MIT Press.

HOW TO CITE THIS ARTICLE

Etemad Sheykholeslami, S. F., Mofidi Shemirani, S. M., & Mortezaei, S. R. (2022). Recognizing the Pattern of Hamedan Neighborhood Center in Accordance with the Needs of Women. *Armanshahr Architecture & Urban Development Journal*. 15(38), 167-182.

DOI: 10.22034/AAUD.2022.199303.1973

URL: http://www.armanshahrjournal.com/article_152326.html



COPYRIGHTS

Copyright for this article is retained by the author(s), with publication rights granted to the Armanshahr Architecture & Urban Development Journal. This is an open- access article distributed under the terms and conditions of the Creative Commons Attribution License.

<http://creativecommons.org/licenses/by/4.0/>

