

# Evaluation and Analysis of Perceptual-Cognitive and Social-Activity Components of Sense of Place in New Urban Settlements; Case Study: Qods Town, Qom City

Shirin Eslami<sup>a\*</sup> - Ahmad Shahivandi<sup>b</sup>

<sup>a</sup> Ph.D. Candidate of Urban Planning, Department of Urban Planning, Faculty of Architecture and Urban Planning, Art University of Isfahan, Isfahan, Iran (Corresponding Author).

<sup>b</sup> Associate Professor of Urban and Regional Planning, Department of Urban Planning, Faculty of Architecture and Urban Planning, Art University of Isfahan, Isfahan, Iran.

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## ABSTRACT

The challenge of transforming space into meaningful places is a significant issue that emerging urban settlements face. This struggle can lead to residents' reduced tendency to stay, their decreased satisfaction with residence, their weakened semantic and emotional connections to the area, as well as diminished social interactions and community solidarity. The present study aims to assess and analyze the significance of perceptual-cognitive and social-activity components of the sense of place in new urban developments by studying Qods Town as a case study. It is applied analytical research carried out within a mixed-method research framework. The required data were collected using library and field studies (using questionnaires). The statistical population included the residents of Qods Town, from which 245 individuals were selected as samples using a random sampling technique. Data analyses were conducted using one-way ANOVA, independent T-test, and structural equation modeling with SPSS26 and Amos Graphic26 software. The results indicate the good fit of the conceptual research model concerning the perceptual-cognitive and social-activity components of the sense of place in new urban developments. This model included factors such as identity-authenticity, imageability, mental image, use-activity, invitation, social participation, and safety-security. Among the aforementioned factors, imageability, social participation, and invitation obtained the highest weights, respectively, indicating their greater importance in shaping the sense of place in new urban developments. This highlights the significant role of enhancing infrastructure and urban managers' attention to effective components and indicators in forming and strengthening residents' sense of place. Notably, in Qods Town, the residents' perceptions of use-activity, invitation, identity-authenticity, and social participation in the conceptual model of sense of place were influenced by their age groups. Additionally, gender differences significantly influenced residents' perceptions of the town's use-activity and invitation.

**Keywords:** Place, Sense of Place, Crisis of Place, New Urban Settlements, Qom City.

\* E\_mail: eslami\_109@yahoo.com

## 1. INTRODUCTION

The establishment and development of contemporary settlements in the form of planned local communities, such as cities, new towns, quarters, and neighborhoods, have been steadily increasing. From the outset, the construction and expansion of these settlements have encountered challenges across various dimensions: physical-spatial, social-functional, perceptual-psychological, economic, and institutional-infrastructure. Among these challenging dimensions, one can refer to an issue common among these settlements: the unrealized of “placality”. This term refers to spaces lacking identity and roots that have not yet transformed into meaningful places. As mentioned by Relph, in the contemporary era, the sense of place dissolves in the shadow of the decreased authentic places, which is called “placelessness,” and at deeper levels, this results in a disconnection from roots and a loss of symbols (Pakzad 2012). In essence, placelessness occurs as a response to the loss or lack of public presence in environments where people feel no sense of belonging, don't value, or care about their surroundings (Carmona et al. 2016), which consequently leads to negative cognitive-psychological consequences for residents.

The “sense of place” concept is fundamental in newly established regions and settlements. These areas lack historical background and identity, and they typically feature diverse demographic structures, cultural compositions, and ethnicities (Montazerolhodjah and Sharifnejad 2023). Some experts argue that the high heterogeneity of residents can weaken social relations within the community (Verbrugge 1977; Wirth 1938). In this context, Stedman (2003) suggests that a sense of place arises from the fluid, changing, and dynamic contexts involved in the “social construct” of place. Conversely, a sense of place, with its emphasis on the ability to understand and perceive the unique qualities of place (Relph 2010), encompasses the emotional attachment and relationships that individuals form with specific locations, sometimes referred to as the “structure of feeling” (Arefi 1999). This personal orientation, in line with a proper perception of and emotional response to place, contributes to what is termed “environmental meaning” (Hummon 1992, cited by Cross 2001). Thus, a sense of place imbues life with meaning. Despite the importance of a sense of place for enhancing quality of life and ensuring the success of newly developed areas, many of these areas are constructed without perception and conscious design for enhancing this sense (Sobhaninia, Buckman, and Schupbach 2023). This reality attracts special attention to the aforementioned dimensions associated with the concept of sense of place. Additionally, as criticism of contemporary urban settlements rises, the challenges related to achieving a sense of place in these areas have become more apparent, especially in contrast to traditional contexts.

Among the causes of these challenges are inadequate perceptual-cognitive and social-activity factors related to place. This underscores the crucial role of urban design, as one of the fundamental principles in the processes of urban planning and design in these newly developed areas, in the establishment of places and creating a sense of place in them.

In this study, the Qods Town in Qom City was selected as a case study among various types of planned urban communities, due to the challenges it faces in the physical, perceptual, and functional dimensions of the sense of place. Some of the key challenges identified in this town are as follows.

1. A lack of proper design and clear definition of neighborhood centers that feature dynamic functions responsive to residents' needs;
2. Weaknesses of social hangouts and multifunctional spaces, which can serve as a catalyst for strengthening local social relations. This has resulted in public spaces that do not serve as a platform for promoting social interactions and communal activities, consequently hindering residents' active participation in social occasions;
3. Insufficient vegetation and inadequate urban furniture, which have contributed to the reduced environmental quality of public spaces; and,
4. A chaotic urban landscape caused by diverse design patterns, a lack of integration among architectural styles, and the incompatibility of these styles with the historical, climatic, and cultural context of Qom. This has diminished both the environmental quality and spatial identity of the town. As a result, Qods Town has become a passive environment lacking a distinct identity, promoting non-contextual architectural patterns. Given these challenges and the increasing importance of quality in emerging urban developments, the present study aims to assess and analyze the importance of the perceptual-cognitive and social-activity components of the sense of place in new urban developments. The main research question is: “What is the conceptual model of the sense of place, and how do the perceptual-cognitive and social-activity dimensions of the sense of place affect the residents of Qods Town?” This study distinguishes itself from previous research by presenting a new conceptual model for measuring and analyzing the sense of place, focusing especially on the perceptual-cognitive and social-activity dimensions tailored for new urban developments. This model can serve as a practical example to enhance the quality of such communities. To achieve the research objective, the present study is organized into four main steps. Step 1: Reviews relevant research background, describe the concepts of place and sense of place, and present the main characteristics and factors of the sense of place; Step 2: Extract, indicators and sub-indicators associated with the perceptual and social factors of sense of place, based on a study of previous relevant literature, in the form of the conceptual research framework; Step 3: Evaluates the case study according

to the developed conceptual research framework; and finally, Step 4: Summarizes the research findings and present the conclusions.

## 2. RESEARCH BACKGROUND

In recent decades, despite the expansion of the “globalization” concept and the development of virtual relationships, experts across various fields have continually emphasized the importance of perception, place, and the sense of place. This, along with the crucial role of urban design in creating place and managing the sense of place, has been increasingly important in theoretical and practical discussions. Understanding the emergence and evolution of meaningful places has become a prominent topic in contemporary scientific literature. In this regard, a vast body of literature on the conceptualization of space and place has emerged from disciplines such as geography, architecture, landscape, psychology, sociology and urban planning. Influential early studies by Tuan (1974) and Relph (1976) laid the groundwork for this exploration (Stokowski 2002). However, the literature on place has been pursued more specifically in the three schools of thought: psychological, phenomenological, and human geography. By embracing the notion that absolute, objective, and coordinate geographical space is conceptually more challenging to grasp than the relative, multidimensional, subjective, and perceptual views of the world around us, one can approach the concept of place in human geography as encompassing the nuances, feelings, symbols, perceptions, and meanings that individuals construct through cognitive, affective, and behavioral mechanisms in relation to their geographic environment. The concept

of “sense of place” in human geography encompasses more complex components that are not easily or necessarily measurable. On the other hand, drawing from environmental psychology studies, sense of place is conceptualized as a structure evolving links, attachments, or relationships that lead individuals or groups of individuals to meaningful places. This structure is often studied further using operational dimensions in environmental psychology (Tang and Painho 2021). Also, from a phenomenological perspective, sense of place is a general phenomenon characterized by structural, spatial, and personality values perceived through the perception of two critical factors: orientation and identification (Partovi 2015).

In a range of domestic and international studies, researchers have tried to evaluate and analyze the emotional-cognitive and behavioral-social structures that influence individual or group feelings about different places at various scales- from home to city. This focus has become more pronounced in recent research due to the challenges presented by new urban settlements, particularly the weaknesses and inadequacies in activity and social dimensions.

A group of studies particularly relevant to this research topic can be highlighted. Domestically, studies by Ziyari et al. (2014) and Rahmani and Adineh Loufard (2015) can be referred to. In terms of international research, key studies include those by Stedman (2002), Stokowski (2002), Ujang and Dola (2007), Smith (2011), Ghafourian and Hesari (2018), Westerhol and Naranjo-Zolotov (2022) and Sobhannia et al. (2023). A summary of the results from these studies is presented in Table 1.

**Table 1. Research Background in Domestic and International Studies**

	Authors	Title	Results	Case Study
Domestic Research	Ziyari et al. (2014)	An Assessment of the Role of Social Development in Strengthening the Sense of Place	There is a positive direct relationship between social development and place sense. The more social development among different neighborhoods, the higher the sense of place (satisfaction, place primacy, place cognition, spatial symbolism, place attachment and place commitment) is added.	Sanandaj
	Rahmani and Adineh Loufard (2022)	A Comparative Study of Sense of Place in the New Towns of Tehra	Andisheh New Town (Phase III) has exhibited a higher sense of place than other case studies, mainly due to the high quality of the physical environment and its compliance with urban standards.	Tehran

	Authors	Title	Results	Case Study
International Research	Stokowski (2002)	Languages of Place and Discourses of Power: Constructing New Senses of Place	This study has defined place and sense of place as social constructs and examined examples of leisure spaces, outdoor recreation, and tourism development in this regard.	***
	Stedman (2002)	Toward a Social Psychology of Place: Predicting Behavior from Place-Based Cognitions, Attitude, and Identity	It has presented a model of a sense of place based on conventional social psychology. This model involves cognitions, attitudes, identities and behavioral intentions located in place. It emphasizes attachment, satisfaction and meanings, as concepts with independent influences on a system encompassing behaviors that preserve or strengthen the valued characteristics of the environment.	Vilas
	Ujang and Dola (2007)	Linking Activity and Place Attachment Dimensions in Enhancing the Sense of Place	Economic and socio-cultural interactions enhance place identity and community identity. Vitality (atmosphere, pedestrian intensity and movement), diversity and choice (uses, products, and users), and transaction (economic transactions and socio-cultural interaction) are some of the key characteristics of activity that help improve the sense of place.	Kuala Lumpur
	Smith (2011)	The Relationship between Residential Satisfaction, Sense of Community, Sense of Belonging, And Sense of Place in a Western Australian Urban Planned Community	Investigating the interrelation of sense of community, sense of belonging, and sense of place and their impact on residential satisfaction indicated that a community developed with sensitivity to people's social and personal needs and spatial planning elements contributes to the development of residential satisfaction.	Ellenbrook
	Ghafourian and Hesari (2018)	Evaluating the Model of Causal Relations Between Sense of Place and Residential Satisfaction in Iranian Public Housing	The sense of place significantly enhances residential satisfaction in Mehr Housing, as the new developments.	Tehran
	Westerhol and Naranjo-Zolotov (2022)	Exploring Sense of Place in Relation to Urban Facilities: Evidence from Lisbon	The possible links between exposure to urban facilities and sense of place reveal that exposure to everyday and high-traffic urban facilities, such as grocery shops, is negatively correlated with place identity, while leisure locations are positively correlated with place attachment.	Lisbon
	Sobhaninia et al. (2023)	The Need for Creative Placemaking in New Development Areas: An Analysis of the Real Estate Developments of Qom, Iran	The results indicated that Pardisan Town in Qom exhibits a weak sense of place across individual, social, cultural, and environmental dimensions.	Qom

### 3. THEORETICAL FRAMEWORK

#### 3.1. New Urban Settlements, Challenges, and the Crisis of Place

Emerging urban developments encounter more complex challenges at different scales of development, from newly established neighborhoods to new cities, compared to traditional contexts. According to various studies, some of these challenges include: the dispersal of authorities' responsibilities and roles, the multitude of decision-making factors, a lack of inter-sectoral coordination and public participation (Arefi And Zamani 2013), inadequacies in the community-centered approach, and technical shortcomings (Sarvar, Tavakkoli, And Bahiraei 2016), the presence of a vicious economic cycle, a negative

balance between housing planning and employment planning, low competitiveness between the city and the urban identity crisis (Mohammadi And Changoli 2012), limited access to expected urban and social services, and a lack of public-centered perspectives in construction, management, and organization issues among government officials, urban designers, and planners. Overall, emerging urban developments face multidimensional and structural challenges, ranging from institutional and management weaknesses to social, economic and participatory failures. These barriers hinder the realization of quality environments that provide residents with a sense of place.

The failure of the functionalist approach over the past century has demonstrated that it is not sufficient for buildings and places to be merely functional; urban places must also be meaningful, meaning that they

must convey meaningful human values - whether social, ideological, scientific, philosophical, or religious. Today, the neutrality of place, which results in the alienation of people within fully planned functionalist neighborhood units, confirms that these spaces have not been involved in places. Although a functionalist neutral system may appear to offer all kinds of possibilities, it still lacks the vibrancy that comes from human life (Partovi 2015). It is important to note that the novelty of places, in the sense that they lack history, significant age, and memorable things, does not preclude their placiability. However, it poses challenges in realizing this potential, as individuals typically derive the meanings they need from the form and activities of the place before adding new meanings based on comparison with similar places (Pakzad 2020). The aforementioned challenges hinder the realization of the various levels of sense of place in contemporary urban developments, contributing to the crisis of place within these spaces. Given that many experts have recently embraced the definition of urban design as “creating place”, it is essential for urban design to integrate urban spaces, buildings, transportation infrastructure, and activities into meaningful and memorable places that enrich individual and collective experiences and lives (Golkar 2012).

### 3.2. Space and Place

The concept of place is closely tied to how people perceive and connect with their environments. Traditionally, place has been conceptualized through the comparison of space and place in what is known as the space-place dialectic. While distinct epistemological functions and perspectives provide different definitions for these two terms, they complement each other (Tang, Acedo, and Painho 2021) in such a way that the notions of “space” and “place” need each other to define them (Tuan 2001). Space and place are core concepts in geography. However, only since the 1970s, place has been recognized as a specific location and has gotten a set of meanings and attachments (Veerbeek 2016). Space is an objective, structured concept and is mainly defined as a physical location with measured dimensions and geographical coordinates, while place is a location that has meanings and values for an individual or group and is formed through human experiences and social interactions (Rezeg, Roche, and Eveno 2025). According to Tuan, “space” is a more abstract concept than “place” (Tuan 2001) and refers to everywhere, while place represents a specific location. Place has content, while space has a kind of emptiness (Behzadfar 2011). In fact, spaces are primary physical facilities that have not yet become places. Simply, spaces become places when people develop various reasons to frequent them (Madden 2011). Kerang also maintains that there are organic social relations in place where people interact over

many years beyond mere material interests (Carmona et al. 2016).

Furthermore, as Langer points out, people own the place using their cultural envelope, which includes historical monuments, distinctive architectural styles, and unique architectural patterns, making the infinite space a unique place (Rowntree 1981). In other words, place is not limited only to spatial, physical, and visual features. A geometric space evolves into a place for living, enriched with social and cultural values and meanings through everyday experiences (Arefi et al. 2009). Consequently, the interrelationships between people and places can manifest in various forms and be experienced differently across social groups, highlighting the complexity and richness of these connections (Erfani 2022; 2021; 2020).

### 3.3. Sense of Place

The concept of sense of place has garnered increasing attention in both popular and academic literature in recent years. However, definitions of core concepts remain contested (Stedman 2002). The disparities among these concepts have not yet been uniformly resolved (Peng, Strijker, and Wu 2020), and there is a lack of theoretical consensus on many terms in this field, as observed by Hidalgo and Hernandez. They noted that terms such as community attachment, sense of community, place dependence, place identity, place attachment, and sense of place have been researched in environmental psychology in ways that are difficult to distinguish conceptually (Belanche, Casaló, and Flavián 2017; Hidalgo and Hernandez 200; Tang and Painho 2021).

In general, sense of place can be regarded as an overarching concept that encompasses the sub-concepts of place identity, place attachment, and place dependence (Stedman and Jorgensen 2001, cited by Scannell and Gifford 2010). This concept includes behavior related to a place compared to others, beliefs about one’s ties to that place, and his feelings about it (Davis and Wagner 2024). Despite the significant differences in different theoretical approaches to place, it appears that all theorists have attempted to define three constituent factors of place with relatively similar commonalities: the physical characteristics of the environment, the meanings and feelings attributed to the place and the activities associated with it (Bandarabad and Shahcheraghi 2017) or, as Canter suggests, the place results from the relationships among actions, ideas and physical properties (Canter 2013).

In the theoretical literature, “sense of place” has been proposed with two distinct interpretations that sometimes overlap. The first interpretation refers to the feeling that an individual experiences when encountering a place (similar to the emotions evoked by a comedy or horror film). The second interpretation focuses on the feeling that an individual has towards a specific place and, in other words, the emotional

relationship that an individual or group has towards a specific place (akin to forming a judgment about the abovementioned film). In the first interpretation, the qualities of a place determine its nature, its location, the feelings it elicits, which are not necessarily positive and ideal and may even be unpleasant. The second interpretation emphasizes the varying degrees of an individual's emotional connection to a place (Pakzad 2020). In this context, the sense of place is viewed as a multidimensional construct reflecting beliefs, feelings, and behavioral commitments toward a place (Jorgensen and Stedman 2006). It is defined as a set of interpretations, meanings, and values linked to a specific place (Raymond et al. 2021; Manzo 2023), and it represents a layered and complex experience that is influenced by various social, cultural, historical and ecological factors (Sun et al. 2025).

However, the mere existence of a place is not a sufficient condition for creating a sense of place; rather, a prolonged and deep experience of that place, preferably coupled with the ability to engage meaningfully with it, is needed (Shamai 1991). Individuals develop a deep-rooted connection to a place through experiences such as being born, raised, and living there (Zlender and Gemin 2020). Ultimately, it can be said that the two interpretations of sense of place complete each other, as the emotional connection to a place emerges from the feeling that the place evokes in the individual (Pakzad 2020). Given the conceptual affordances of sense of place in current research, it has been identified as a promising factor in the management of socio-ecological systems (Verbrugge et al. 2019, cited by Knaps et al. 2022).

### 3.4. Cognitive-Perceptual Factors of Sense of Place

Meaning (cognitive-emotional) is one of the three factors that constitute the sense of place, as identified by scholars. It encompasses cognition, identity, attitude, and potential behaviors (Stedman 2002) toward place. The sense of place generally includes perceptual and associative characteristics (Motloch 2000) and involves personal orientation towards place. This personal orientation leads to accurate perception and feelings about place, thereby creating environmental meaning. This process helps to understand people's subjective perceptions and their nearly conscious feelings about their environment (Hummon 1992, cited by Cross 2001). Meanwhile, the meaning of place is constructed through experiences, as places are experienced subjectively. This experience is the most fundamental and intuitive way to understand a location. As individuals process their sensory knowledge of the world around them (such as warmth, darkness, or noise) and form their unique emotional responses (Creed, Taylor, and Hudson 2020), both long-term and short-term cognitive processes work together to develop a sense of place (Raymond, Kyttä, and Stedman 2017).

Accordingly, actual places are imbued with meanings by individuals or groups, described in the literature as "space + meaning = place" (Harrison et al. 1996, cited by Turner and Turner 2006). The underlying meaning of places is deeply connected to human purpose, culture, experiences, perspectives, and interests (Relph 2007). However, it is noteworthy that the socio-physical characteristics of places interact with human traits and influence how users evaluate and behave in their environment. In this regard, individual traits influencing environmental evaluation, such as personality, emotional states, socio-cultural experiences, level of expectations, personal intentions, and place characteristics, refer to social and spatial characteristics, such as goals, age, gender, and culture of the environment (Nasar 2011). Moreover, intra-individual states, ethnic ties, and ancestral roots contribute to the development of a sense of rootedness in a place (Hay 1998).

### 3.5. Socio-Behavioral Factors of Sense of Place

In recent decades, a theoretical approach has emerged that draws experts' attention to activity-based factors affecting the sense of place, focusing on social, behavioral, and activity characteristics. This approach defines the sense of place as a two-way process involving both rapid and immediate perceptions and slow and gradual social constructs (Raymond, Kyttä, and Stedman 2017). Many studies have highlighted the social construct of the sense of place (Stedman 2003). According to Lang, the social and cultural aspects of the concept of sense of place (Lang 2012) are quite evident, as reflected in the literature on place. From this perspective, a sense of place in a given space is perceived by adding something, such as social meaning, conventions, cultural perceptions related to role, function, nature, etc. (Harrison and Dourish 1996).

Creating a sense of place fortified by contextual and cultural connections is deemed necessary and beneficial for individuals and communities today (Hay 1998). In this regard, individuals play a central role in place-making processes through both individual actions and collective practices (Kundu 2016), and places, as fluid, variable, and dynamic contexts of interactions that encompass both overt and covert social actions (Stokowski 2002), significantly influence the notions of ideology, power, control, conflict, dominance, and distribution of social and physical resources within place-making behaviors. Moreover, relatively similar behavioral patterns among residents foster extensive social bonds within the community, leading to the emergence of emotional ties between individuals and their social contexts (Hesari et al. 2019).

In considering the activity dimension of the sense of place, attention to both individual and collective uses and activities is crucial for creating high-quality places and integrating the sense with their social and geographical contexts that contribute to the man-

place connection. This dimension often comprises cognitive-emotional states and is influenced by both individual and communal activities, such as leisure activities, recreation, and tourism (Stokowski 2002). Recent years have seen a rapid expansion of the concept of sense of place beyond the confines of leisure and recreation to encompass a wide variety of uses and environments (Raymond, Kytä, and Stedman 2017). Nguyen et al. (2019), in their study, found that commercial public spaces in cities play a central role in attracting people to pause and engage in activities (Nguyen, Han, and Sahito 2019), serving as venues for everyday interactions, including cultural activities and social interactions. Also, the simultaneous presence of diverse groups and activities is recognized as a key element in creating social cohesion (Qi, Mazumdar, and Vasconcelos 2024). On the other hand, places are essential for enhancing well-being and the use of places, deeply influencing the type of experiences and interactions individuals have with spaces (Dalavong and Choi 2024). In this regard, one can point to the positive relationship between levels of participation and citizenship power and the concept of sense of place (Ellery and Ellery 2019). Understanding the connection between levels of sense of place and activity characteristics can serve as an effective tool for urban planners and designers, assisting them in creating and revitalizing meaningful urban places (Ujang and Dola 2007).

#### 4. METHOD

The present study employed an applied analytical research approach within a mixed-method research framework, utilizing both quantitative and qualitative strategies. In the qualitative phase, data were collected through library studies, which involved reviewing urban reports and literature related to the sense of place, with a particular focus on new urban developments. The qualitative data were analyzed using a content analysis method. Following this analysis, relevant components, indicators, and sub-indicators were extracted, leading to the development of the conceptual research model that served as the foundation for the quantitative phase. Figure 2 illustrates the conceptual research model, along with supporting sources. In the quantitative phase, a cross-sectional survey was conducted, and data

were collected using a structured questionnaire. This questionnaire comprised 33 items: four items were based on a nominal scale, and 29 items were focused on the perceptual-cognitive and social-activity components of the conceptual model of sense of place using a five-point Likert scale (ranging from “very low” to “very high”). The statistical population included the residents of Qods Town, from which 245 individuals were selected as samples using a random sampling technique. The quantitative data were analyzed using descriptive and inferential statistics with SPSS 26 and Amos Graphic 26 software. In the descriptive analysis, measures such as mean, mode, and standard deviation were calculated in SPSS 26 software. For the inferential analysis, an independent T-test (to examine gender differences) and one-way ANOVA (to assess the impact of age on the perception of sense of place) were used to compare the opinions of different groups of residents of Qods Town. Additionally, structural equation modeling (second-order factor analysis) was utilized to analyze the relationships between the sense of place indicators and their interdependencies using AMOS Graphic 26 software. The content validity of the questionnaire was confirmed by professors and experts in the field of urban planning, and Cronbach’s alpha was assessed for reliability. The estimated Cronbach’s alpha value was 0.905, indicating a high level of reliability. In summary, the combination of qualitative analysis and quantitative modeling in this mixed-method research approach enabled a comprehensive examination of the sense of place within new urban settlements across various dimensions.

It is important to note that the normality of the data used in Amos Graphic 26 software was assessed using kurtosis and skewness criteria, where data are considered normal if skewness falls between -3 and +3, and kurtosis between -10 and +10. In the present study, all variables of the conceptual research model were found to be within these acceptable ranges, confirming the validity of the normality assumption. Additionally, the fit of the research model was assessed using both absolute and relative fit indices in structural equation modeling. Figure 1 presents the map of the case study, and Figure 3 outlines the research process.

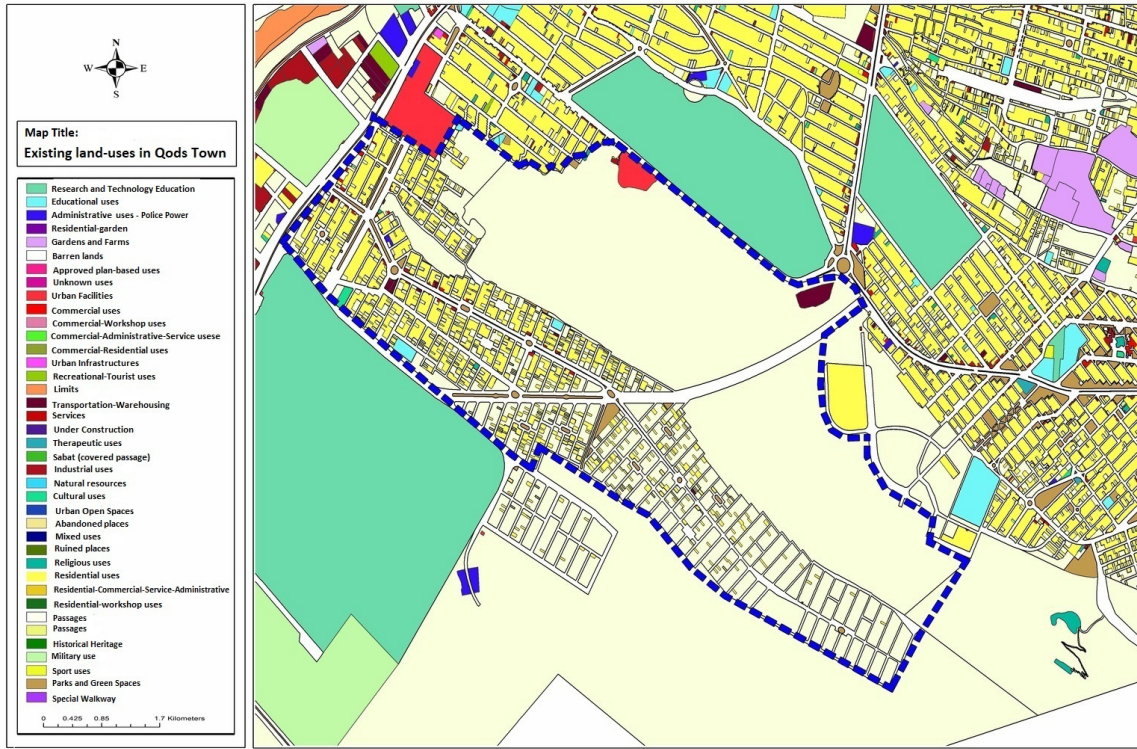


Fig. 1. Map of the Case Study (Qods Town)

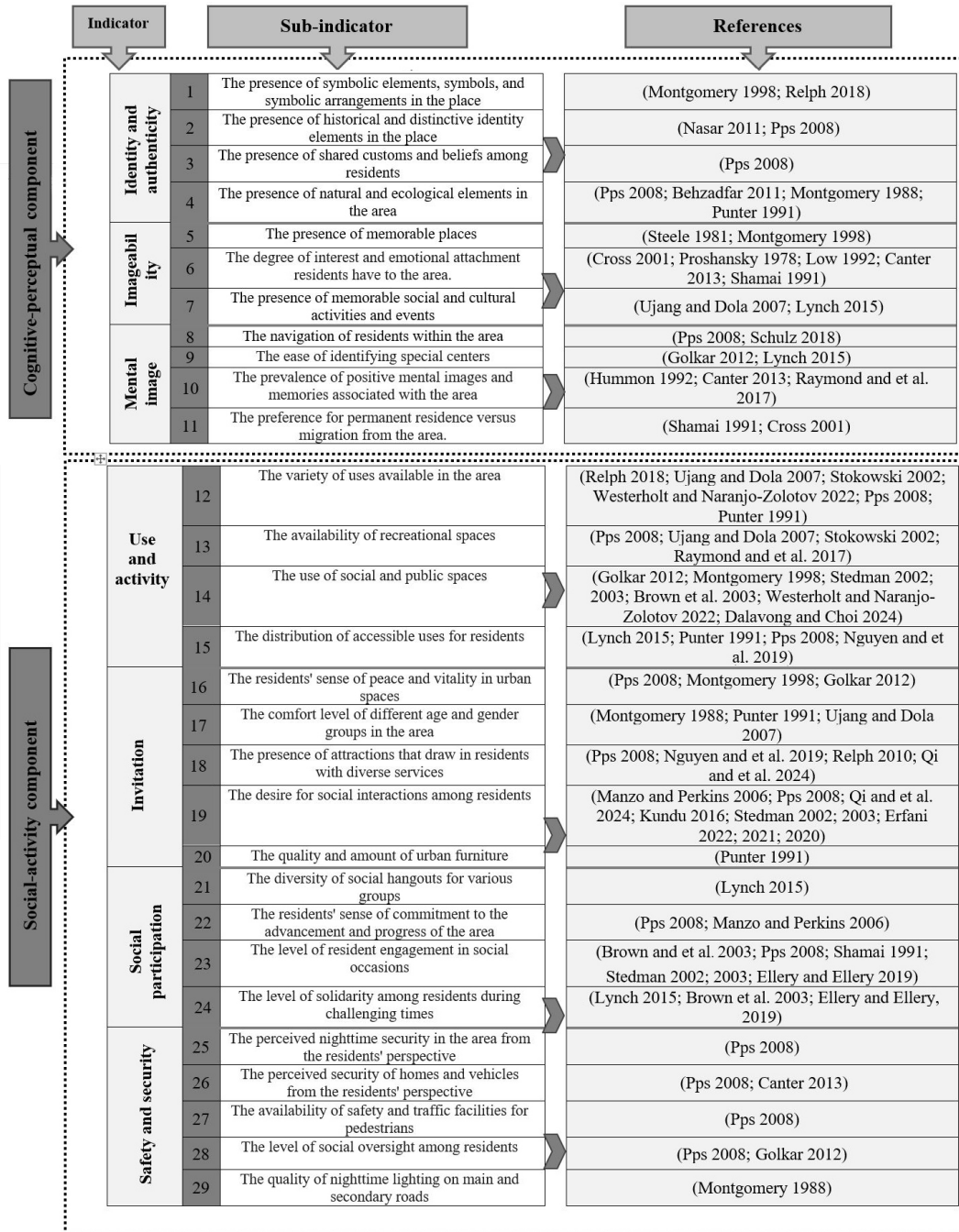


Fig. 2. Components, Indicators, and Sub-Indicators of the Conceptual Research Model

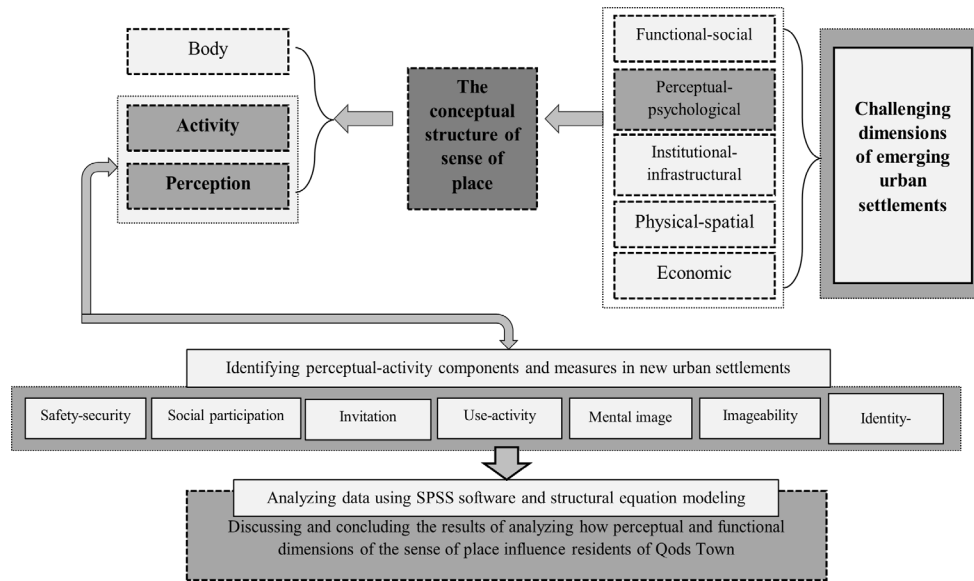


Fig. 3. Research Process

## 5. FINDINGS

### 5.1. Descriptive Demographic Findings

This section outlines the demographic characteristics of the sample group, including age, gender, education, and duration of residence, along with the personal characteristics of the respondents in terms of frequency and percentage. The findings revealed that there were 114 female respondents and 129 male respondents. The age group with the highest frequency was 24-35 years, accounting for 37.4% of the sample. In terms of education, the majority of respondents held a bachelor's degree, making up 33.6% of the sample. Additionally, the highest frequencies regarding the duration of residence were found in two groups: 2-5 years (31.3%) and 6-10 years (29.2%).

### 5.2. Descriptive Analysis of Perceptual-Cognitive and Social-Activity Components of Sense of Place among Residents of Qods Town

A descriptive comparison of the mean, mode, and standard deviation of perceptual-cognitive and social-activity components among residents of Qods Town demonstrated that the seven indicators studied were below the average level from the residents' perspective, implying the low realization of the factors outlined in the conceptual research model. Among the indicators studied, the mental image (3.75) indicator scored the highest at 3.75, while the activity indicator received the lowest score of 2.75. Table 2 compares the sub-indicators of the conceptual research model using descriptive statistics, and Figure 4 illustrates the descriptive average of these indicators by sub-indicators.

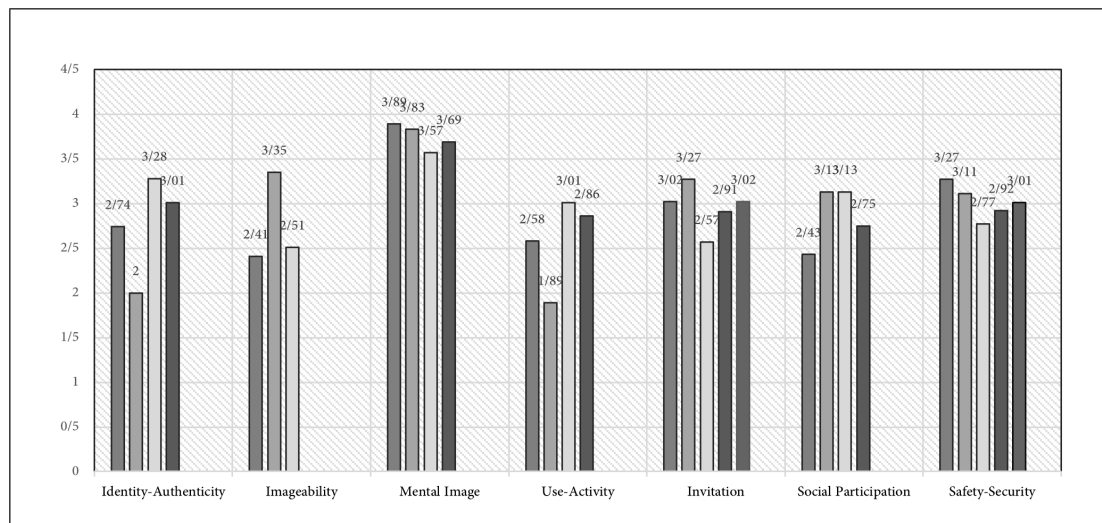


Fig. 4. Descriptive Comparison of the Mean Values of Perceptual-Cognitive and Social-Activity Indicators of Sense of place among Residents of Qods Town

**Table 2. Descriptive Comparison of the Mean Values of Perceptual-Cognitive and Social-Activity Indicators of Sense of Place among Residents of Qods Town**

Indicator	Sub-Indicator	Descriptive Measures of Dispersion			
		Mean	Mode	Standard Deviation (S.d.)	Mean
Identity-Authenticity	The presence of symbolic elements, symbols, and symbolic arrangements in the place	2.74	2.00	1.094	
	The presence of historical and distinctive identity elements in the place	2.00	2.00	0.943	2.76
	The presence of shared customs and beliefs among residents	3.28	4.00	1.044	
	The presence of natural and ecological elements in the area	3.01	3.00	1.93	
Imageability	The presence of memorable places	2.41	2.00	1.077	
	The degree of interest and emotional attachment residents have to the area.	3.35	3.00	0.928	2.75
	The presence of memorable social and cultural activities and events	2.51	3.00	1.077	
Mental Image	The navigation of residents within the area	3.89	4.00	0.928	
	The ease of identifying special centers	3.83	4.00	0.852	
	The prevalence of positive mental images and memories associated with the area	3.57	4.00	0.905	3.75
	The preference for permanent residence versus migration from the area.	3.69	4.00	1.051	
Use-Activity	The variety of uses available in the area	2.58	2.00	1.077	
	The availability of recreational spaces	1.89	1.00	0.980	
	The use of social and public spaces	3.01	3.00	1.032	2.59
	The distribution of accessible uses for residents	2.86	2.00	1.096	
Invitation	The residents' sense of peace and vitality in urban spaces	3.02	3.00	0.907	
	The comfort level of different age and gender groups in the area	3.27	4.00	0.103	
	The presence of attractions that draw in residents with diverse services	2.057	2.00	0.981	2.85
	The desire for social interactions among residents	2.91	3.00	1.040	
	The quality and amount of urban furniture	3.02	2.00	0.999	
Social Participation	The diversity of social hangouts for various groups	2.43	3.00	1.116	
	The residents' sense of commitment to the advancement and progress of the area	3.13	3.00	0.962	2.86
	The level of resident engagement in social occasions	3.13	3.00	0.962	
	The level of solidarity among residents during challenging times	2.75	3.00	0.970	
Safety and Security	The perceived nighttime security in the area from the residents' perspective	3.27	3.00	0.976	
	The perceived security of homes and vehicles from the residents' perspective	3.11	3.00	1.051	3.02
	The availability of safety and traffic facilities for pedestrians	2.77	3.00	1.044	
	The level of social oversight among residents	2.92	3.00	1.049	
	The quality of nighttime lighting on main and secondary roads	3.01	4.00	1.084	

### 5.3. Inferential Analysis

In this section, an independent T-test was utilized to examine the effect of the gender of residents of Qods Town on their perceptions of perceptual-cognitive and social-activity indicators of sense of place. In

this test, Sig. >0.05 implies that there is no significant difference between various age groups. The result of this test, including T values and the significance levels, revealed that there is no significant difference between gender groups in the indicators studied, except for the use-activity (Sig.=0.01 and T-value=1.09) and

invitation (Sig.=0.03 and T-value=0.90) indicators. These results indicate that gender has a significant effect on residents' perceptions of the use-activity and invitation indicators. But, it has no significant effect on residents' perception of other components of sense of place, including identity-authenticity, mental image, imageability, social participation, and safety-security.

Also, a one-way ANOVA was conducted to examine the effect of the residents' ages on their perceptions of the perceptual-cognitive and social-active indicators of sense of place. In this analysis, Sig. >0.05 implies that there is no significant difference between various age groups. The results of this analysis, including F-values and significance levels, indicated a significant difference between different age groups living in Qods Town in their perceptions of some indicators of the conceptual model of sense of place. A significant difference was observed in the following indicators: use-activity (F-value= 3.55, and Sig.=0.00 (99% confidence level), invitingness (F-value= 3.66 and Sig. 0.00 (99% confidence level), identity-authenticity (F-value= 2.31 and Sig. 0.05 (95% confidence level), and social participation (F-value=2.30 and Sig. 0.05 (95% confidence level). Next, the structural equation modeling was applied to examine the relationships between the main factors of the research model. The model was designed in the Amos Graphics software. The model had one external latent variable (exogenous) (perceptual and functional factors of sense of place), seven internal latent variables (endogenous) (identity-authenticity, mental image, imageability, social participation, safety-security, use-activity, and invitation) and twenty-nine external observed variables, which were named (X). In this model, twenty-nine measurement errors associated with observed variables (E) and seven structural equation errors (PSI) were considered. Figure 5 depicts the relationships between the external latent variable, internal latent variables, and observed variables in the model developed in the software.

In this study, the findings from the second-order factor model indicated the higher weights of some perceptual-cognitive and social-activity components affecting sense of place, confirming their more specific and tangible effects compared to other components in the model developed. Among the internal latent variables, four indicators of imageability, invitation, social participation (the latter two with the same weight) and use-activity have obtained higher weights in the evaluation of the external variable (sense of place), respectively, followed by the indicators of identity-authenticity, mental image, and safety-security. Therefore, one can say that among the perceptual-cognitive and social-activity indicators affecting the sense of place among the residents of Qods Town, imageability is the most influential indicator on the residents' perceptions of sense of place in Qods Town and plays a crucial role

in the formation of this concept.

According to Table 3, which presents the standardized regression weight, standard error (S.E.), critical ratio (C.R.), and P-value of the model variables, one can confirm the significant relationships between the external, and internal latent variables, and observed variables and the significant difference between the calculated values with zero and a 99% confidence level in the research model developed by the Amos Graphic software. The outcomes can be analyzed as follows:

Path 1 examines the effect of the internal latent variable "identity-authenticity" on the sense of place, revealing a significant relationship between these two variables. The correlation, with a factor loading of 0.62, indicates that the identity-authenticity variable has a lesser impact on the sense of place compared to other internal latent variables in the research model. In the case study, similar to many new urban developments, the identity indicator has failed to convey a strong identity image of the space. This is due to several factors, including the absence of rich existential context, the diverse cultural customs and traditions of the residents, and the lack of historical and distinctive identity elements and patterns in the context. However, it appears that residents do not view this deficiency as problematic because, as mentioned earlier, in this type of settlement, the residents' perception of the place tends to focus on meeting their present and future functional needs. However, it is important to note that this focus may have negative impacts on other indicators in the long run. Therefore, despite the relatively poor position of the "identity-authenticity" indicator in the hypothesized model, it is crucial to address it in future planning to enhance the sustainability and spatial quality of the settlement. Path 2 examines how the internal latent variable "imageability" affects the sense of place. The findings reveal a significant relationship, indicated by a regression weight of 0.99, a critical ratio (C.R.) of 4.551, and a significant P-value. This suggests that imageability has the highest effect size on the sense of place within the research model. The correlation value, coupled with the high indicator weight, highlights some shortcomings in the town, such as its lack of appealing places, activities, and memorable events. The degree of interaction with a place and presence in it, are crucial for recognizing and experiencing that place. Consequently, the results indicate a clear deficiency in communal and memorable activities, which are vital for fostering social interactions among residents and building a sense of attachment and belonging to their neighborhoods. Given the significant role of the imageability indicator in shaping the sense of place, the lack of attention to creating the necessary conditions for its occurrence in the town, especially on a local scale, emerges as a primary challenge in improving the quality of the town's living environment.

In Path 3, the effect of the internal latent variable “mental image” on the sense of place is examined. The analysis confirms a significant effect, indicated by a regression weight of 0.681, a critical ratio (C.R.) of 4.643, and a significant P-value. However, this regression weight indicates that the effect of this variable on the sense of place is less pronounced compared to other internal latent variables of the model. This is reflected in the sub-indicators, which reveal a more favorable perspective from the residents, aligning with their mental expectations. Since the case study is an example of new urban developments, where facilitating the automobile needs of residents within a gridiron context has been prioritized, the residents’ ability to navigate has been estimated at a desirable level. Additionally, despite some issues in the context that may stem from various internal and external factors, there are positive perceptions and mental images among residents regarding their living situation in the town, suggesting that their perceptions of the environment align with their expectations to some extent. However, this relative satisfaction and the fulfillment of functional expectations have led to a diminished role of the mental image within the model. Path 4 analyzed the impact of the internal latent variable “use-activity” on the sense of place among residents of Qods Town. This variable with a regression weight of 0.936, a critical ratio of 4.114, and a significant P-value can be identified as the fourth influential indicator in the conceptual research model. Its high weight in the hypothesized model is attributed to some shortcomings in the context, including a lack of diverse uses, insufficient dispersion and mixing of uses and activities, failure to meet residents’ activity needs, such as leisure places, and insufficient acceptance of existing public and communal spaces. These deficiencies have highlighted the importance of use and activity as crucial factors in enhancing the sense of place for residents. Therefore, it can be concluded that if urban management focuses more on integrating various uses and activities on both micro to macro levels, it will significantly enhance the sense of place for the residents of Qods Town. Paths 5 and 6 explore how the internal latent variables “invitation” and “social participation” influence the sense of place. The results reveal a significant relationship between these variables and the sense of place, as confirmed by their regression weights, critical ratios (C.R.), and P-values. With a regression weight

of 0.98, these two variables have been identified as the second most influential indicators of the sense of place in Qods Town. The research findings suggest that one of the main reasons for the failure of new urban developments, including Qods Town, is the lack of desirable social interactions and participation among residents. An inadequate number of social places in the neighborhood, which limits opportunities for different groups of residents to engage with each other, residents’ reluctance to participate in social and religious occasions, and their poor sense of commitment and solidarity in addressing the issues existing in the places, will overshadow and diminish their sense of place over time. In contrast, promoting participation by strengthening the neighborhood and social relationships can foster a strong bond between residents and their residential context. On a positive note, despite some shortcomings and inadequacies in the context, the perceived invitation of the town has been rated favorably by residents. This positive perception largely stems from external attractions, such as Qods Town’s location in Municipal District 4 of Qom City, its natural landscapes, popular constructions, the presence of attractive places on urban and extramural scales, such as the Bird Garden, the Holy Defence Garden-Museum, and the relatively organized heights for walking. These features create an appealing image that invites individuals and groups to Qods Town and encourages them to continue residing in it.

Path 7 confirms a significant relationship between the internal latent variable “safety-security” and sense of place, with a regression weight of 0.62, accompanied by a significant critical ratio (C.R.) and a significance P-value. The results indicate that the safety-security indicator is at a desirable level, attributed to the relative daily and nightly security available for residents in various spaces, the security offered for homes and vehicles, and the consistent presence and patrolling of police forces, resulting in this indicator having the lowest weight in the hypothesized model. It is also worth noting that, for the reasons explained above, within the observed variables of the hypothesized model, the sub-indicator of “positive mental images and memories”, had the highest factor loading, with a weight of 0.86, in instilling a sense of place in residents, while the sub-indicator “residents’ orientation”, had the lowest factor loading at 37.

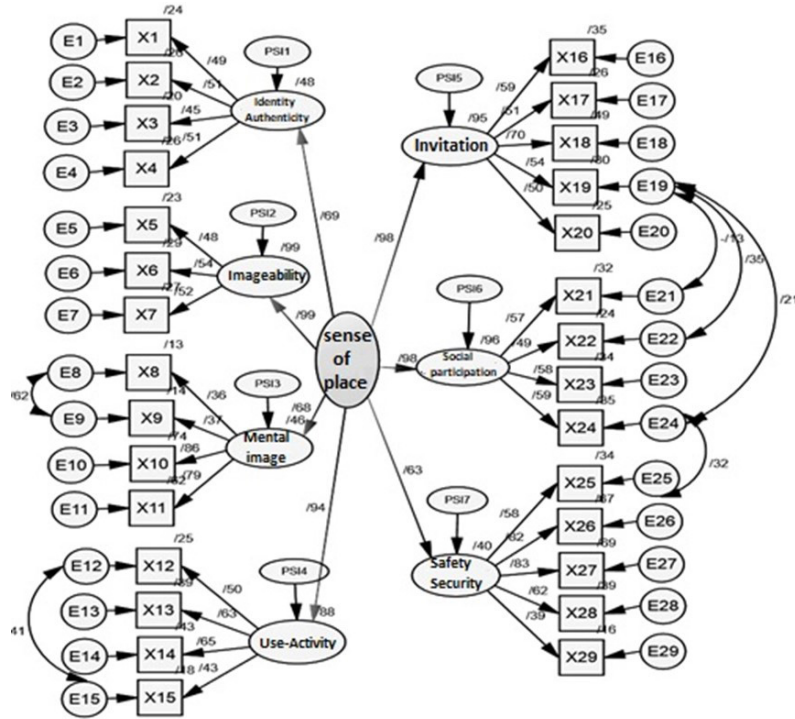


Fig. 5. Hypothesized Standard Model in Amos Graphical Software

Table 3. Regression Weights of Indicators and Sub-Indicators of the Hypothesized Research Model

P	C.R.	S.E.	Standardized	The Correlation between Indicators and Sub-Indices in the Hypothesized Structural Equation Model		
P-Value	Critical Ratio	Standard Error	Regression Weight			
			.69	Sense of Place	--->	Identity-authenticity
***	4.55	.381	.99	Sense of Place	--->	Imageability
***	4.64	.377	.68	Sense of Place	--->	Mental image
***	4.11	.331	.93	Sense of Place	--->	Use-activity
***	4.72	.344	.97	Sense of Place	--->	Invitation
***	4.66	.413	.97	Sense of Place	--->	Social participation
***	4.32	.272	.62	Sense of Place	--->	Safety and security
			.44	Identity-Authenticity	--->	Mental image
***	4.54	.277	.50	Identity-Authenticity	--->	The presence of historical and distinctive identity elements in the area
***	4.46	.258	.49	Identity-Authenticity	--->	The presence of symbolic elements, symbols, and symbolic arrangements in the place
***	4.53	.262	.50	Identity-Authenticity	--->	The presence of natural and ecological elements in the area
			.52	Imageability	--->	The presence of memorable social and cultural activities and events
***	6.37	.163	.53	Imageability	--->	The degree of interest and emotional attachment residents have to the area.
***	5.88	.149	.47	Imageability	--->	The presence of memorable places
			.78	Mental Image	--->	The preference for permanent residence versus migration from the area.

P	C.R.	S.E.	Standardized Regression Weight	The Correlation between Indicators and Sub-Indices in the Hypothesized Structural Equation Model		
P-Value	Critical Ratio	Standard Error				
***	10.91	.086	.86	Mental Image	--->	The prevalence of positive mental images and memories associated with the area
***	5.428	.071	.37	Mental Image	--->	The ease of identifying special centers
***	5.20	.077	.35	Mental Image	--->	The navigation of residents within the area
			.42	Use-Activity	--->	The distribution of accessible uses for residents
***	5.791	.249	.65	Use-Activity	--->	The use of social and public spaces
***	5.69	.230	.62	Use-Activity	--->	The availability of recreational spaces
***	6.62	.172	.49	Use-Activity	--->	The variety of uses available in the area
			.59	Invitation	--->	The residents' sense of peace and vitality in urban spaces
***	6.65	.158	.51	Invitation	--->	The comfort level of different age and gender groups in the area
***	8.37	.153	.69	Invitation	--->	The presence of attractions that draw in residents with diverse services
***	6.95	.150	.54	Invitation	--->	The desire for social interactions among residents
***	6.55	.143	.50	Invitation	--->	The quality and amount of urban furniture
			.56	Social Participation	--->	The diversity of social hangouts for various groups
***	6.29	.119	.49	Social Participation	--->	The residents' sense of commitment to the advancement and progress of the area
***	7.12	.124	.58	Social Participation	--->	The level of resident engagement in social relationships
***	7.252	.118	.59	Social Participation	--->	The level of solidarity among residents during challenging times
			.58	Safety and Security	--->	The level of social oversight among residents
***	9.10	.146	.81	Safety and Security	--->	The perceived nighttime security in the area from the residents' perspective
***	9.15	.158	.82	Safety and Security	--->	The perceived security of homes and vehicles from the residents' perspective
***	7.680	.140	.62	Safety and Security	--->	The availability of safety and traffic facilities for pedestrians
***	5.32	.133	.39	Safety and Security	--->	The quality of nighttime lighting on main and secondary roads

#### 5.4. Fit Measures of the Conceptual Research Model

Among the various fit measures for structural equation models, the Chi-square fitness index is regarded as the most general absolute fit index. If  $P > 0.05$ , one can conclude that the covariance structure of the model does not significantly differ from the observed covariance structure, thereby confirming the hypothesized research model. Another important index is the normed or relative Chi-square (CMIN/DF), which typically accepts values between 2 and 3 (Ghasemi 2013). In the present study, the P-value was found to be 0.000, and the CMIN/DF value was

2.62, indicating that the conceptual research model fits well. For relative fit indices, the normed fit index or Root Mean Square Error of Approximation (RMSEA) is crucial. An RMSEA value above 0.10 signifies poor model fit, while a value between 0.08 to 1 indicates good fit (Ghasemi 2013). In the present study, the RMSEA value was estimated at 0.82, which suggests a good fit of the research model. Regarding parsimony fit indices, the parsimony ratio (PRATIO) index should fall between 0-1; in this study, it was found to be 0.89. Additionally, the parsimony comparative fit index (PCFI) and the parsimony normed fit index (PNFI) should both exceed 0.05. In

this analysis, the PCFI and PNFI were estimated at 0.692 and 0.611, respectively, indicating a good fit for the hypothesized research model. Tables 4 and

5 present the absolute and relative fit indices for the conceptual research model in structural equations.

**Table 4. Absolute Fit Indices of the Hypothesized Research Model in Structural Equations**

Absolute Fit Indices of the Hypothesized Model					
P-Value	P	<0.05	0.000	Acceptable	
Chi-Square Value/Degree of Freedom	CMIN/DF	2-3	2.625	Acceptable	

**Table 5. Relative Fit Indices of the Hypothesized Research Model in Structural Equations**

Index	Abbreviation	Acceptable Fit Threshold	Model			Result
			Hypothesized	Saturated	Independence	
Normed Fit Index	RMSEA	0.08-1	0.82		0.243	Acceptable
Parsimony Ratio	PRATIO	0-1	0.89	0.000	1.000	Acceptable
Parsimony Normed fit Index	PNFI	>0.05	0.611	0.000	0.000	Acceptable
Parsimony Comparative Fit Index	PCFI	>0.05	0.692	0.000	0.000	Acceptable

## 6. CONCLUSION

The present study aimed to assess and analyze the significance of the perceptual-cognitive and social-activity components of the sense of place in Qods Town as an example of new urban developments. The hypothesized research model was assessed using second-order factor analysis in structural equation modeling with the Amos Graphic 26 software.

It is worth mentioning that the results of the present study align with those of previous research mentioned in the research background section. Specifically, the findings are consistent with those of “Ziari et al. (2013), who emphasized the need to focus on social development and enhancing the sense of place; Smith (2011), who highlighted the significance of addressing social needs and the sense of community in fostering the sense of belonging and the sense of place and their impacts on resident satisfaction; and Stedman (2003), who discussed the relevance of social constructs and the semantics surrounding the concept of the sense of place”. The effects of functional activities in place, such as leisure spaces, entertainment, the power of diversity, and choice of activities, which have been mentioned in the studies by Stokowski (2002) and Ujang and Dola (2007), were also confirmed in the present study. This study, while emphasizing previous findings, illustrates the fact that many indicators of the perceptual-cognitive and social-activity components of the sense of place in new urban developments have been inadequately addressed. However, these components are crucial for the continuity of residence, resident satisfaction, a sense of attachment to one’s home, and the fulfillment of subjective expectations.

To address the main research question- what is the conceptual model for assessing and analyzing the

perceptual-cognitive and social-activity components of sense of place among residents of Qods Town and how can it be evaluated?- the research findings and hypothesized factor model suggest that the aforementioned components can be articulated through seven indicators: identity-authenticity, imageability, mental image, use-activity, invitation, social participation, and safety-security, along with 29 sub-indicators. The good fit of the aforementioned model indicates its utility and practicality. Structural equation analyses revealed that among the aforementioned indicators, imageability, social participation, invitation, and use-activity had the highest factor loading, respectively, and were assigned the highest weight in the evaluation of sense of place. Notably, the imageability indicator carried the most weight in shaping residents’ sense of place. The high value placed on this factor suggests that focusing on creating memorable places, activities, and shared events significantly enhances the sense of place for residents. The indicators of invitation and social participation, which were assigned equal weight and ranked second, underscore the importance of social factors in instilling a sense of place in residents. Unfortunately, new urban developments often suffer from insufficient social interaction and participation due to either a lack of public spaces or residents’ reluctance to engage. This deficiency adversely affects the formation and reinforcement of a sense of place, particularly given the significance of its social construct. The use-activity indicator, ranking fourth with substantial weight, indicates residents’ dissatisfaction with the distribution, diversity, and accessibility of the uses and activities they need and expect. In contrast, the indicators of identity-authenticity, mental image, and safety-security received significantly lower weights, thus

playing a lesser role in shaping the sense of place for Qods Town residents.

The research findings also demonstrated that different age groups in Qods Town have perceived the indicators of use-activity, invitation, identity-authenticity, and social participation differently. In addition, gender differences have significantly influenced the residents' perceptions of use-activity and invitation indicators. Overall, the moderate to

weak scores across most indicators and sub-indicators of sense of place in the descriptive analysis and the results of the inferential analysis of the hypothesized research model underscore the need for urban managers to pay special attention to the indicators and components that contribute to improving the quality of the sense of place in Qods Town as an example of new urban developments.

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The authors have no conflicts of interest to declare.

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The authors commit to observe all the ethical principles of the publication of the scientific work based on the ethical principles of COPE. In case of any violation of the ethical principles, even after the publication of the article, they give the journal the right to delete the article and follow up on the matter.

## PARTICIPATION PERCENTAGE

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

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