

Recognizing the Components of Contemporary Housing and its Impact on the Cultural and Social Identity of the Metropolis of Ahvaz Using the Shannon Entropy Method

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ABSTRACT: In the metropolis of Ahvaz, contemporary housing plays a significant role in shaping and enhancing its residents' cultural and social identity. This research employed a questionnaire as the data collection tool. A total of 16 questions were designed for the identity questionnaire, centered around two main components: social and cultural. Additionally, 34 questions were provided to residents of various regions in Ahvaz, covering eight primary components: cultural, structural, functional-executive, physical-spatial, operational, experiential-aesthetic, environmental, and social-political, to distinguish between the internal and external housing components. The analysis of correlation coefficients and regression between contemporary housing variables and the urban identity of Ahvaz reveals a strong positive correlation between these two variables. This indicates that as the level of industrialization of buildings increases, urban identity indicators also rise across different areas of Ahvaz. The final weight of the housing and contemporary identity components was calculated using the Shannon entropy method. The results indicate that different components hold varying importance and influence in different domains. In cultural identity, the social system plays a more prominent role, while in social identity, religion is more significant. Regarding housing, functional and environmental aspects are more important, focusing on efficiency and sustainability in housing design. This analysis can be helpful for policymakers, designers, and planners to understand better the importance of various components in identity and housing.

Keywords: Contemporary housing, Building, Socio-cultural identity, Shannon entropy method, Ahvaz.

INTRODUCTION

Housing is a necessity that has acquired different meanings in various natural and constructed environments. Each community has given it a unique shape based on its needs, capabilities, and economic, social, and cultural constraints (Najafi et al., 2023; Mohammadian et al., 2021; Mohammadi Yeganeh et al., 2021). Contemporary housing architecture has weakened the connection between housing and individuals, resulting in a lack of identity for homes and satisfaction among residents. Housing is an institution created for complex purposes and not merely a structure (Khadjeh-Nazad et al., 2021). As building a home is a cultural phenomenon, the form and plan of housing, along with its spatial organization and order, are profoundly influenced by the cultural environment to which the housing belongs. The aim and role of housing is to create a spatial social unit (Honarvar et al., 2023; Ayni-Far et al., 2020). The distinctive characteristics of a culture, namely

the accepted methods in that culture for carrying out tasks and the avoidance of what is socially unacceptable, mean that housing is not only a cultural phenomenon but also a space shaped by cultural factors. In many societies, housing is more than a physical structure (Hogg, 2016; Amiri, 2017). Since housing is created for individuals, those individuals must participate in the production process (Nazoktabar & Ebrahimi, 2023). The topic of identity has garnered significant attention, especially following the modern era and the shift towards global architecture, which has again drawn the interest of many researchers and designers towards Iranian Islamic identity (Brieger, 2019). Contemporary housing architecture in Iran has not reflected the identity and culture of society as it did in the past, leading to a gradual identity crisis due to the emergence of outward-facing trends and new building patterns (Haslam et al., 2024).

One of the most significant issues that have drawn the attention

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of academic institutions and urban management organizations in recent years is the systemic problems of contemporary housing in Iran (Formolly & Saraei, 2024; Barkhordar et al., 2021). Many scholars acknowledge that contemporary Iranian housing fails to comprehensively meet the needs of Iranian families, including cultural, social, meaningful, and functional requirements (Nazoktabar & Ebrahimi, 2023). This has led to a notable decrease in satisfaction with contemporary Iranian housing compared to traditional Iranian housing (Valibeigi et al., 2020). Housing encompasses various social, economic, cultural, and psychological dimensions and cannot be viewed from a one-dimensional perspective. Therefore, both the quantity and quality of housing are important, and since consumer satisfaction ultimately holds the greatest significance, housing must align with traditional values, environmental characteristics, and the beliefs and social contexts of the individuals (Nazoktabar & Ebrahimi, 2023). For various reasons, today's architectural space is not built based on cultural contexts.

Consequently, the issue of identity is also significant, as it can be easily stated that, given the current prevalent architecture in the country, not only do today's buildings fail to impart identity to the city, but they also strip it of its historical identity (Sakib, 2022). Based on conducted studies, Iran holds a low position in industrial and technological production, and the reasons for this low technological standing are often examined from technical and economic perspectives, with less focus on cultural and identity aspects (Kazimierczak et al., 2020). The society's acute need for housing has highlighted the reality that traditional construction methods will not satisfy community needs. As a result, employing a construction system with the capacity for industrial production and prefabrication could meet the quantitative and qualitative needs of the region (Stokes & Price, 2017; Ham, 2023). However, these changes in construction must be based on local capabilities; thus, this development should be gradual, evolutionary, and not sudden or fundamental. The emergence of contemporary architecture in Khuzestan, especially in Ahvaz, has not been separate from that of Iran's major cities. The city of Ahvaz is still in its formative stages and has developed in response to the geopolitical needs of the country in contemporary times; it is currently experiencing an identity crisis and confusion. (Kamelnia & Hanachi, 2022).

The introduction of Western modernity in Khuzestan, along with the technical and civil engineering efforts of builders in the context of contemporary architecture and urban planning, has effectively attracted a large population, leading to a transformation of their initial identities and the creation of new ones (Hataminejad et al., 2018). The city of Ahvaz, which is the focus of this study, does not relate to favorable environmental conditions, economic factors, or the lifestyles of local tribes and communities; instead, its significance is based on a strategic position. Over time, the important social and political consequences in a city like Ahvaz have led to the housing experiences, as mentioned earlier, being forgotten. Therefore, there has been an investigation into the influencing factors in contemporary industrial housing in response to the reception of housing complexes (Nahas et al., 2023). The present research aims to describe, analyze, and clarify the internal and external organizing concepts in housing design, which would lead to the emergence of a contemporary housing model capable of

identifying factors that impact the socio-cultural identity of Ahvaz. Ultimately, efforts will be directed towards achieving a standardized and structured model for contemporary housing complexes rooted in the city's identity, significantly enhancing living conditions compared to the past, and developing policies and regulations for higher-level architectural and urban planning frameworks within the study area.

MATERIALS AND METHOD

The main strategy of this research is applied and developmental in terms of its objectives. The methodology is based on a mixed-method approach, integrating descriptive methods and content analysis to identify the concepts and components of contemporary housing and its socio-cultural identity. This process begins after reviewing the background literature and extracting patterns and a conceptual model for the research. The conceptual model aims to elucidate the concepts and components of contemporary housing and socio-cultural identity, leading to the identification and introduction of general principles in both quantitative and qualitative terms within the housing domain. This section aims to achieve indicators and organizing components of socio-cultural identity and contemporary housing derived from texts and experts' opinions, utilizing insights from recognized architecture specialists in the country. This objective is accomplished through content analysis methods.

In this study, interviews were conducted using a questionnaire among individuals residing throughout the city to evaluate the component of contemporary housing in the socio-cultural identity transformations of the metropolis of Ahvaz. The number of participants was determined to be 171 based on Cochran's formula. Furthermore, a questionnaire was utilized for data collection. According to Table 1, the questionnaire on identity was designed with 16 questions based on two main components: socio-cultural. Conversely, as outlined in Table 2, 34 questions were developed with eight main components—cultural, structural, functional-performance, morphological-spatial, operational, empirical-aesthetic, environmental, and political-social—specifically concerning the internal and external housing components provided to residents of various regions in Ahvaz.

In the data analysis, to ensure reliability, the data were examined using reliability coefficients to uphold the validity of the results. In this study, all data collection tools complemented each other, allowing for the validation of other methods and a deeper investigation into the motivations of respondents and the reasons they provided for their answers. For this purpose, after examining the indicators of contemporary housing and socio-cultural identity, the parameters obtained were assessed using various tools, and the related criteria were identified and introduced for the city of Ahvaz. Depending on the significance, the degree of presence, impact, resident satisfaction, and the emphasis placed by experts based on observations, sources, studies, interviews, questionnaires, and expert observations (the researchers' on-site observations) were introduced. Data analysis was conducted using SPSS software, initially employing Pearson correlation tests and regression coefficients to identify the impact of contemporary housing components on socio-cultural identity and to establish the significance of these indicators. Subsequently, the components of each contemporary housing and identity indicator were prioritized using

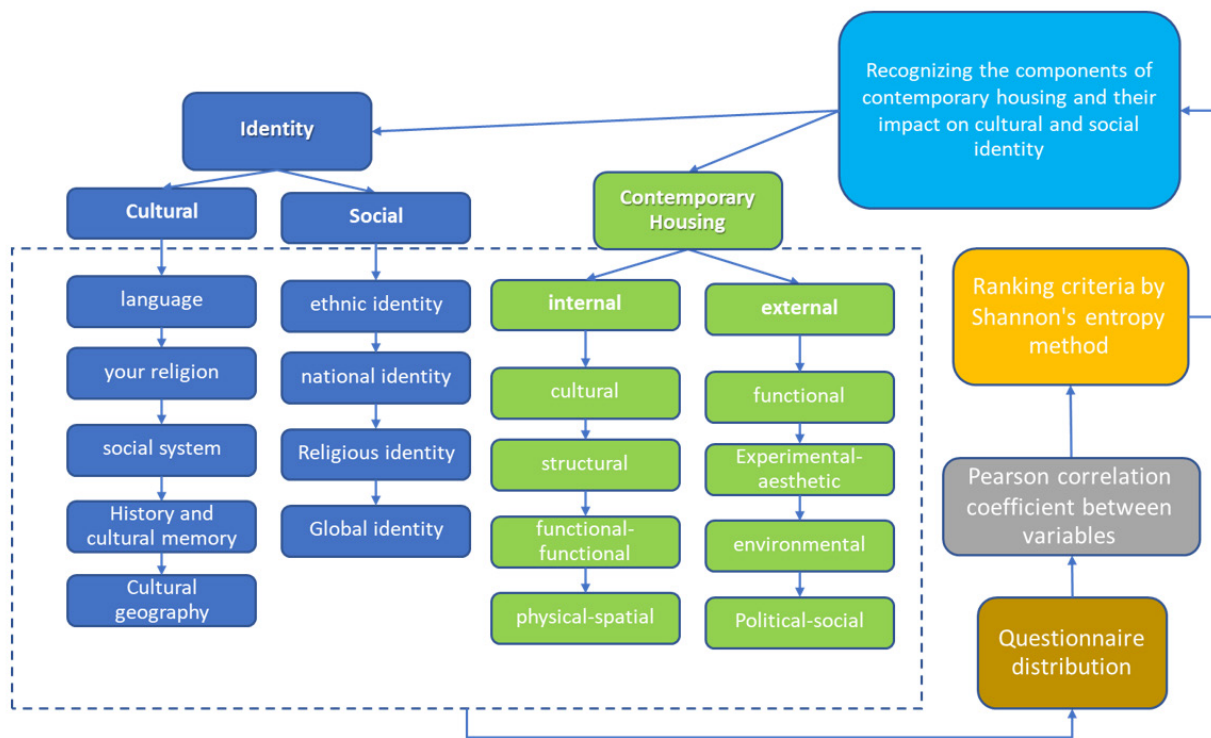


Fig 1: Flowchart of the Conceptual Model of the Research.

the Shannon entropy method. The conceptual model of the research is presented in Figure 1, considering the mentioned items. Table 1 presents the results of Cronbach's alpha coefficient for the reliability of the contemporary housing and identity questionnaire. Since all the coefficients are calculated to be 0.9 or higher, it can be concluded that the questionnaires used in this study have a high level of reliability.

Table 2 presents the components of the identity questionnaire. According to this table, the questionnaire is divided into two sections: cultural identity and social identity. Cultural identity includes a prescriptive approach with four sub-components: language, religion, social system, cultural history and memory, and cultural geography. Social identity consists of four sub-components: ethnic, national,

religious, and global identity.

Similarly, Table 3 shows the components of the contemporary housing questionnaire, which includes internal sub-components—cultural, structural, functional-performative, and physical-spatial—and external housing components with sub-components—operational, experiential-aesthetic, environmental, and socio-political.

RESULTS AND DISCUSSION

The demographic characteristics of respondents to the contemporary identity and housing questionnaires in Ahvaz's residential areas revealed 107 males and 64 females. Additionally, 59 respondents were single, while 112 were married. The age variable indicated that

Table 1: Calculation of Cronbach's Alpha Coefficient for the Reliability of the Contemporary Housing and Identity Questionnaire

Questionnaire	Number of questionnaires	Item	Cronbach's alpha coefficient
Contemporary Housing	17	Indicators of an Ideal Residential Architecture	0.902
	17	Ideal External Indicators of Housing Architecture	0.905
Identity	16	-	0.986

the most common age group among respondents was between 30 and 45 years (Figures 2 to 4). Descriptive statistics for the contemporary housing questionnaire are presented in Table 4. According to this table, the functional-performance component had a mean of 3.73 for the internal aspects of housing, while the environmental component had a mean of 3.67 for the external aspects of housing, showing the highest

rankings. Descriptive statistics for the identity questionnaire are shown in Table 5. This table indicates that the social system component had the highest score in cultural identity, with a mean of 3.88, while the religious identity component had the highest score among social identity components, with an average of 3.49.

The correlation coefficient results between contemporary housing and

Table 2: Components of the Identity Questionnaire

Types of identity	Indicators	Components	
Cultural identity	Prescriptive approach	Language	speech
			.Religion is the field of religion
		Your religion	the field of religion
			social system
			educational system
			family system
		Social system	Economic system
			Cultural system
			Political-legal system
		History and cultural memory	History and cultural memory
Social identity			Material heritage
			Cultural geography
		ethnic identity	
		national identity	
		Religious identity	
		Global identity	

Table 3: Components of the Contemporary Housing Questionnaire.

Components	Subcomponent	Features and subsections
Internal housing components	Cultural	.Create a sense of identity
		The feeling of belonging contains symbols and cultural signs.
		A feeling of familiarity and association
	Structural	Creating a sense of residence
		Strength and stability of the structure
		Use of appropriate materials
	Functional-Functional	Standard equipment
		Circulation
		Dimensions and size
	Physical-Spatial	Access to housing and its suitability for people
		Suitable communal spaces
		Beautiful views
		Changeability
		Proper arrangement of the space
		The existence of intermediate areas
		Appropriate separation of spaces
		Neat appearance and a good view

Continiue of Table 3: Components of the Contemporary Housing Questionnaire.

Components	Subcomponent	Features and subsections
External housing components	Functional	Behavioral camps (compatibility of activity, time, space)
		The compatibility of the urban form with the uses, pedestrian network, riding network, and .information network
		Environmental safety for activities
		Security environment for activities
	Experimental-aesthetic	physical-spatial environment (objective environment), including spatial ossification, physical organization, mass-space exchange
		Sensory perceptual environment (perceptual environment), including the quality of the objective view the analysis of the structure of the urban view.
		Mental perceptual environment (cognitive environment), including the quality of the mental landscape (spatial and temporal), evaluative mental landscape, concrete meanings, and vitality.
		the microclimate of urban spaces (climate comfort), Including sunbathing, shading, wind, .and humidity
	Environmental	Sounds, smells, and scents of the environment
		Sustainable urban design
		Efficiency of consumption of natural resources (energy, land.)
		The balance of ecosystems
	Political-social	Reducing pollution (air, land, water)
		Social justice
		participation and public interactions, including neighborhood, neighborhood
		Health and Safety
		Peace and comfort and privacy

identity variables showed a significance level of 0.000, indicating a significant relationship between the studied indices across different areas of Ahvaz. The significance coefficient for this variable was $R=0.773$, indicating a significant, positive, and strong correlation between identity and contemporary housing indices. Based on these results, it can be concluded that with an increase or decrease in contemporary housing indices, identity indices also rise or fall in various areas of Ahvaz. In other words, contemporary housing indices positively impact socio-cultural identity.

The regression analysis results indicated that the significance level or Sig between the identity indices and contemporary housing in the regions of Ahvaz was 0.000, demonstrating a dependence between these two variables. The analysis revealed that any change in the independent variable (contemporary housing) could significantly change the dependent variable (identity). In other words, as the components of contemporary housing increase, urban identity will also improve (Table 2)

Ranking Components Using Shannon Entropy Method

The Shannon Entropy method is highly useful for analyzing and assessing information distribution and systems' complexity, particularly in recognizing contemporary housing components and their impact on socio-cultural identity. This method allows for evaluating the distribution and complexity of components by calculating the entropy of various housing indicators. The results from this approach can indicate the different effects these components have on preserving or

changing socio-cultural identity, whereby components with low entropy typically contribute to maintaining cultural identity. In contrast, those with high entropy may indicate greater changes and diversity.

In this study, the Shannon Entropy method was employed to prioritize and weigh identity components for identifying contemporary housing elements in the metropolitan area of Ahvaz. The stages of using the Shannon Entropy method in this research include:

Normalization of Data

Normalization of data in the Shannon Entropy method involves converting raw data into a common scale to enable comparability among different indicators. In this research, this process was carried out using linear normalization, where the components of identity and contemporary housing indicators were normalized within a specified range, usually between 0 and 1 (Tables 8, 10, 12, and 14).

Calculation of Shannon Entropy

The Shannon entropy for each component is calculated using the following formula:

Equation 1

$$p_{ij} \ln(p_{ij}) \sum_{i=1}^m \frac{1}{\ln(m)} = {}_jE$$

The normalized value of each component is denoted as p_{ij} , and m represents the number of components.

This formula measures the uncertainty or diversity for each component. Higher entropy indicates greater uncertainty, while lower entropy indicates more concentration (Tables 9, 11, 13, and 15).

Table 4: Results of the Questionnaire Statistics on Contemporary Housing Components (Internal-External).

	Component	Minimum	Maximum	Average	standard deviation
Internal	Cultural	1.00	5.00	1.59	1.
	Structural	1.00	5.00	1.47	1.47
	Functional-Functional	1.00	5.00	1.89	1.89
	Physical-Spatial	1.00	5.00	1.47	1.47
External	Functional	1.00	5.00	1.63	1.63
	Experimental-Aesthetic	1.00	5.00	1.52	1.52
	Environmental	1.00	5.00	1.78	1.78
	Political-Social	1.00	5.00	1.49	1.49

Table 5: Results of the Questionnaire on Identity Components.

	Component	Minimum	maximum	average	Standard Deviation
Cultural identity	Language	1.00	5.00	3.10	1.69
	Your religion	1.00	5.00	3.12	1.74
	Social system	1.00	5.00	3.88	1.51
	History and cultural memory	1.00	5.00	2.61	1.49
	Cultural geography	1.00	5.00	2.45	1.63
Social identity	Ethnic identity	1.00	5.00	3.14	1.87
	National identity	1.00	5.00	2.63	1.71
	Religious identity	1.00	5.00	3.49	1.69
	Global identity	1.00	5.00	2.70	1.54

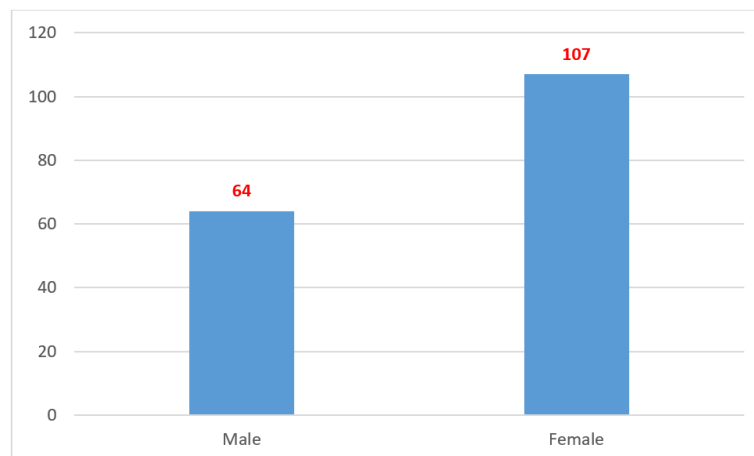


Fig 2: Frequency distribution of the gender variable.

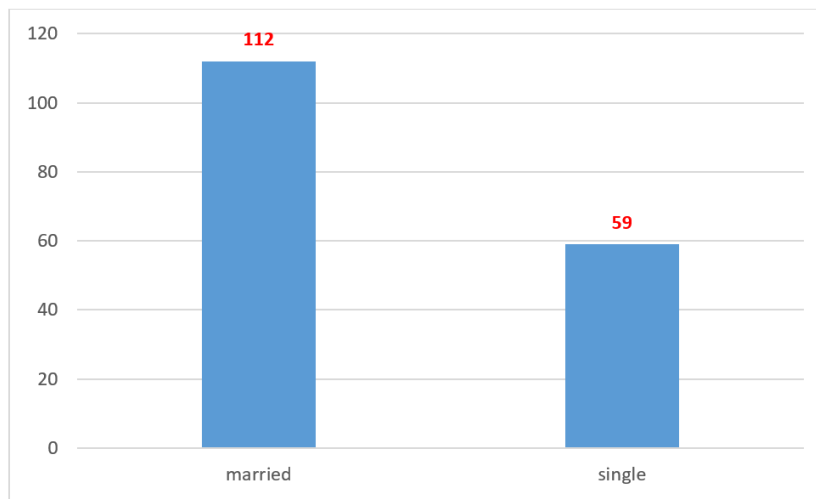


Fig 3: Frequency distribution of marital variable.

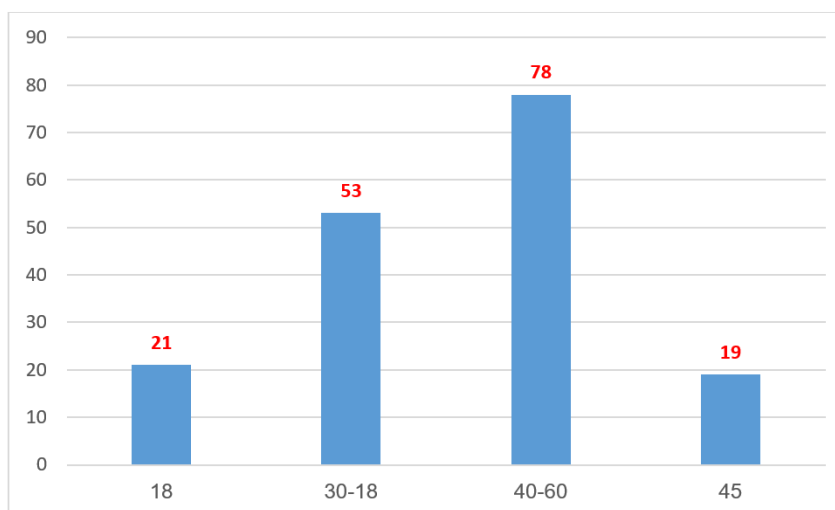


Fig 4: Frequency distribution of age variable.

Table 6: Correlation coefficient between indicators of contemporary housing (internal and external) and identity.

		Identity	Contemporary housing
Identity	Pearson Correlation	1	0.773**
	Sig. (2-tailed)		.000
	N	171	171
Contemporary housing	Pearson Correlation	0.773**	1
	Sig. (2-tailed)	.000	
	N	171	171

** . Correlation is significant at the 0.01 level (2-tailed).

Table 7: Regression Analysis between Contemporary Housing Indicators and Identity.

	Model	Sum of Squares	df	Mean Square	F	.Sig
1	Regression	23796.793	1	24670.128	369.128	.000 ^b
	Residual	12654.873	169	71.459		
	Total	35789.801	170			

a. Dependent Variable: identity

b. Predictors: (Constant): Contemporary housing

Calculating Divergence Degree

In the Shannon entropy method, computing the divergence degree for each component aims to determine its relative importance among the other components. In this study, after calculating the entropy for each contemporary identity and housing component, the divergence degree is determined as the difference between the maximum possible entropy (corresponding to the logarithm of the number of possible states) and the calculated entropy for that component. This difference indicates the degree of influence or importance of a component within the overall system; components with higher divergence degrees retain more information in the system and exhibit less diversity, while components with lower divergence signify greater diversity and less importance (Tables 9, 11, 13, and 15).

The divergence degree for each component is calculated using the following formula:

Equation 2

$${}_jE - 1 = {}_jd$$

Where ${}_jE$ is the Shannon entropy value for component j .

Final Weight Calculation

After calculating the divergence degree for the components of contemporary identity and housing, the final weight of each component was determined to assess its significance within the dataset. To achieve this, the divergence degree of contemporary identity and housing components was divided by the total divergence degrees of all components to obtain the final weight of each. This final weight indicates the relative importance of each component; thus, components with higher weights have significantly more influence. The final weight for each component is calculated using the following formula:

Equation 3

$$\frac{{}_jd}{{}_jd \sum_{j=1}^n} = {}_jw$$

The normalized weight of cultural identity was initially calculated according to Table 8. Ultimately, as shown in Table 9, the results of weighting the components of cultural identity using Shannon's entropy method revealed that the language component, with a final weight of 0.198, holds the least relative importance. This indicates that, based on the available data, it has lower uncertainty and is thus assigned a lower relative weight. The religious component, with a final weight of 0.192, has medium importance, reflecting moderate uncertainty.

The social system component, with a final weight of 0.212, carries the highest relative importance, suggesting a greater focus and impact than the other components in the metropolis of Ahvaz. The components of history, cultural memory, and cultural geography have weights of 0.194 and 0.203, respectively, placing them in the middle of the table and indicating moderate relative importance.

The normalized weight was first calculated according to Table 10 to examine the components of social identity. Subsequently, the results from the weighting of social identity components using the Shannon entropy method, as shown in Table 11, indicated that the components of national identity, with a final weight of 0.246, have the lowest weights. This suggests that, based on the available data, their level of uncertainty or diversity is low compared to the other components. The components of ethnic and global identity, with a final weight of 0.249, are considered less influential, given their moderate level of uncertainty. In contrast, the religious identity component has the highest relative importance in the metropolis of Ahvaz, with a final weight of 0.255, indicating a greater focus and impact than the other components.

After calculating the normalized weights of the internal housing components (Table 12), the results obtained from weighting the contemporary internal housing components using the Shannon entropy method are presented in Table 13. According to this method, the functional-performance component has the highest weight of 0.253 in the Ahvaz metropolitan area, indicating its greater importance than other components. With a weight of 0.248, the cultural component holds the least relative significance, suggesting it has less variability than the other components. Finally, the structural and spatial-physical components have a similar relative importance, each with a weight of 0.250.

Following the calculation of the normalized weights of the external housing components (Table 14), the results from weighting the contemporary external housing components using the Shannon entropy method, as shown in Table 15, revealed that the environmental component has the highest weight of 0.255 in Ahvaz, indicating its greater importance compared to other components. The performance component ranks lowest in relative importance with a weight of 0.246, highlighting its greater variability and lesser impact within this dataset. Ultimately, the experiential-aesthetic and political-social components exhibit similar relative importance with weights of 0.249, reflecting their nearly equal effects in this collection.

Table 8: Normalized weight of cultural identity.

Component	Normalized score
Language	0.2
Your religion	0.3
Social system	0.1
History and cultural memory	0.25
Cultural geography	0.15

Table 9: The results of weighting the components of cultural identity by the Shannon entropy method.

Component	Normalized score	Entropy	Degree of divergence	Final weight
Language	0.2	0.2	0.8	0.198
Your religion	0.3	0.225	0.775	0.192
Social system	0.1	0.143	0.857	0.212
History and cultural memory	0.25	0.215	0.785	0.194
Cultural geography	0.15	0.178	0.822	0.203

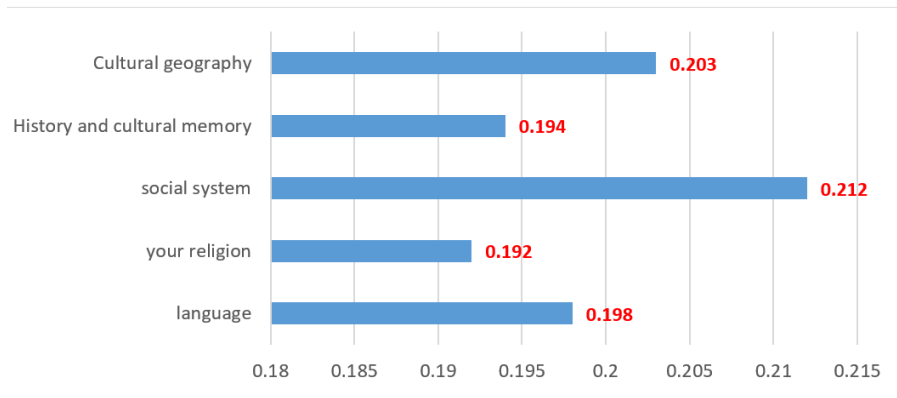


Fig 5: Prioritization of cultural identity components using the Shannon entropy method.

Table 10: Normalized weight of social identity.

Component	Normalized score
Ethnic identity	0.25
National identity	0.3
Religious identity	0.2
Global identity	0.25

Table 11: The results of weighting the components of social identity by the Shannon entropy method.

Component	Normalized score	Entropy	Degree of divergence	Final weight
Ethnic identity	0.25	0.25	0.75	0.249
National identity	0.3	0.261	0.739	0.246
Religious identity	0.2	0.231	0.769	0.255
Global identity	0.25	0.25	0.75	0.249

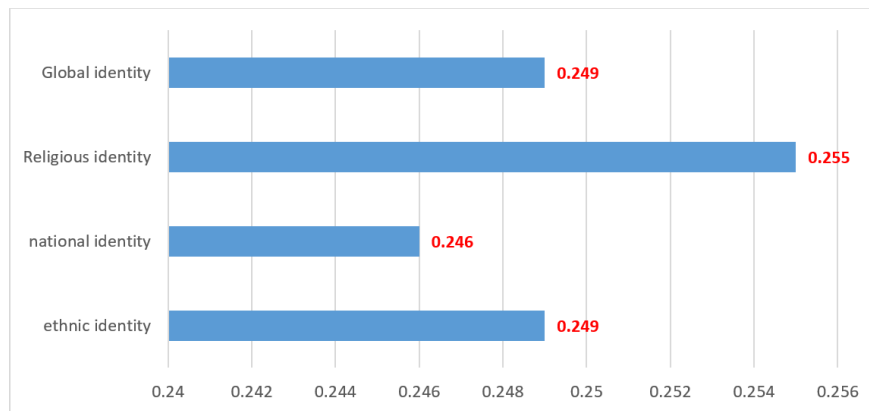


Fig 6: Prioritization of social identity components by Shannon's entropy method.

Table 12: Normalized weights of contemporary internal housing components.

Component	Normalized score
Cultural	0.28
Structural	0.25
Functional-Functional	0.22
Physical-Spatial	0.25

Table 13: Results of weighting the components of contemporary internal housing using the Shannon entropy method.

Component	Normalized score	entropy	Degree of divergence	Final weight
Cultural	0.28	0.257	0.743	0.248
Structural	0.25	0.25	0.75	0.25
Functional-Functional	0.22	0.241	0.759	0.253
Physical-Spatial	0.25	0.25	0.75	0.25

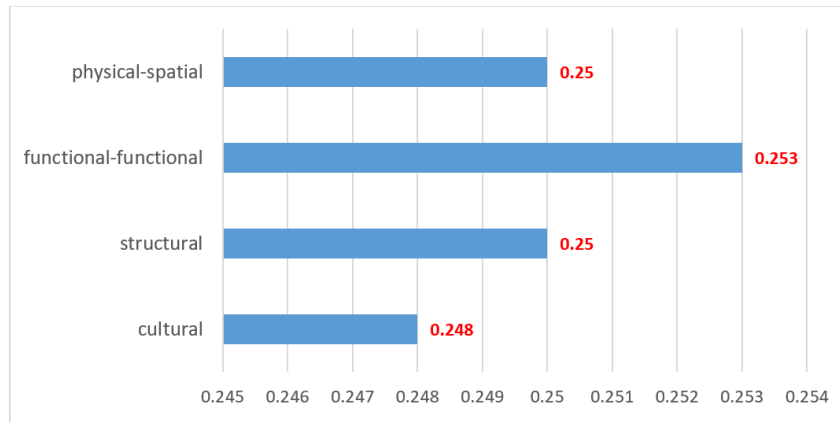


Fig 7: Prioritization of Contemporary Internal Housing Components Using the Shannon Entropy Method.

Table 14: Normalized weights of components in contemporary external housing.

Component	Normalized score
Functional	0.3
Experimental-Aesthetic	0.25
Environmental	0.2
Political-social	0.25

Table 15: The results of weighting the components of contemporary external housing by the Shannon entropy method.

Component	Normalized score	entropy	Degree of divergence	Final weight
Functional	0.3	0.261	0.739	0.246
Experimental-Aesthetic	0.25	0.25	0.75	0.249
Environmental	0.2	0.232	0.768	0.255
Political-social	0.25	0.25	0.75	0.249

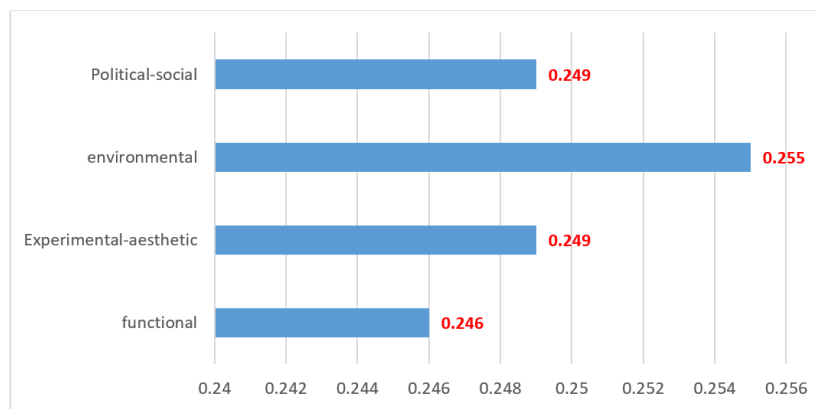


Fig 8: Shannon's entropy method prioritizes contemporary external housing components.

CONCLUSION

The research establishes a connection between the socio-cultural identity of the city of Ahvaz and the formation and concepts of organizing architecture in housing. Focusing on the characteristics that form the organizing components and the features of contemporary housing, as well as the essential indicators of socio-cultural identity, fundamental and foundational principles and concepts related to contemporary housing with identity can be extracted. Residents, by carefully addressing their needs and desires within the domain of contemporary housing with identity in the designated area, will play a significant role in the research process of this thesis.

According to the results obtained, various components of cultural identity were evaluated, including language, religion, social system, history, cultural memory, and cultural geography. The language component, with a final weight of 0.198, was the least significant, indicating that, compared to other components, it exhibited less variability among the data and had a minor role in defining the cultural identity of the metropolis of Ahvaz. The religion component, with a weight of 0.192, was of medium importance, reflecting a balanced role in the cultural structure of the community. The social system component, with the highest weight (0.212), has the most significant impact on the cultural identity of this metropolis, emphasizing the important role of social structures in shaping local culture. The history and cultural memory components, with weights of 0.194 and 0.203, respectively, also hold moderate roles. In examining social identity, the components of ethnic, global, national, and religious identities were analyzed. The findings indicated that the national identity components, with a weight of 0.246, exhibit the least impact, suggesting that these components have less variability and a reduced effect on the social identity of Ahvaz. Both ethnic identity and global identity, with a weight of 0.249, fall into the category of components with moderate influence. Conversely, religious identity, with a final weight of 0.255, has the most significant impact on the social identity of this city, reflecting the high importance of religion in Ahvaz's social and cultural structure.

The analysis of contemporary housing components revealed that the functional-performance component holds the highest significance with a weight of 0.253. These findings indicate that in the metropolitan area of Ahvaz, there is a greater emphasis on the functional aspects of housing, which can directly impact the quality of life. In contrast, the cultural component, with a weight of 0.248, is deemed the least important among the housing components, suggesting a relative neglect of cultural aspects in the design and construction of housing. The structural and spatial-architectural components also exhibit comparable importance with similar weights of 0.250, reflecting an almost equal influence of these two dimensions in contemporary housing in Ahvaz.

In examining external housing components, the results showed that the environmental component, with a weight of 0.255, is the most significant, indicating attention to environmental issues in housing design and construction in Ahvaz. This may be due to specific climatic conditions and the need for more sustainable designs. The functional component ranked the lowest with a weight of 0.246,

suggesting greater dispersion and lesser impact within this dataset. Additionally, experiential-aesthetic and political-social components, each with a weight of 0.249, exhibit similar influence, highlighting the attention given to experiential and social aspects alongside aesthetic considerations in contemporary housing.

The correlation analysis between contemporary housing variables and socio-cultural identity in Ahvaz indicates a significant and positive relationship between these two variables. Moreover, the correlation coefficient demonstrates a strong correlation between the indicators of contemporary housing and identity across various areas of Ahvaz. These results clearly show that contemporary housing, as one of the key urban factors, directly impacts the socio-cultural identity of the city's residents. In other words, any changes in the indicators of contemporary housing—such as architectural design, spatial functionality, and environmental features—can significantly affect how socio-cultural identity is perceived and represented in this city. This finding is particularly important in the metropolitan area of Ahvaz, which possesses a diverse socio-cultural composition.

With its unique climatic, social, and cultural characteristics, the city of Ahvaz provides a distinctive platform for examining these connections. As the capital of Khuzestan province, Ahvaz features diverse urban and rural fabrics, resulting in a high level of cultural variety. Therefore, contemporary housing may affect identity differently across various city regions, depending on each area's specific attributes. For instance, in regions where housing design aligns particularly well with local culture, there may be a stronger positive impact on enhancing cultural identity. Given the strong and positive correlation between contemporary housing and identity, it can be concluded that policymakers and urban planners in Ahvaz should pay closer attention to the design and development of contemporary housing. In this context, creating housing that meets functional and environmental needs and incorporates local socio-cultural elements can foster socio-cultural identity in the city. This is especially relevant in areas with a richer cultural texture, aiding in preserving and strengthening these identities.

Overall, this study indicates that contemporary housing in Ahvaz should be viewed as a key element in preserving and enhancing socio-cultural identity. The strong correlation suggests that any changes or improvements in contemporary housing indicators could broadly impact the city's socio-cultural structure. Thus, various cultural, social, and contemporary housing components exert different influences on the city's identity in the metropolis of Ahvaz. Elements of the social system and religious identity are recognized as key factors in socio-cultural identity, while functional and environmental aspects of contemporary housing hold greater significance. These findings could be extremely beneficial for urban planners and policymakers in enhancing and strengthening the socio-cultural identity of this metropolis.

AUTHOR CONTRIBUTIONS

H. Ghasemzadeh performed the literature review and experimental design, analyzed and interpreted the data, and prepared the manuscript text and edition. F. Habib is responsible for reviewing, controlling, and final editing the article

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CONFLICT OF INTEREST

The authors declare no potential conflict of interest regarding the publication of this work. In addition, the authors have witnessed ethical issues, including plagiarism, informed consent, misconduct, data fabrication or falsification, double publication and submission, and complete redundancy.

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