



The Cognition of Iranian Traditional Architecture's Elements in Award-Winning Projects (Case Study: Memar-Award, 2008 to 2017)

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ABSTRACT

In the course of the last century, Iran, whose traditional architecture was based on its ancient philosophies and values combined with metaphysical concepts, found itself faced with different Western ideologies. Given that the number of valuable projects in the contemporary architecture of Iran has decreased, this study was an attempt to answer the following question: To what extent do the competitions held in Iran take into account the cognition and recreation of Iranian architectural elements, especially in residential buildings? In this study, Iranian architecture features and modern architecture features were classified in the categories of plan, ornament, material, volume and facade, and climatic features. In the next step, the award-winning residential projects over 10 years (from 2008 to 2017) were evaluated to determine their features. The research method was qualitative-quantitative. In the qualitative part, historical-analytical method and descriptive-analytical method were used to review award-winning projects and extract traditional and modern architecture elements. Logical reasoning method was used for data analysis, and SPSS was employed in the quantitative part. The sample of the study included 35 projects which had won "Memar-Award". The results show that in award-winning projects, the volume and façade, ornaments and materials were designed more based on the cognition of modern elements, while the plans were more based on the cognition of Iranian architecture. In general, modern elements were more frequently used in award-winning projects in comparison to traditional elements. Therefore, it can be claimed that "Memar-Award", in the residential sector, lead the contemporary architecture toward modern architecture.

Keywords: *Design Study, Cognition, Competitions, Iranian Architecture Elements, Residential Buildings.*

1. Introduction

During recent decades, Iranian architecture found itself confronted with Western values, which has had a strong impact on the contemporary architecture [1]. Frampton argued that contemporary architecture must establish a balance between local identity and global elements. Therefore, it is of great importance that in every country, the elements of traditional architecture get applied in the contemporary architecture [2]. In this regard, Kreiner asserted that architectural competitions tend to be significant in several aspects [3]. The selection of a project in the competitions by the juries is

counted as an approval for a pattern of the design for the new generation of architects [4] and definitely effects over the contemporary society. It can be argued that each and every criterion that is taken into account when judging the projects in competitions is very significant. The reason is that the entire architecture community is inevitably involved with those criteria, and designers endeavor to direct their thoughts toward designs that incorporate them.

Therefore, the authors assume that the incorporation of traditional Iranian architecture elements in the judgement criteria can be an

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important strategy to encourage architects to include them in their projects. The question that arises here is to what extent the competitions held in Iran take into account the cognition and recreation of Iranian architectural elements, especially in residential buildings? To explore this in details, the present study first extracted the symbols which exist in traditional houses in Iran; then, it evaluated 35 award-winning projects during 10 years (from 2008 to 2017), in terms of the use of these elements. The findings of this study can be beneficial for students, architects, architectural firms and policy-makers. To this end, the following research questions were raised: RQ1: To what extent have the elements of Iranian traditional architecture been used in the "Memar-Award" projects in residential sector from 2008 to 2017? RQ2: To what extent do the competitions held in Iran take into account the cognition and recreation of Iranian traditional architecture elements, especially in the residential buildings? Based on the above research questions, the following research hypotheses were formulated: H01: The elements of Iranian architecture could barely be observed in the award-winning projects in residential sector from 2008 to 2017. H02: Residential architecture competitions held in Iran lead the contemporary architecture toward modern architecture rather than traditional Iranian architecture elements. The findings of the present study can greatly assist the organizers of Iranian architecture competitions in regulating the contests more effectively and purposefully in pursuit of exerting more productive impact on Iran's contemporary architecture.

2. Research Background

Architecture competitions have encouraged a large amount of research for the discovery of their implications in various aspects. Manzoni, Morris, and Smyth (2012) investigated the performing paradox in architectural competitions [5], and

Menteth (2017) conducted a comprehensive survey of architectural competitions [6]. Golabchi and Farahani (2017) analyzed the world architecture competitions in a book entitled "Architecture Design Competition" [7]. Mirmiran (1998) published a paper entitled "Positive and Negative in Competition Experiences" [8]. Eslami and Soleimani (2012) published a paper entitled "Analytical Approach to the Function of Holding Architectural Competitions in Iran" [4]. Rezanezhad (2012) investigated the identity of Iranian contemporary architecture by conducting a case study in Iranian architecture competitions from 2001 to 2011 [9]. Also, some researchers have investigated Iranian traditional architecture. Modaresirafat et al. (2020) explored the criteria of tradition in Iranian university buildings [10]. Zandiyeh and Karimi (2015) examined the materials in Iranian traditional architecture [11]. Amirkhani (2014) reviewed design concepts of traditional Iranian architecture [12]. Damadi (2013) outlined some characteristics of Iranian architecture such as introversion and proportionality [13]. Aghazadeh (2018) investigated some features of Iranian architecture such as centralism, introversion, light and reflection, connection with nature, geometry, transparency, mystery and ambiguity [14]. Doroodgar et al. (2012) deemed hierarchy, transparency, privacy, and harmony with the environment as features of Iranian traditional architecture [15]. Nevertheless, the extensive review of the related literature did not find any academic studies in Iranian context which focused on the cognition of Iranian architecture elements in award-winning projects and its impact on contemporary architecture. To address this gap, the present study outlined Iranian architecture elements and probed the elements which were included in the award-winning projects from 2008 to 2017.

Table 1: Review of research about Iranian traditional architecture [10] [11] [12] [13] [14] [15]

Researchers	Research Name	Author's Emphasis on Features of Iranian Traditional Architecture
(Doroodgar et al, 2012)	The impacts of revivalist trends on the contemporary architecture of Iran (1977-2011)	hierarchy, transparency, privacy, dome, wind tower, brick, timber, harmony with the environment [15]
(Damadi, 2013)	Characteristic of Islamic and Iranian architecture	Introversion, homogeneous proportions [13]
(Amirkhani,2014)	overview of design concepts of traditional Iranian architecture and its reflections in Iranian contemporary architecture	proportions, symmetry, geometry, impressive shades, conflicting colors, motifs, yards, center-oriented structure, traditional pool, vaulted arch [12]

(Zandiyeh, and Karimi,2015)	Investigation of materials in traditional Iranian architecture and its comparative evaluation with materials used in modern architecture in Iran.	stone, brick, colored glass [11]
(Aghazadeh,2018)	Aesthetics and the manifestation of spirituality in Islamic- Iranian art and architecture with an emphasis on conceptual symbols from the perspective of tourism	centralism, introversion, light, connection with nature, geometry, transparency and continuity, arabesque pattern, entry threshold, muqarnas [14]
(Modaresirafat etal, 2020)	Screening the criteria for tradition and modernism in Iranian academic buildings	privacy, introversion, environmental adaptation, geometric diversity, proportionate, calligraphy, patterns, brickwork, purity, motifs [10]

3. Literature Review

3.1. Tradition, Modern, Modernity, and Modernism

In Webster's dictionary, tradition is defined as the unwritten transmission of beliefs and customs from one generation to another [10]. Tradition includes customs, beliefs and behaviors inherited from the past and has a very important impact on the cultural and social conditions of society [16]. Traditional architecture is also known as historical architecture, original architecture, and local architecture. Anthony Giddens emphasized that opposition to tradition is inherent to the concept of modernity [10]. Modernity is the era in which humanism emerges [16]. One of the important aspects of the modern era is the criticism of tradition. Tradition was criticized mainly during the Renaissance and the Enlightenment era [17]. The philosophy of modernity is to benefit from advanced techniques and materials, use technology and reject the past as a source of inspiration [10]. Modern era is considered one of the turning points of history owing to subsequent developments such as humanism, enlightenment and industrial revolution [16].

Jenks classified the characteristics of modernism that lasted from 1920 to 1960 and late-modernism that began in 1960 and continues to the present day based on ideology, style and design ideas.

- Ideologically: Universal, perfectionist and idealistic, form follows function.
- Style: Simplicity, abstract form, purity, unadorned box, anti-decoration, anti-metaphor, anti-historical memories, anti-symbolism.
- Design ideas: Transparency, asymmetry [18].

In defining the criteria for modern architecture, Zevi included a list consisting of functions, asymmetry, anti-perspective, box breaking, cantilever, membrane, and sheath structure [10]. Also, in other studies, some characteristic such as transparent space [19], lack of attention to typology, emergence of functionalism [20], rejection of historical styles, rejection of ornament, form's simplification and elimination of excessive details in design, exposed structure, concrete or steel construction system and more use of glass in facade [17] have been mentioned.

Table 2: Criteria for modern architecture [10] [15] [16] [17] [19] [21]

Researchers	Research Name	Authors' Emphasis on Research
(Modaresirafat, 2020)	Screening the criteria of tradition and modernism in Iranian academic buildings using fuzzy delphi technique	extraversion, transparency, lack of ornaments, statue like building, lightness, element-like components, brutalism, free plan, simplicity, functionalism, nudity, the use of glass, the relationship between inside and outside, basic platonic solids, pilot space, structural aesthetics, minimalist thinking [10]
(Doroodgar etal, 2012)	The impacts of revivalist trends on the contemporary architecture of Iran (1977-2011)	rationalism, functionalism, rectangular and cubic form, cement material [15]
(Ghobadian, 2003)	Theories and concepts in contemporary western architecture	roof garden, free plan, horizontal windows, consoles [16]
[Zabihi, 2010]	Evaluating the effects of modern movement on contemporary	a rejection of historical styles, a rejection of ornament, form's simplification, elimination of excessive detail,

	residential buildings in Iran's capital city- Tehran	exposed structure, concrete or steel construction system, more usage of glass in facade [17]
(Ranjazmayazari and Ansari, 2021)	Comparative study of facade ornament, a factor in understanding of scale, function and structural expression (case study: modern and postmodern era).	chicago style: structure as ornaments. early modernism: elimination of ornaments, transparency [21]
(Sohangir & Norouzbrazjani, 2013)	Comparative survey on conceptual relation between music and architecture space, in pre-modern and post-modern eras, In the western world	changing the concept of space due to the industrial revolution, the advancement of technology, reducing of the quality of architectural space, Introducing of the term transparent space [19]

3.2. The Cognition of Iranian Traditional Architecture Elements and Modern Architecture Elements

During the last 150 years, Iran, whose traditional architecture was based on its ancient philosophies and values along with metaphysical concepts, encountered various western ideologies [1]. During centuries, Iranian architecture was meticulously considered to be one of the world's greatest masterpieces [22]. The scientific study of Iranian architecture commenced in 1921 [23], and numerous books and papers have been published in which different elements of Iranian architecture have been discussed. In this study, the authors have divided Iranian architecture elements into five categories based on library studies, which are: 1-ornament 2-material 3-plan 4-volume and facade 5-climatic features. Authors also divided modern elements to four categories including: 1-ornaments, 2-materials, 3-plan 4-volume and facade, as modern architecture did not hold environment and climatic features in high regards.

3.2.1. Ornament: In Iranian traditional architecture, special ornaments such as arabesque, calligraphy, brick laying, muqarnas, rasmi-bandi, and mirror work have always been used. These ornaments were created based on national values, religious beliefs and mythology [24]. In comparison, in modern architecture, ornaments have been removed and few elements such as metal railings are used in some modern buildings [25].

3.2.2. Material: Using brick, glazed tiles, wood and colored glass is of special importance in Iranian traditional architecture, and the art of brick laying has been used with various geometric shapes in Iran [26]. In comparison, in modern architecture, some materials such as cement [15], concrete, steel, and stone were of great importance [27]. Also, the use of metal, which first started in bridge construction, was very important in modern architecture [16].

3.2.3. Plan: Iranian traditional architecture was formed based on the principles of geometry and mathematics [28]. A cognition of geometry,

symmetry and proportion in the plan of Iranian traditional houses has been among important factors [2]. Also, separating private and public space has always been important. Usually, three different types of transition spaces are designed in plans [29]: 1-entrance, 2-eight-sided 3-veranda [30]. The central courtyard is another important feature which symbolized the centrality of universe and paradise [31]. Designing of balcony and porch, which represent the transition space [12], is also an important factor in Iranian architecture [32]. By contrast, in the plan of modern buildings, elimination of the load-bearing role of walls and the possibility of using large glass windows, pilot building, free plan, and consoles can be seen [11].

3.2.4. Volume & Facade: In Iranian architecture, different types of arches and vaults [12] such as pointed arches, camber arches, and barrel vaults are used [32]. Small windows, canopy, symmetry, portico, module, and attention to light and shadow on the facade are some of the features that can be seen in Iranian houses. On the contrary, in modern architecture, cognition and use of large windows, cubic design [15], modern facade and basic platonic volume [10], broken lines, and asymmetry are of great importance [33].

3.2.5. Climatic Features: Traditional architecture is harmonious with the environment [17]. Compatible design with nature in Iranian houses can be seen as introversion and extroversion [34]. Also, one of the most prominent features is water, which symbolizes life. Iranian traditional architects have used water in different forms such as pond, pool and fountain [35]. Furthermore, using a central court-yard that divides the houses into two parts (winter and summer section), is seen in introverted houses [31]. There are plants in accordance with the environment in these central courtyards.

Fakhr al-mudin is another element which is formed in order to make the air flow. The existence of these elements indicates that Iranians traditional architecture has always been compatible with its environment [36]. It should be noted that some of

these elements have philosophical weight and some serve aesthetic purposes merely. By contrast, it is not necessary for modern architecture to adapt to the environment, so it can be implemented in different environmental conditions [10]. The

authors of this study have offered their own classification of the features of Iranian and modern architecture based on the research background and literature review (table 1 and table 2) (table 3).

Table 3: Categories of traditional & modern architecture features [2] [10] [15] [19] [20] [21] [24] [25] [26] [27] [28] [29] [30] [31] [32] [37] [38]

Categories	Iranian Architecture Features	Modern Architecture Features
1-Ornaments	arabesque, calligraphy, brick-laying, muqarnas, rasmi-bandi, mirror work [24]	metal railing [25]
2-Material	brick, glazed tiles, colored glass, wood [26]	cement, concrete, steel, stone [27]
3-plan	separating private and public areas, balcony, eight-sided, geometry, court-yard [2, 28, 29, 30, 31, 32]	void, free plan [37,38]
4-Volume and Facade	small windows, canopy, symmetry, portico, module, vault, light and shadow [32]	asymmetry, large window, modern facade, cubic design, broken lines, modern volume [10, 33]
5-Climatic Features	landscape, natural ventilation, plant, water [31,19,20,21]	modern architecture does not pay attention to climatic features [15]

4. Research Methodology

The nature of this study was mixed method (qualitative-quantitative). This mixed method research (MMR) involves collecting, analyzing, and integrating both quantitative and qualitative data in a single project [39]. By using a quantitative method, researchers can examine the observable aspects of a phenomenon that can be measured, and by using qualitative research, they can understand the latent aspects of a social phenomenon [40]. In the qualitative part of the present study, a historical-analytical method and a descriptive-analytical method were used for extracting data, and a logical reasoning method was used to analyze the data. The related literature was thoroughly reviewed and the Iranian

traditional architecture features as well as modern architecture features were delineated (descriptive-analytical method). Then, a list of selected projects in the Memar-Award, was drawn (historical-analytic method). In the quantitative part, the extent to which the elements were used in the projects, as well as the type and the nature of the elements that were most frequently employed, were reported in the statistical tables, and SPSS was utilized to analyze the data. The field data were collected through library studies. The sample in this study consisted of 35 residential projects which had won Memar-Award from 2008 to 2017, and since the sample was small and reviewable, all cases were analyzed.

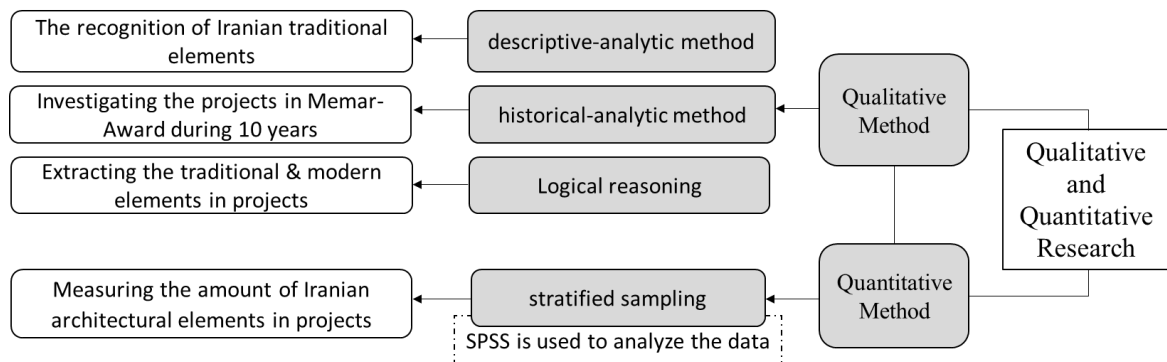


Fig. 1: The general structure of the research method (source: authors)

5. Research Findings

In this part, the winning projects during 2008 to 2017 in the residential sector were analyzed,

and the use of Iranian traditional features and modern features were explored. Following table shows the project analysis.

Table 4: Analyzing the use of traditional and modern elements in award-winning projects (2008 to 2017)

[41] [42] [43] [44] [45] [46] [47] [48] [49] [50]

Years		2017					2016			2015					2014			2013			2012			2011			2010			2009			2008							
Ranks		1	2	2	3	3	1	2	3	1	2	3	3	3	1	2	2	3	1	2	3	1	2	2	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	
Elements	Names	Slow Asleep	111	Manzarieh	Koochak	Malek	Rozen	Goushvareha	Zaferanieh	Villa Building	911 Complex	BW7	Saba House	Hamsaveh	Chizari	Sipan	Ilkhaneh	Chehelgereh	Sharifha	Naivan	Saveh Villa	Naiafabad	Firouzmanda	Kouhsar	Abadan	Kashanak	Aiorbaft	Mahalat	Bidabad	No. 17	Bamboo	Yarmand	Khalli Village	Friend House	Dolat II	Barbod				
		Traditional Elements	Mirror Work	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rasmi Bandi	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Muqarnas	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Brick Laying	-		-	-	-	-	-	√	-	√	-	-	-	-	-	-	√	√	-	-	-	√	√	-	-	√	√	-	-	-	-	-	-	-	-	-	-	-		
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Colored Glass	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Glazed Tiles	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Wood	√		√	√	√	-	-	√	√	-	√	√	√	-	√	√	-	-	√	√	√	√	√	√	-	-	-	√	-	-	√	-	√	-	√	√	√	√		
Brick	-		-	-	-	-	-	√	-	√	-	-	-	-	-	-	√	√	-	√	-	√	-	-	√	√	√	-	-	√	-	-	-	-	-	-	-	-		
Court-yard	-		-	-	-	√	-	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Geometry	-		-	-	-	√	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	√	√	-	-	-	-	-	-	√	√	-	-	-	-	-	-	-	-	
Eight-sided	-		-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	√	-	-	-	-	-	-	-	-	-	
Balcony	√		√	√	-	√	√	√	√	-	√	√	√	√	-	-	√	√	√	√	√	√	√	√	√	√	-	√	√	√	√	√	√	√	√	√	√	√	-	
Private and Public Areas	√		-	√	-	√	-	√	√	-	√	√	-	√	√	√	-	√	-	√	-	√	√	√	-	√	√	√	-	√	-	-	-	-	-	√	√	√	√	
Light and Shadow	√		-	√	√	√	√	√	-	√	-	-	√	√	√	√	√	√	√	√	√	√	√	√	-	√	√	√	√	-	√	-	√	-	√	-	√	√	-	
Vault	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Module	√		-	-	-	√	√	-	√	√	-	-	√	√	√	√	√	√	-	√	-	-	-	-	-	-	√	√	-	-	-	-	-	-	-	-	-	√	-	
Portico	-		-	-	-	√	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Symmetry	-		-	-	-	-	√	√	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	
Canopy	√		-	-	√	√	-	√	-	-	-	-	√	-	√	-	√	-	-	√	-	√	√	√	-	√	-	√	√	√	√	√	√	√	√	√	√	√	√	
small Windows	-		-	-	-	-	-	√	-	√	√	-	√	√	√	-	-	√	-	√	-	√	-	-	-	√	√	√	√	√	√	√	-	-	-	-	√	-	√	√
Water	-		-	-	-	-	-	√	-	-	-	-	-	-	-	-	-	-	√	-	√	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Plant	√	√	√	√	√	√	√	√	-	√	√	√	√	√	√	√	√	√	-	√	-	√	√	-	-	√	√	√	√	√	√	√	√	√	√	√	√	√	-	
Natural Ventilation	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	-	-	-	√	√	-	-	-	-	-	-	-	-	-	-	-	√		
Landscape	√	√	√	√	√	√	√	√	√	-	√	√	√	-	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
Modern	Metal Railing	-	-	√	-	-	√	√	-	-	-	-	-	-	-	√	-	-	-	√	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	-	√	-		
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steel	√	–	√	√	–	–	√	√	√	√	√	√	–	–	–	√	–	–	–	–	√	√	–	–	√	√	–	–	–	–	√	–	√	–	–	
stone	√	√	√	√	√	–	–	–	–	–	√	–	–	√	√	√	–	–	–	–	–	–	–	–	√	√	–	–	–	–	–	–	–	–	–	–
void	–	–	–	–	–	√	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Free plan	–	√	–	√	–	√	–	–	–	–	√	√	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Asymmetry	√	√	√	√	√	–	–	√	√	√	√	√	–	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	–	√
large window	√	√	√	√	√	√	–	√	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Cubic Design	√	–	√	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Modern facade	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Broken Lines	–	√	–	√	√	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	
Modern Volume	√	√	√	√	√	√	–	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	–	

Table 5: The frequency and percentage of modern and traditional features (source: authors)

Elements	Category	Subcategory	F	%	%
Traditional Iranian Architecture Elements	Climatic Features	landscape	32	91.43	46.43
		Natural Ventilation	5	14.29	
		Plant	23	65.71	
		Water	5	14.29	
	Volume & Facade	Small Windows	18	51.43	33.47
		Canopy	15	42.86	
		Symmetry	4	11.43	
		Portico	3	8.57	
		Module	16	45.71	
		Vault	0	0	
	Light and Shadow	26	74.29		
	Plan	Separating Private and Public Areas	21	60	34.29
		Balcony	26	74.29	
		Eight-sided	3	8.57	
		Geometry	6	17.14	
Court-yard		4	11.43		
Materials	Brick	9	25.71	22.14	
	Wood	22	62.86		
	Glazed Tiles	0	0		
	Colored Glass	0	0		
Ornaments	Arabesque	6	17.14	7.14	
	Calligraphy	1	2.86		
	Brick Laying	8	22.86		
	Muqarnas	0	0		
	Rasmi-bandi	0	0		
	Mirror Work	0	0		
Modern Architecture Elements	Volume, Facade	Modern Volume	30	85.71	64.29
		Broken Lines	13	37.14	
		Modern facade	26	74.29	
		Cubic Design	19	54.29	
		Large Windows	16	45.71	
		Asymmetry	31	88.57	
	Plan	Free Plan	13	37.14	22.86
		Void	3	8.57	
	Materials	Stone	15	42.86	33.57
		Steel	16	45.71	
Concrete		11	31.43		
Cement		5	14.29		
Ornaments	Metal Railing	7	20	20	

The analysis of tables 4 and 5 highlights the following results in each category:

•**Climatic Features Category:** The climatic features related to Iranian traditional architecture – including natural ventilation, using plants and water, and compatible design with landscape – was considered in 46.43 % of the projects. Besides, landscape was seen in 32 projects (91.43%), planting in 23 projects (65.71%), and natural ventilation and water were observed in 5 cases (14.29%).

•**Volume and Façade Category:** In total, 33.47% of facade and volume design was based on Iranian elements, whereas 64.29 % was based on modern elements, such as cubic design 54.29%, design with broken lines 37.14%, large windows 45.71% and asymmetry 88.57%. Regarding Iranian traditional features, light and shadow were used in 26 works (74.29%). Moreover, small windows were employed in 18 projects (51.43%), modules were witnessed in 16 cases (45.71%), canopy in 15 projects (42.86%), and symmetry and portico were observed in 4 and 3 projects (11.43% and 8.57%), respectively. It is noteworthy that vaults were not employed in any building.

•**Plans Category:** In most awarded projects, plans were designed based on Iranian architecture. Balcony designs, separation of private and public areas, incorporation of geometry, court yard, and

eight-sided noun space/entrances were considered in 34.29% of projects, while free plans and designing voids which were the features of modern architecture, used in 22.86% of projects.

•**Materials Category:** It can be said that in award-winning projects, modern materials such as cement, concrete, steel and stone were used more than traditional materials such as wood, brick, glazed tiles, and colored glass (33.57% vs 22.14%). Using traditional materials including wood was seen in 22 cases (62.86%) and brick in 9 projects (25.71%). It should be noted that none of traditional materials, including glazed tiles and colored glass, were used in any of awarded projects. Among modern materials, use of steel, stone, concrete, and cement was reported to have been 45.71%, 42.86%, 31.43%, and 14.29%, respectively.

•**Ornaments category:** In general, only 7.14% of Iranian traditional ornaments were considered in all 35 projects. By contrast, metal railing, which is considered a modern ornament, was used in 7 projects (20%). Among Iranian traditional ornaments, brick laying was employed in 8 works (22.86 %), arabesque in 6 works (17.14%), and calligraphy only in one of the awarded projects (2.86%). It is of great importance that muqarnas, rasmi-bandi, and mirror-work were not employed in any awarded projects.

Table 6: The percentage of modern and traditional elements based on year (source: authors)

Year	Rank	Name of Design	Modern Elements		Traditional Iranian Elements		Modern Elements	Traditional Iranian Elements
			F	%	F	%	%	%
2017	1	Slow Asleep	6	46.15	8	30.77	56.92	26.92
	2	111 Apartment	8	61.54	4	15.38		
	2	Manzarieh Building	8	61.54	6	23.08		
	3	Koochak House	8	61.54	6	23.08		
	3	Malek Apartment	7	53.85	11	42.31		
2016	1	Rozen Building	6	46.15	6	23.08	48.72	37.18
	2	Goushvare h-ha	4	30.77	16	61.54		
	3	Zaferanieh Garden	9	69.23	7	26.92		
2015	1	Villa Building	5	38.46	7	26.92	46.15	26.15
	2	911 Complex	7	53.85	5	19.23		
	3	BW7	8	61.54	5	19.23		

	3	Saba House	4	30.77	10	38.46		
	3	Hamsayeh	6	46.15	7	26.92		
2014	1	Chizari	6	46.15	7	26.92	51.92	29.81
	2	Sipan Building	6	46.15	6	23.08		
	2	Ilkhaneh	9	69.23	9	34.62		
	3	Chehelgeresh House	6	46.15	9	34.62		
2013	1	Sharifiha House	8	61.54	5	19.23	56.41	29.49
	2	Najvan Garden	7	53.85	11	42.31		
	3	Saveh Villa	7	53.85	7	26.92		
2012	1	House No. 7	3	23.08	14	53.85	33.33	32.05
	2	Firouzmandan House	4	30.77	9	34.62		
	2	Kouhsar Villa	6	46.15	2	7.69		
2011	1	Abadan Apartment	5	38.46	6	23.08	38.46	32.05
	2	Kashanak	5	38.46	9	34.62		
	3	Ajorbaft House	5	38.46	10	38.46		
2010	1	Mahalat Apartment	5	38.46	8	30.77	28.21	23.08
	2	Bidabad House	4	30.77	4	15.38		
	3	No. 17	2	15.38	6	23.08		
2009	1	Bamboo Structure	3	23.08	4	15.38	48.72	15.38
	2	Yarmand Building	10	76.92	3	11.54		
	3	Khalili Village	6	46.15	5	19.23		
2008	1	House of a Friend	7	53.85	7	26.92	30.77	26.92
	2	Dolat Building II	3	23.08	8	30.77		
	3	Barbod House	2	15.38	6	23.08		

Table 7: The percentage of using traditional and modern elements based on ranks (source: authors)

	Traditional	Modern
	%	%
1	27.69	41.53
2	27.21	47.92
3	28.52	44.87

In the qualitative section, through the analysis of the views of experts regarding traditional Iranian architecture elements, the most important features were extracted and divided into five categories: 1-climatic features including landscape, natural ventilation, using plant and water. 2-volume and façade including small windows, canopy, symmetry, portico, module, vault, and light and shadow. 3-plan including separating private and public areas, balcony, eight-sided space/entrances,

geometry, and court-yard. 4-materials including brick, wood, glazed tiles, and colored glass. 5-ornaments including arabesque, calligraphy, brick laying, muqarnas, rasmi-bandi, and mirror work. Also, the most important features of modern architecture were extracted by the analysis of the views of different experts, and placed in 4 categories: 1-volume and facade including modern volume, broken lines, modern façade, cubic design, large windows, and asymmetry. 2-plan including

free plan and void. 3-material including stone, steel, concrete, and cement. 4-ornaments including metal railing. The analysis of 35 selected projects showed that Najafabad and Firouzmandan House, Dolat Building II, and Barbod House encompassed more traditional than modern elements. In Ajobaft House, the use of modern and traditional designs was almost equal. In all other buildings, modern features were more frequently used in comparison to the traditional elements.

The results of the quantitative section highlighted that the most frequent traditional Iranian architecture element was related to the compatible design with landscape. In volume and façade category, playing with light and shadow was of great importance. In the plan, using balcony was

specified; in the material category, the use of wood was more distinctive, and finally regarding the use of ornaments, brick laying was bold (Fig 2). Moreover, it can be seen that the modern feature used most frequently in the realm of materials was steel; and in the volume and façade category, asymmetry was the most commonly employed (Fig 3). The results of this study signified that in award-winning projects, modern volume and facades, modern ornaments and modern materials were used more frequently, while the plans were mostly designed based on traditional architecture (Fig 4). Totally, it can be stated that modern elements outnumbered Iranian traditional elements in all projects, except for 2012, when both groups were utilized equally (Fig 5).

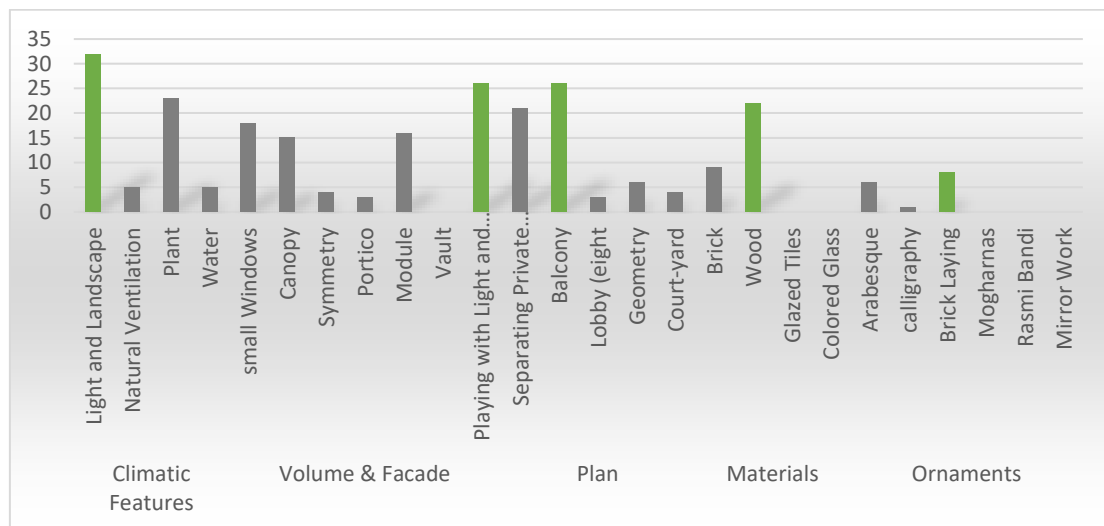


Fig. 2: The frequency of using Iranian traditional features (source: authors)

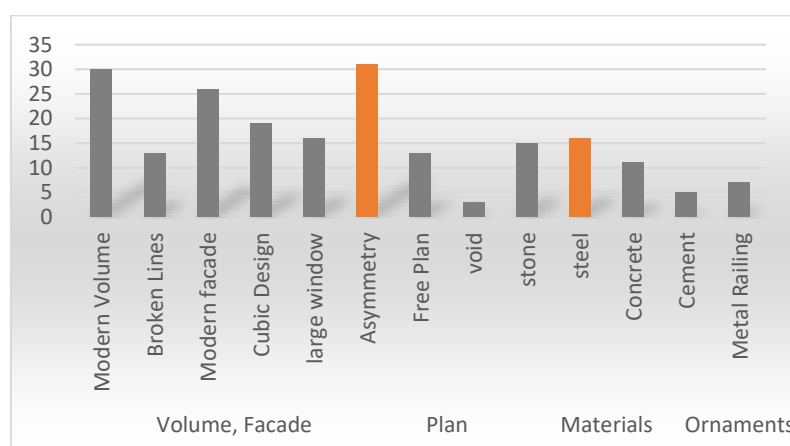


Fig. 3: The frequency of using modern architecture features (source: authors)

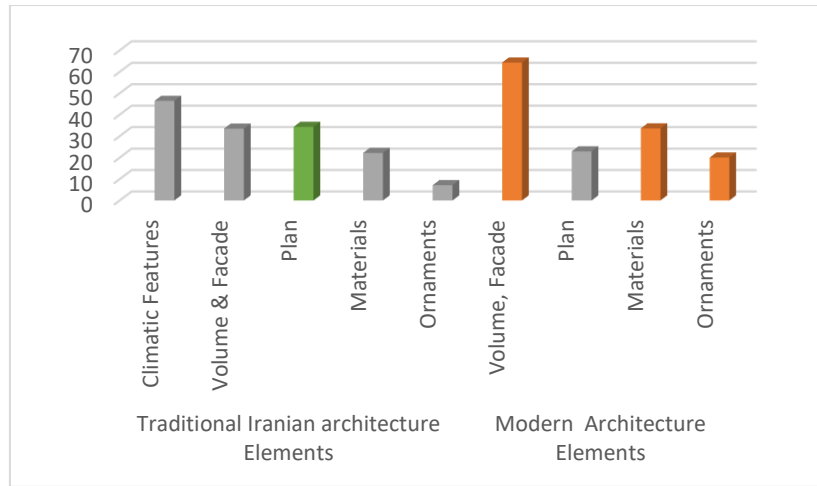


Fig. 4: The use of traditional versus modern architecture features (source: authors)

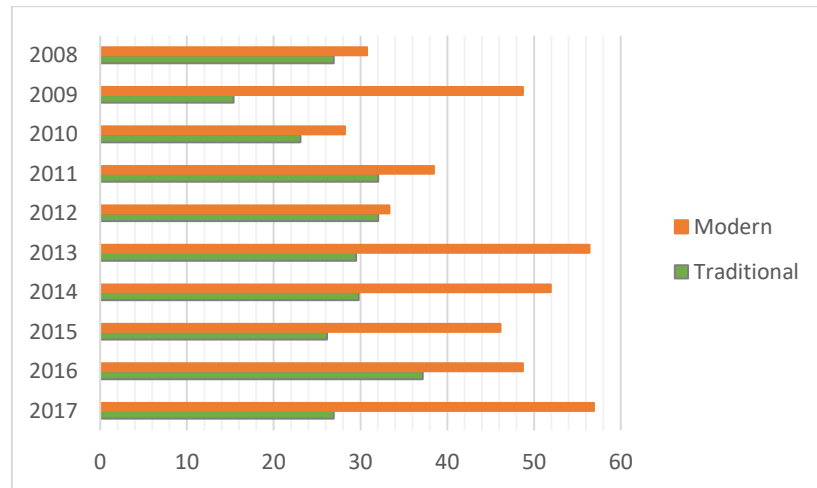


Fig. 5: The use of traditional and modern architecture elements based on years (source: authors)

6. Conclusion

In answer to research question 1, the analysis of the 35 selected projects highlighted that in award-winning projects, modern volume and facade, modern ornaments, and modern materials were used more frequently, while the plans were mostly designed based on traditional architecture. In total, 64.29 % of facade and volume designs were based on modern features, while 33.47% were based on Iranian features. In general, 20% of project ornaments were based on modern architecture, where as 7.14% were deemed as Iranian traditional ornaments. It can be remarked that modern materials were more frequently used than traditional materials in residential sector (33.57% vs 22.14%). The plans of the selected projects were mostly designed based on Iranian traditional features in comparison to modern plans (34.29% vs 22.86%). The most widely used Iranian architecture element in award-winning projects from 2008 to 2017 in terms of considering climatic features were compatible design with the

landscape; in volume and facade category, it was attention to light and shadow; and in the plan category, it was balcony. As for ornaments, it was brick-laying that was mostly used in projects. Among traditional Iranian ornaments, muqarnas, rasmi-bandi, and mirror-work were not used in any awarded project.

In answer to research question 2, the results of this study highlighted that the modern elements were more frequently used in award-winning projects in comparison to traditional ones; and it can be claimed that the Memar-Award held in Iran has been leading the contemporary architecture toward modern architecture. In a paper entitled "Evaluating of the effects of modern movement on contemporary residential buildings in Iran's capital city- Tehran", Zabihi stated that in the contemporary era, houses were deeply influenced by modern characteristics from 1941 to 1979; even after 1979, they are still affected by modern principles and characteristics. Moreover, in a study entitled "Screening the criteria for tradition and

modernism in Iranian academic buildings using fuzzy Delphi technique", Modaresirafat et al. concluded that the effect of features of modernism was significant compared to traditional ones. The findings of both these studies confirmed and were in line with the findings of the present study. Totally, the first hypothesis, stating the elements of Iranian architecture were not frequently used in the

award-winning projects in residential architecture competitions from 2008 to 2017, was not rejected. Nevertheless, the second hypothesis, claiming residential architecture competitions held in Iran lead the contemporary architecture toward Western architecture, was not rejected, either.

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