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# Significance of authenticity: learning from best practice of adaptive reuse in the industrial heritage of Iran

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## ABSTRACT

In recent years, adaptive reuse of industrial heritage has achieved great acceptance among developing countries, whereas it provides economic, cultural, and social benefits to urban communities. On the other hand, it is important to keep the cultural significance of an industrial heritage by identifying the condition in which it might meet authenticity after adaptive reuse. The main aim of this research is to introduce the industrial heritage of Iran and evaluate the criterions of authenticity among those conserved through adaptive reuse. To gain an understanding of the issue, a “historical-interpretation” research method relying on analytical-description techniques was adopted and interviews through questionnaires were conducted with a variety of architecture students and professors. The findings indicate that the concept of authenticity is considered significantly in adaptive reuse of the industrial heritage of Iran, while intervention is the most popular approach which creates a museum-like structure for the buildings.

## ARTICLE HISTORY

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## KEYWORDS

Adaptive reuse; authenticity; buildings; industrial heritage of Iran; sites

## 1. Introduction

Industrial heritage buildings are an important part of developing countries' communities and provide a valuable glimpse of their industrial identity. To move toward a more sustainable society, demolition of these culturally and historically significant buildings is hard to be justified (Correia and Walliman 2014). In recent years, the adaptive reuse of built industrial heritage has been a common practice in a growing number of cities around the world. Consequently, it has become a valuable asset to be used to regenerate declining urban areas and promote a more desirable place image.

Authenticity resumes a central role in the conservation of industrial heritage buildings. The published document of English Heritage defines the meaning of authenticity as “those characteristics that most truthfully reflect and embody the cultural heritage values of a place” (English Heritage 2008, 71 cited in Eshrati; Fadaei Nezhad et al. 2015). Therefore, the significance of authenticity in the conservation of industrial heritage buildings is necessary to reveal the “true nature” of historic buildings, which might be hidden or covered up by some obscuring factors. The concept of authenticity is generally discussed with most focusing on whether it draws spending from those visitors wishing to experience the past, or offers a sense of identity, and

anchors collective memories by providing tangible links between past, present, and future.

## 2. Materials and methods

### 2.1. Research aim

This research aims to redefine the concept of authenticity and its genres in the industrial heritage of Iran and identify the condition in which a property meets authenticity criterions the most after adaptive reuse.

### 2.2. Research questions

Questions posed include: (1) What is the position of adaptive reuse in conserving the industrial heritage of Iran? And (2) How authentic are those relics conserved by adaptive reuse?

### 2.3. Research method and data collection

To reach the aim and answer the questions, a “historical-interpretation” method relying on analytical-description techniques is adopted. History research accesses evidence from the past, while significant schools of thoughts affect how the past is interpreted. Tactically, historical-interpretation method involves fact finding, fact

evaluation, fact organization, and fact analysis (Figure 1). Moreover, it needs being aware of different judgments that might be made about the subject once enough evidence has been collected (Groat and Wang 2002).

Data collection of the research is performed by literature review, observation, photography, and questionnaire-based interview. To investigate the functional status of industrial heritage of Iran, 353 questionnaires (equalling to the number of buildings and sites) are distributed among architecture students. Indeed, the ones renovated through adaptive reuse (by the number of 20) are selected as the statistical population to evaluate the significance of authenticity. Consequently, 30 architecture professors and students highly educated in the field of heritage studies are asked to fill the questionnaires. Precisely, 50 questionnaires are conducted and the questionnaire of each building is just filled by the professors or the students who has the possibility to observe it.

### 3. Literature review

#### 3.1. Authenticity

Oxford dictionary has defined the term of “authenticity” based on the terms of “reliable,” “trustworthy,” “original,” and “undisputed origin” . Indeed, a more recent definition in the dictionary has offered “authentic as true to oneself” or “authentic as original” or “authentic as trustworthy statement of fact.” The term authenticity originates from Greek and Latin, and means “authoritative” and “original”. In the European Middle Ages, authenticity was applied to demonstrate political authority, reliability of religious books, and the efficacy of magic . Later, the term has been used in museums, where experts determine “whether objects of art are what they appear to be or are claimed to be” (Trilling 1972, 93). Therefore, the traditional meaning of authenticity centres on the genuine, the real, and the unique.

The concept of authenticity is defined as revealing the aesthetic and historic value or the true nature of a property based on original material and authentic documents (Venice Charter 1964). Authenticity is against copying or reconstructing without any creativity. Alivizatou (2012) has mentioned, “Authenticity does not mean blind perpetuation of traditions, but rather a more creative engagement with how to make relevant the traditions of the past in the present.” Authenticity can be defined in two ways: either as existing in object, place, event, or tourism industry; or concerning human attributes signifying being one’s true self or being true to one’s essential nature. Drawing on Heidegger’s theory, Wang (1999) suggested a distinction between an object authenticity and an

experience authenticity, and proposed the concept of “existential authenticity.” As he believed, the authentic experiences of visitors emerge from intrapersonal sources (feelings of pleasure, relaxation, and self-making) and interpersonal sources (interaction between friends and family members). International conventions represent a universal consensus on the importance of authenticity in the conservation process of heritage buildings (Table 1).

Genres of authenticity are classified into the nine groups of (1) natural, (2) original, (3) exceptional, (4) referential, (5) influential, (6) technical, (7) artistic, (8) functional, and (9) rare authenticity (Table 2). First, natural authenticity which is perceived if heritage is untouched by human hands—not artificial or synthetic—in its natural state. Cohen (1988, 374) believes that authenticity is related to nature because alienated contemporary tourists seek authentic natural or primitive experiences, untouched by modernity. Second, original authenticity which is related to originality in design of heritage that makes it the first of its kind, never seen before by human eyes; and not a copy or imitation. Third, exceptional authenticity which is defined as people tendency to perceive as authentic that which is done exceptionally well, executed individually and extraordinarily by someone demonstrating human care; not unfeelingly or disingenuously performed. Tourists’ experience is adorned when heritage is produced with human care and for a small set of identifiable and close-knit individuals. In an age of mass consumption, in which every item of culture becomes a commodity, the shift from personal service to self-service has become very popular, and has had an impact on the commercialization of the heritage experience. Therefore, many visitors feel burdened by self-service and prefer human-provided services that cater them on an individual-by-individual basis or in some extraordinary way (Gilmore and Pine 2008). Fourth, referential authenticity which is related to heritage referring to some other context, drawing inspiration from human history, and tapping into one’s shared memories and longings; not derivative or trivial (Macdonald 2006). Sincerity is the main determinant of referential authenticity which can be investigated from the three main perspectives of history and culture as referents; commitment to traditional production processes; and appealing above commercial considerations (Beverland 2005, 1025). Fifth, influential authenticity which is defined as people tendency to perceive as authentic that which exerts influence upon other entities, calling human beings to a higher goal and providing a foretaste of a better way; not inconsequential or without meaning (Gilmore and Pine 2007, 49–50). People tendency towards influential authenticity is based upon feelings of

**Table 1.** Authenticity in the view of international conventions (Authors).

		The event		
Time	Convention name	Main content		Place
1964	The Venice Charter	Historic values as the concept of authenticity Expansion of the conservation scope from one building to surrounding space indicating the concept of integrity		Italy
1978	The First Session of the World Heritage Committee in Paris	Authenticity based on the four criterions of design, material, workmanship, and setting		France
1994	The Nara Charter	Authenticity based on tangible and intangible expressions Authenticity as the key factor in determining value		Japan
1998	The San Antonio Declaration	Assessment of authenticity based on reflection of the true value, integrity, context, identity, and use and function. Emphasizing on the authenticity of cultural landscape and its significance in conservation		The United States
1987	The Stockholm Declaration	Respecting authenticity and cultural diversity of communities.		Sweden
1999	The Burra Charter	Conservation of natural and cultural significance of heritage Introducing cultural significance as aesthetic, historic, scientific, social and spiritual value for all generations.		Australia
2000	The Zimbabwe Expert Meeting	Authenticity in African context The importance of intangible authenticity specifically management system		Sothorn Africa
2003	Convention for the Safeguarding of the Intangible Heritage	The importance of recognition and conservation of intangible heritage		France
2004	The International Declaration of Bam	The importance of authenticity and integrity in conservation of Bam Cultural Landscape.		Iran
2005	The International Declaration of Seoul	The conservation of authenticity in historic environments		Korea
2005	Vienna Memorandum on 'World Heritage and Contemporary Architecture Managing the Historic Urban Landscape'	The importance of authenticity and integrity in well-balanced approaches of conversation in the management system of Historic Urban Landscape		Austria
2006	The International Declaration of Jerusalem	The values of tangible and intangible heritage The significance of 'Sense of Place' in conservation process;		Israel
2011	ICOMOS Charter on the Preservation of the Spirit of Place (Quebec Charter)	The values of tangible and intangible heritage The role of historical-evidential, aesthetic and socio-cultural values in authenticity. The relationship between authenticity and aesthetic, historical-evidential and social-cultural values The role of authenticity and integrity in controlling the effects of development		Canada
2011	UNESCO Draft Recommendation on Historic Urban Landscape	The significance of authenticity in conservation of urban landscape		---

**Table 2.** Genres of authenticity (Authors, based on Gilmore and Pine 2007).

Genres of authenticity	Criteria
Natural Original	Landscape- Flora & Fauna- Use of natural ingredients Connection to past- Activities- Traditional lifestyle & daily duties- Design, fabric & materials used in building's construction and artefacts- Appearance of furniture — Social organization
Exceptional Referential	Human interaction- Services provision- Production Historical continuity & connection with past- Commitment to traditional production process- Lack of commercialization
Influential Technical	Perceptual engagement & inner change- Nostalgia for the vanished past- Influences to architecture & art Commitment to the original construction process
Artistic	Material Using the original forms & patterns- Commitment to the original design principles Immaterial Perception of the past- documentary values
Functional Rare	The continuity of original function Rarity in experts' view point
Conceptual	Place identity associated with the sense of place

nostalgia for the vanished past, a search for their historic roots and for an imagined time when life was more natural, purer, and simpler (Bruner 1994, 411). Sixth, technical authenticity which provides a response to the dangers that modern technology may pose to the authentic structure of heritage. As Heidegger (1977, 27) believes, technology has limits in revealing the true essence of things and human is always responsible for considering the concealed. Therefore, man can reveal the authenticity of heritage by using modern technology, instead of becoming the servant of it. Seventh, artistic authenticity

which is associated with preserving material and immaterial values. Material authenticity has a limitation because of the natural decay of original materials which need alteration (Lowenthal 1998). As no heritage relic exists just for a single moment, and evolves through its creation and use, therefore, it contains numerous truths. In this case, authenticity relates to its original state and how it changed over time (Feilden and Jokilhetto 1993). On the other hand, the significance of heritage resides mainly in its continued spiritual meaning and symbolic values related to daily use rather than pre-eminence of the

material itself which is called immaterial authenticity. Eighth, functional authenticity which is associated with the continuity of the original function. The truth of heritage is perceived completely if it still has its original function, otherwise it is considered as a museum object which can't demonstrate its real condition (Kidd 2011). Ninth, rare authenticity which is associated with how rare a heritage relic is among its similar cases. Therefore, it is necessary to evaluate its exclusive values in the view of related experts. Tenth, conceptual authenticity which is associated with intangible aspects of authenticity including ephemeral, performance, ethnographic, and self-destructive dimensions. Consequently, place identity as one of the main dimensions of conceptual authenticity shows a strong bound between a place and one's personal identity (Devine-Wright and Clayton 2010). This bound contains both cognitive and affective elements (Zenker and Rutter 2014) which form the sense of place. Therefore, the place cultural significance can offer individuals opportunities to identify themselves (Ramkissoon 2015) and express their sense of identity.

It is necessary to ascertain the function of authenticity in the heritage conservation. The role of authenticity in conservation heritage relics can be introduced as representing the interaction of the conceptual, material, and aesthetic authenticity. The conceptual authenticity is associated with intangible aspects of a monument including the aspect of setting listed by Stovel (2007). Design, material, and workmanship could be then placed along the bottom axis between the aesthetic and the material authenticity. The material authenticity resides in the originality of material construction related to historical and physical material essence (Piazza and Riggio 2007). The aesthetic authenticity seeks to create a unified artistic experience which imparts to visitors a completed image of the relic. However, the criteria mentioned in the genres of

authenticity can be considered as the subdivisions of conceptual, material, and aesthetic authenticity (Figure 2).

There are significant approaches in renovation process which identify the notions of authenticity and inauthenticity (Figures 3 and 4; Table 3). These approaches are as follows: historic, contemporary, craftsmanship, and people-oriented.

### 3.2. Adaptive reuse

Adaptive reuse is associated with developing the potential of an additional use and wear for a functionally obsolete building.

Adaptive reuse helps communities, governments, and developers to reduce the environmental, social and economic costs of continued urban development and expansion (Figure 5). Adaptive reuse has become a strategy for the conservation of energy. The social advantages of adaptive reuse are providing a link to the past and the revitalization of a neighborhood (Philokyprou 2014). Rather than trying to remove the problems of an area by razing structures, the realization that existing buildings provide a neighborhood's "sense of place" has come to the fore. If the structure of a building is in good condition and it is easily adapted to the new program, the economic advantages will be lower construction and land acquisition cost and less time consuming (Howard Snyder 2003, 18–20).

The most successful adaptive reuse projects are those that retain a building's heritage significance as well as add a contemporary layer that provides value for the future. The main design principle considered in adaptive reuse is the integration of the old and the new. According to the degree of the integration between the old and the new, adaptive reuse is divided into three categories of "installation," "intervention," and "insertion" (Brooker and Stone 2016) (Figures 6 and 7). The

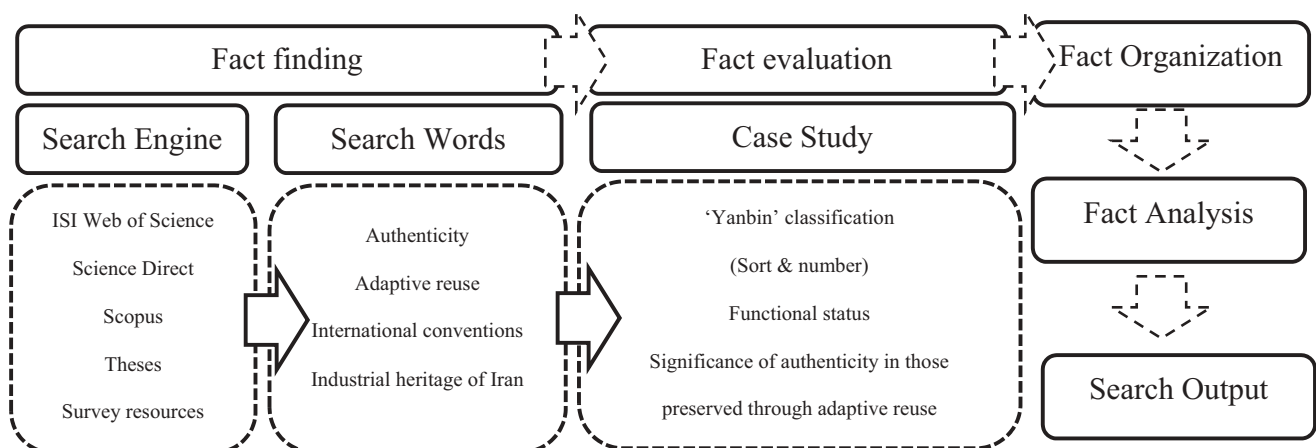
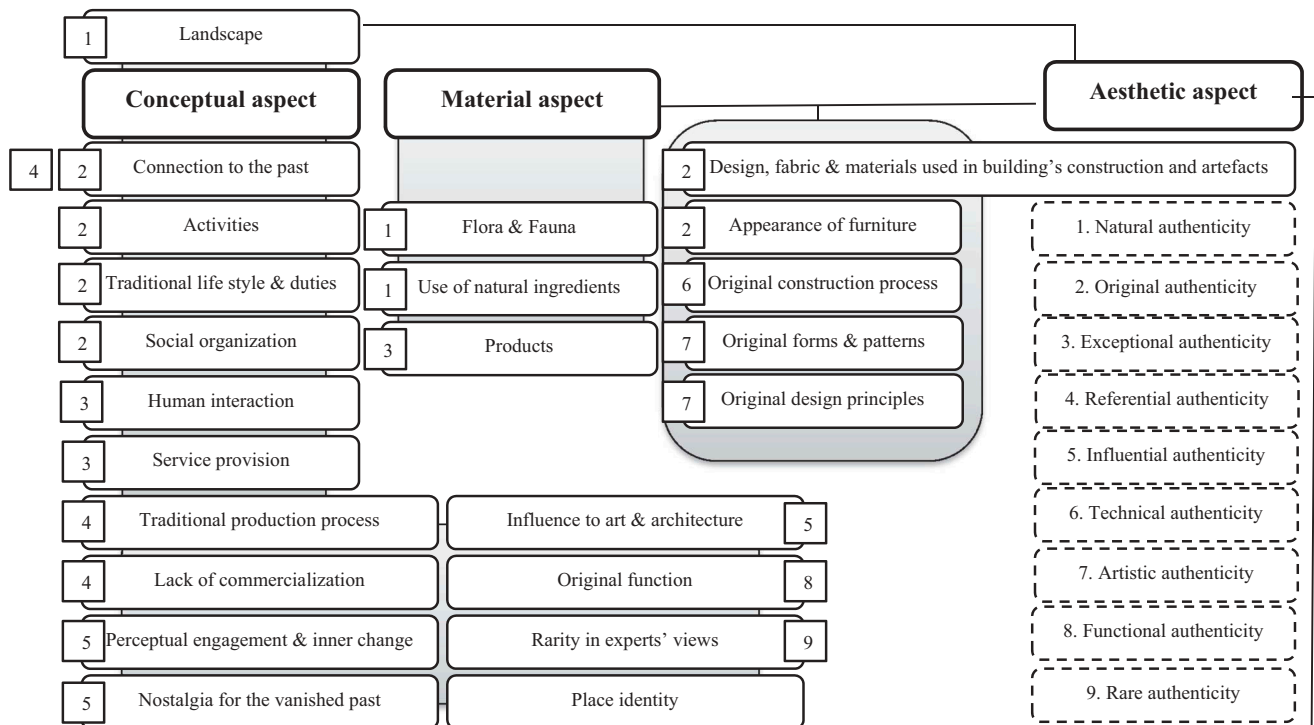
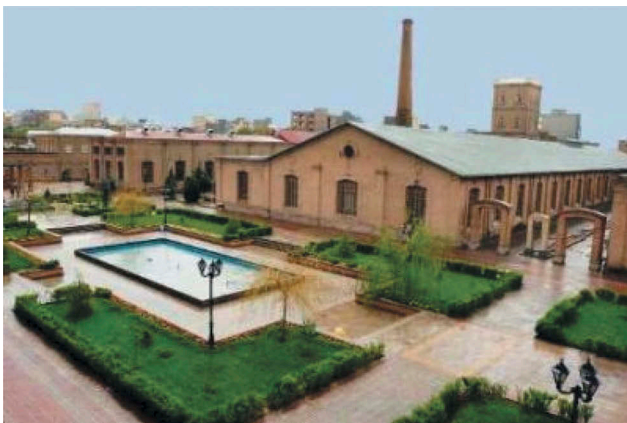


Figure 1. Methodology adopted for research.



**Figure 2.** Interaction of conceptual, material and aesthetic aspects with genres of authenticity (Authors).



**Figure 3.** Applying authenticity by historic/people-oriented approach in the Khosravi factory reused as Tabriz Art University (Authors).

design principle of “installation” implies that the old building and the new elements exist at the same time, while there are clearly distinctive and there is no communication between them. The design principle of “intervention” implies a clear dependence of the new elements on the old building. In this regard, the architects may extract the main elements of the old building and then make some small additions, subtractions, or changes to design the new elements. The design principle of “insertion” implies an intense relationship between the old building and the new elements while



**Figure 4.** Applying authenticity by contemporary/people-oriented approach in the Shams factory reused as Tehran cultural center (Authors).

both exist independently. The appearance of the old building is respected but its interior is remodelled in a large scale (Huang 2016, 71–72).

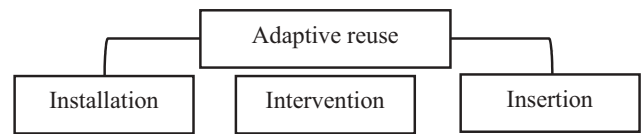
### 3.3. Industrial heritage

Industrial buildings are one of the important building typologies which demonstrate the technological development of the country through their architecture. The Nizhny Tagil Charter for The Industrial Heritage (2003) defines them as remains of industrial culture which are

**Table 3.** Notions of authenticity and inauthenticity in conservation (Authors, based on Wesener 1999).

Approaches	Notions of authenticity	Notions of inauthenticity
Historic	<ol style="list-style-type: none"> <li>1) Historic space quality</li> <li>2) Historic façades</li> <li>3) Historic settings, properties &amp; artefacts</li> <li>4) Least developed areas</li> <li>5) Reusing historic buildings to provide workshops for traditional businesses &amp; ceremonies for traditional rituals</li> </ol>	<ol style="list-style-type: none"> <li>1) Negotiation of historic buildings</li> <li>2) Cheap space used as for storage</li> </ol>
Contemporary	<ol style="list-style-type: none"> <li>1) Juxtaposing the new with the old</li> <li>2) Correspondence of new building to old neighbours (proportions, heights and material)</li> <li>3) Developed areas</li> </ol>	<ol style="list-style-type: none"> <li>1) Historicizing buildings</li> <li>2) Being in a museum place</li> <li>3) Designing buildings out of context</li> </ol>
Craftsmanship People- oriented	<ol style="list-style-type: none"> <li>1) Memories of old workshops, their inhabitants &amp; production process</li> <li>2) Presence of mix of people</li> <li>3) Friendliness</li> <li>4) People interaction</li> <li>5) Increased activity after 5 p.m.</li> <li>6) Cultural motifs</li> </ol>	<ol style="list-style-type: none"> <li>1) Negotiation of original function</li> <li>2) Lack of social spaces</li> </ol>

of historical, technological, social, architectural, or scientific value. These remains consist of buildings and machinery; workshops, mills, and factories; mines and sites for processing and refining warehouses and stores; places where energy is generated, transmitted, and used; transport and all its infrastructure; as well as places used for social activities related to industry such as housing, religious worship, or education (Figure 8). Industrial sites are often brownfields. A brownfield is an abandoned, or under-used industrial facility where redevelopment is complicated by environmental contamination. Reusing brownfield sites in preference to green ones has been the central focus of urban development in Britain since the 1990s (Yanbin 2014). International conventions represent principles on the conservation of industrial heritage (Table 4).

**Figure 6.** The three approaches of adaptive reuse (Authors, based on Brooker and Stone 2016).

### 3.4. Industrial heritage of Iran

Before industrial revolution in the west in the 19th century, industry in Iran referred to all the activities done in small workshops such as pottery, carpet, and cloth weaving and the buildings related to the use of renewable energies such as water mills and windmills.

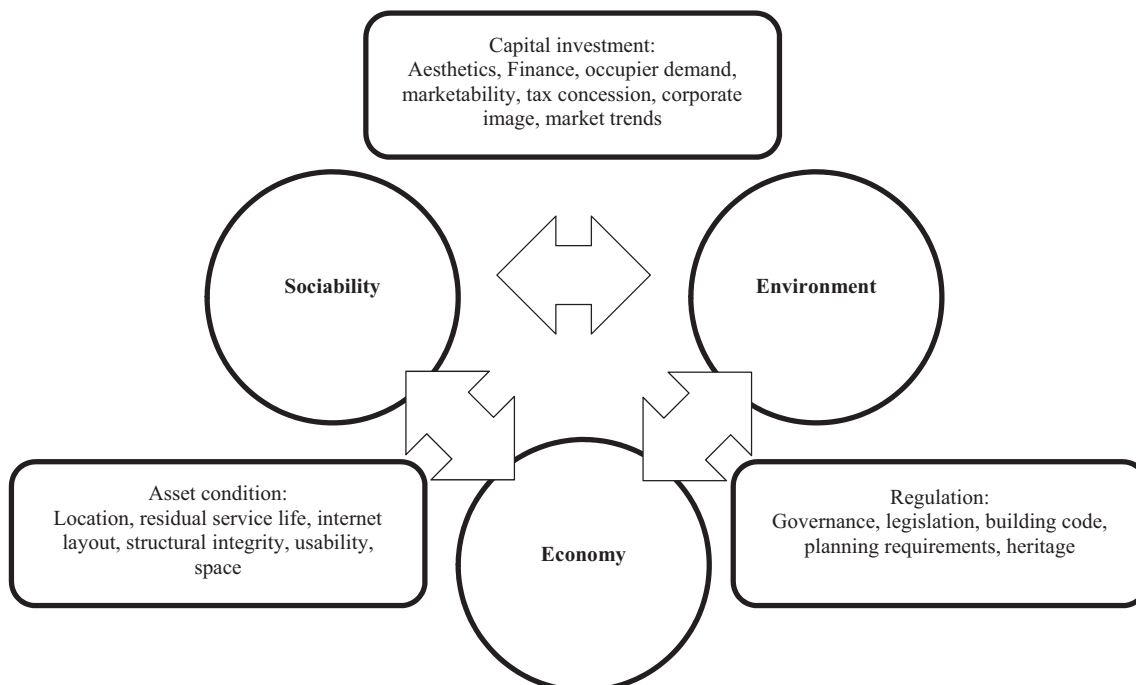
**Figure 5.** Issues considered in adaptive reuse (Bullen and Love 2009, 38).



Figure 7. Adaptive reuse approaches in the Eghbal factory of Yazd (Authors).

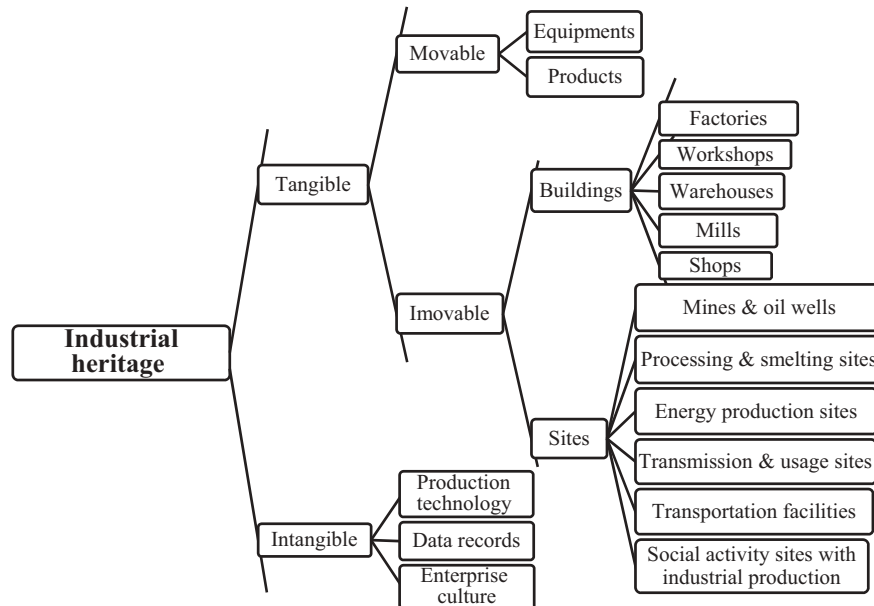


Figure 8. The classification of industrial heritage (Yanbin 2014).

By the formation of the “Qajar” dynasty (1795–1925) in the late 18th century, the process of industrialization founded in Iran. The main agents were classified into the two groups of political-military and social-cultural alterations. The political-military alterations originated from military disputation with other countries. Losses in the disputations triggered the use of modern military technologies, which were the initiation of the use of the west industrial products in Iran. The social-cultural alterations originated from the two factors of the Qajar kings’ trips and students’ trips to Europe and establishing modern schools. Besides, establishing modern schools and employing foreign tutors in these schools affected on the social-cultural structure of the society and the process of industrialization as a result. In this era several factories were constructed, but soon became decrepit (Figures 9 and 10).

In the “Pahlavi” era (1925–1978), the process of industrialization developed significantly. In summary, many roads, railways, bridges, factories, and government buildings were constructed which were all the sign of an industrial society. It is worth mentioning

that the most important decision of the government at this time was to build the national railway proposed by the Parliament in 1926. In this era, over 270 factories were constructed; therefore, the country achieved self-sufficiency in industrial products by up to 70%. In 1952, the government created new facilities to help manufacturers develop industry. Consequently, these facilities had a significant role in the development of the industry as the number of factories reached up to 346 ones (Banimasoud 2011, 11). Most of these factories were located in the capital of Tehran.

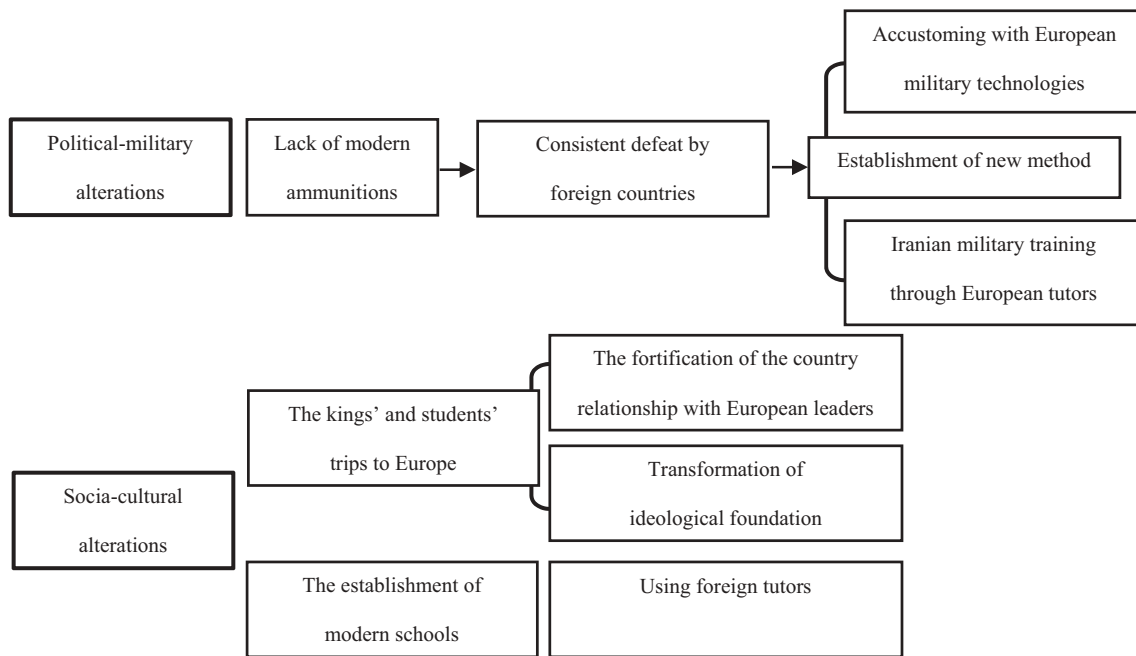
As a result, the industrial heritage of Iran refers to all the buildings and sites constructed as a sign of industrial culture in its historical eras which are mostly “Qajar” and “Pahlavi.”

#### 4. Research results

The three phases of (1) data summarization and coding based on literature review, (2) data representation based

**Table 4.** International conventions of industrial heritage (Authors).

Time	The event			Place
	Convention name	Main content		
1933	Athens charter (Published by CIAM)	The protection of historical buildings		Athens
1964	Venice charter (Published by ICOM)	The qualitative aspect of historical buildings, including definitions, protection, restoration, historical sites, excavation and publication		Venice
1950–1960s	The beginning of the transformation of dilapidated industrial heritage			The United States
1960–1970s	Moving from industrial age to the post-industrial age; The traditional industry declined, the scale of transformation expanded and the means of transformation became more flexible			—
1976	Nairobi recommendation (Published by UNESCO)	The protection of sites, towns and villages		Nairobi
1977	Machu Picchu charter (Published by CIAM)	The protection of historical monuments and traditional cultures		Lima
1987	Washington charter (Published by ICOMOS)	The protection of historical towns and traditional residential areas		Washington
1996	The Barcelona international building association	The protection, management and regeneration of city-abandoned areas		Barcelona
2003	Nizhny Tagil charter (Published by TICCIH)	The definition of value, as well as the identification and conservation measures of the industrial heritage		Nizhny Tagil
2011	Dublin principles (Published by ICOMOS)	The importance of both tangible and non-material heritages.		Paris
2012	Taipei declaration (Published by TICCIH)	Focusing on the Asian industrial heritage		Taipei



**Figure 9.** The agents of industrialization in Iran (Authors).

on questionnaire analysis, and (3) conclusion are performed to reach the research results.

In the first step, “Yanbin” classification of industrial heritage is investigated in the “Qajar” and “Pahlavi” buildings, which are of historical value. Then, their functional states classified into the seven groups of reused adaptively, having original function, partly having original function, partly abandoned, abandoned, partly destroyed, and

destroyed are identified (Table 5). To evaluate the impact of adaptive reuse on heritage buildings, case studies are classified into the three groups of renovated based on installation, intervention and insertion approaches (Table 6). Finally, a questionnaire (Table 7) based on Table 2 is prepared to investigate the concept of authenticity among those relics conserved through adaptive reuse and its significance is estimated according to the



Figure 10. Industrial heritage of Iran founded in the Qajar era (Authors) (Banimasoud 2011).

Table 5. Classification and number of Iranian industrial heritage buildings & site (Authors).

Function	Number		Reused adaptively	Having original function	Partly having original function	Partly abandoned	Abandoned	Partly destroyed	Destroyed
	Identified	Investigated							
Buildings									
Factories	199	127	13	63	2	7	19	14	9
Workshops	8	0	0	0	0	0	0	0	0
Reservoirs	3	3	0	0	0	0	2	1	0
Wheat silos	4	4	0	2	2	0	0	0	0
Slaughterhouses	1	1	1	0	0	0	0	0	0
Airports	12	12	0	11	0	0	0	1	0
Train stations	41	40	1	36	1	1	0	0	1
Mills	3	3	1	1	0	0	0	1	0
Fire stations	1	1	0	1	0	0	0	0	0
Customs building	1	1	0	0	0	0	1	0	0
Total Buildings	273	192	16	114	5	8	22	17	10
Sites									
Oil wells	2	2	1	0	0	0	0	1	0
Refineries	2	2	0	2	0	0	0	0	0
Brick furnaces	14	12	1	3	0	0	5	3	0
Lighthouses	1	1	0	0	0	0	1	0	0
Dams	5	5	0	4	0	0	1	0	0
Energy production sites	3	3	1	2	0	0	0	0	0
Transmission sites	7	3	2	0	0	0	0	0	1
Road tunnels	3	3	0	3	0	0	0	0	0
Railway bridges	34	29	0	28	0	0	0	1	0
Wharves	6	4	0	3	0	0	1	0	0
Total Sites	80	64	5	45	0	0	8	5	1
<b>Total</b>	<b>353</b>	<b>256</b>	<b>20</b>	<b>159</b>	<b>5</b>	<b>8</b>	<b>30</b>	<b>22</b>	<b>11</b>

scores given to the criteria of the questionnaire. The score given to each criterion of the questionnaire is from 0–4, and the average score for each genre shows its significance in authenticity.

#### 4.1. Discussion



Research results show that the industrial heritage of Iran is classified into the two groups of buildings and sites. The industrial heritage buildings are factories, workshops, reservoirs, wheat silos, slaughter houses, airports, train stations, mills, fire stations, and customs buildings, while the industrial heritage sites include oil wells, refineries, brick furnaces, lighthouses, dams, energy production sites, transmission sites, road tunnels, bridges, and wharves. Indeed, they show that the percentage of the industrial heritage buildings is higher

than the industrial heritage sites in Iran (Figure 11). Indeed, factories as industrial heritage buildings and bridges as a part of industrial heritage sites have of the highest number among all.

As it is illustrated, many of Iranian industrial heritage buildings and sites including factories, airports, train stations and bridges have their original functions. On the other hand, many of them, which are worth of preservation, are abandoned or in danger of deconstruction. Meanwhile, about 8% of these buildings and sites are reused adaptively which were considered as case studies to evaluate the significance of authenticity after renovation (Figure 12).

As about 24% of the industrial heritage of Iran are in danger of demolition (being vacant, partly vacant, and partly destroyed), it is very important to conserve them through adaptive reuse. Adaptive reuse of

Table 6. The practice of adaptive reuse in case studies (Authors).

Project	Location	Time		Function		Transformation	Original	Current function	Before	After	Transformation type
		Construction	Transformation	Original	Current function						
1 The Shams factory	Tehran	1931	1992	Beer factory	Cultural centre			Installation			
2 The Pashmineh factory	Tabriz	1935	1995	Wool blanket factory	Drug research centre			Installation			
3 The Argo factory	Tehran	1889	2016	Beer factory	Institute of culture & art			Installation			
4 The Beyanak factory	Tehran	1922	1997	Sock weaving factory	The museum of nature & wildlife			Intervention			
5 The old railway station	Tehran	1882	1972	Railway station	Cultural park			Intervention			
6 The main entrance of the gun factory	Tehran	1925	2004	The main entrance of the gun factory	The main entrance of the metro station			Intervention			
7 The Pashmbaf factory	Esfahan	1935	1996	Spinning & weaving factory	Broadcasting building	—		Intervention			
8 The Khosravi factory	Tabriz	1931	1975	Leather factory	University			Intervention			
9 Rasht post & telecommunication office	Gilan	1931	1994	Post & telecommunication office	Post museum			Intervention			
10 The first Iranian oil well	Khuzestan	1907	—	Oil well	Oil museum			Intervention			

(Continued)

Table 6. (Continued).











Project	Location	Time		Function		Before	After	Transformation type
		Construction	Transformation	Original	Current function			
11 The pavilion	Tehran	1924	1960	Wireless communication station	The museum of radio & wireless technologies			Insertion
12 The radio station	Tehran	1940	2009	Radio station	Iran broadcasting building			—
13 The Momtaz factory	Tehran	1980	2009	Spinning & weaving factory	Commercial centre			—
14 Tehran slaughterhouse	Tehran	1944	1991	Slaughterhouse	Cultural centre			—
15 The Eghbal factory	Yazd	1931	2003	Spinning & weaving factory	Science & technology centre			Installation Intervention Insertion

Table 7. The questionnaire prepared to investigate the concept of authenticity (Authors).

Authenticity	Criteria	Quantitative score			
		(4)	(3)	(2)	(1)
Natural	Landscape	Harmonic	Very harmonic	Neutral	Very inharmonious
	Flora & fauna	Indigenous	Mostly indigenous	Neutral	Mostly foreign
Original	Use of natural elements	Metaphysical	Organic	Bionic	Neutral
	Connection to the past	Extremely	Visiting the building, can you feel the presence of history and tradition spiritually?	Moderately	Slightly
Exceptional	Activities	Almost always	Often	Are ceremonies such as cultural celebrations held in this building?	Seldom
	Traditional lifestyle & daily duties	Excellent	Visiting the building, can you recognize the traditional lifestyle & daily duties of previous users of the building?	Average	Below average
Referential	Appearance of furniture	Strongly agree	Agree	Do you think the decoration and furniture of the building satisfy different generations?	Disagree
	Human interaction	Strongly agree	Agree	Does the building provide you the spatial necessities to have social interactions with others?	Disagree
Influential	Service provision	Extremely	Very	Do you think that human needs are respected in the renovation plan of this building?	Slightly
	Historical continuity	Extremely	Very	Do you think that the historical identity of the building has remained unchanged over time?	Slightly
Technical	Using old motifs & paradigms	Strongly agree	Agree	Do you think that the building has been renovated using old motifs and paradigms?	Disagree
	Lack of commercialization	Strongly agree	Agree	Do you think that the building is more considered as a heritage than a commercial commodity?	Disagree
Artistic	Perceptual engagement & inner change	Extremely	Very	Visiting the building, are you impressed by a specific spiritual experience?	Slightly
	Nostalgia for the vanished past	Extremely	Very	Visiting the building, do you get to know its historical identity and feel nostalgic?	Slightly
Functional	Influences to architecture & art	Strongly agree	Agree	Do you think that the architecture of the building has been a sample for other industrial buildings?	Disagree
	(Structure & material)	Very Similar	Somewhat similar	Do you think that the structure & material used in renovation process are similar to the original ones?	Somewhat opposite
Rare	Commitment to the original construction	Excellent	Above average	Average	Below average
	Material	Excellent	Above average	Average	Below average
Functional	Immaterial	Very nostalgic	Somewhat nostalgic	Neutral	Somewhat non-nostalgic
	The continuity of original function	Mentioned in manuscripts	Mentioned in heritage	Mentioned in books & articles	Mentioned in Internet sites
Rare	Rarity in experts' viewpoint	In the country	In the province	In the city	In the region
		In the country	In the province	In the city	In the region

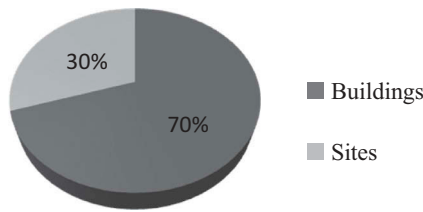


Figure 11. Percentage of buildings and sites (Authors).

these monuments provides a link to the past and revitalize a sense of place among individuals. Indeed, it generates less construction waste and contributes to energy efficiency which helps preserving the environment. Finally, if the structure is in good condition and it is easily adapted to the new program, the economic advantages will be lower construction, land acquisition cost, and less time consuming.

As detailed information was illustrated in Table 6, Iranian industrial heritage buildings and sites are mostly renovated based on the intervention approach (Figure 13).

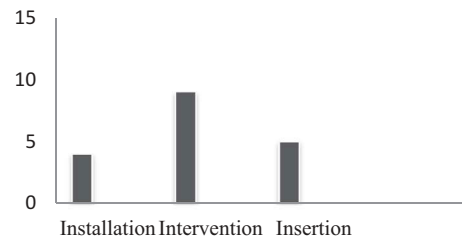


Figure 13. Renovation approaches in industrial heritage of Iran (Authors).

Analysis of questionnaires proves that great attention has been paid to authenticity in the adaptive reuse of the industrial heritage of Iran. Even one of the lower mean scores given to original authenticity is higher than the average.

Among the aspects, natural, artistic, technical, exceptional, referential, influential, rare, original, and functional authenticity gained respectively highest to lowest mean scores in authenticity. Devoting the highest score to natural authenticity shows success in using native

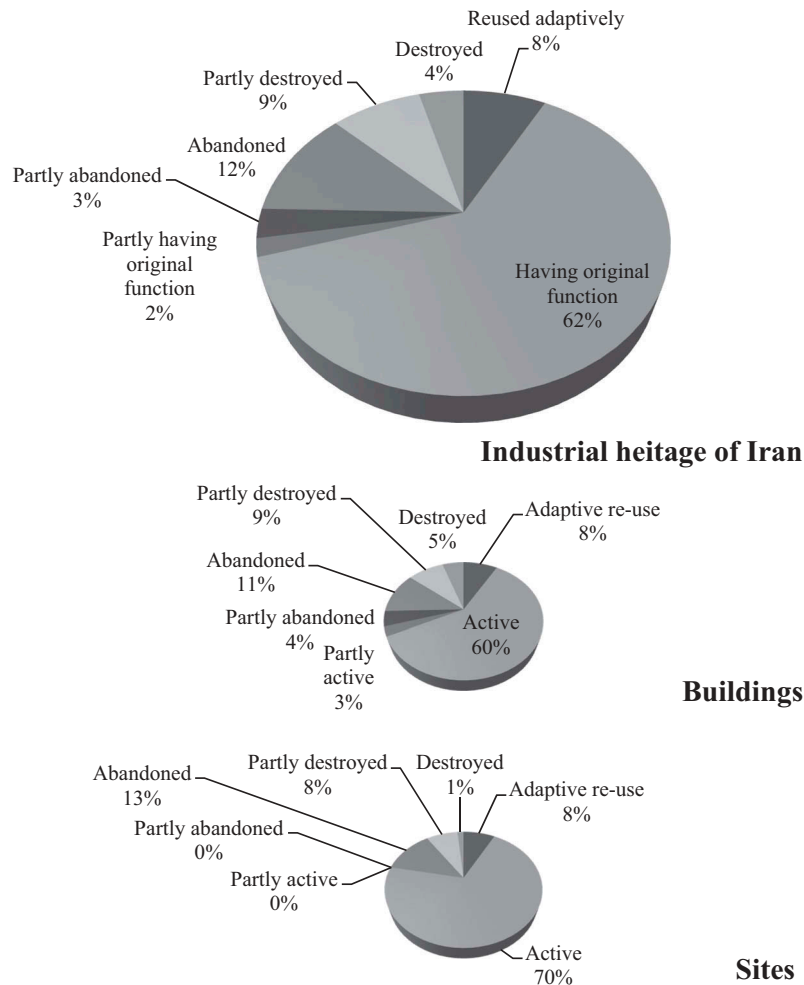


Figure 12. Functional state of industrial heritage of Iran (Authors).

flora in landscape design. Indeed, the high score given to immaterial issues has increased artistic authenticity score which is in direct relationship with the high score of referential authenticity caused by using old motifs and paradigms in renovation process. Since intervention is one of the most popular approaches in the renovation of the industrial heritage of Iran, technical authenticity relating to commitment to the original construction process has received a high score above the average. Appearance of furniture is of a low score which could be considered as the weakness of renovation process in the industrial heritage of Iran. Finally, the lowest score given to functional authenticity is due to the new function given to heritage buildings after adaptive reuse which is far from the original one (Figures 14 and 15).

### 5. Conclusion

Industrial heritage buildings are associated with the industrial relics that have no production function any

more. These relics consist of factories, workshops, mills, processing and refining sites, places where energy is produced, transmitted, and used, and transportation buildings. Meanwhile, adaptive reuse is one of the main strategies to help industrial heritage relics develop an additional use when they are left abandoned and in danger of destruction. Indeed, it helps cities reduce environmental, social, and economic costs of continued urban development and expansion.

Authenticity is one of the most important issues considered in the conservation of industrial heritage buildings and, therefore, has been noticed in various international conventions recently. The three aspects of conceptual, material, and aesthetic authenticity are mostly considered in the conservation process which reveal the true nature of a heritage. However, these aspects are related to the genres of authenticity which include natural, original, exceptional, referential, influential, technical, artistic, functional, and rare authenticity. Authenticity is mostly a conceptual issue depending on material factors. Among the genres,

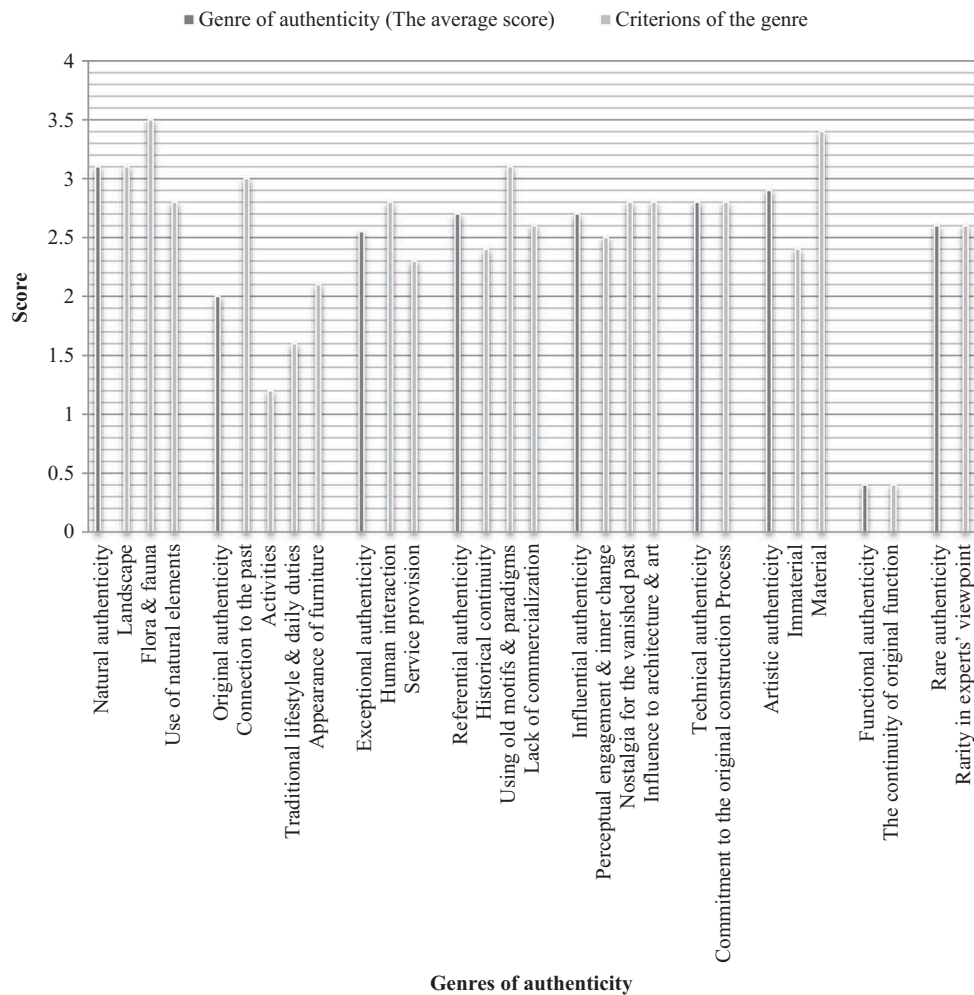
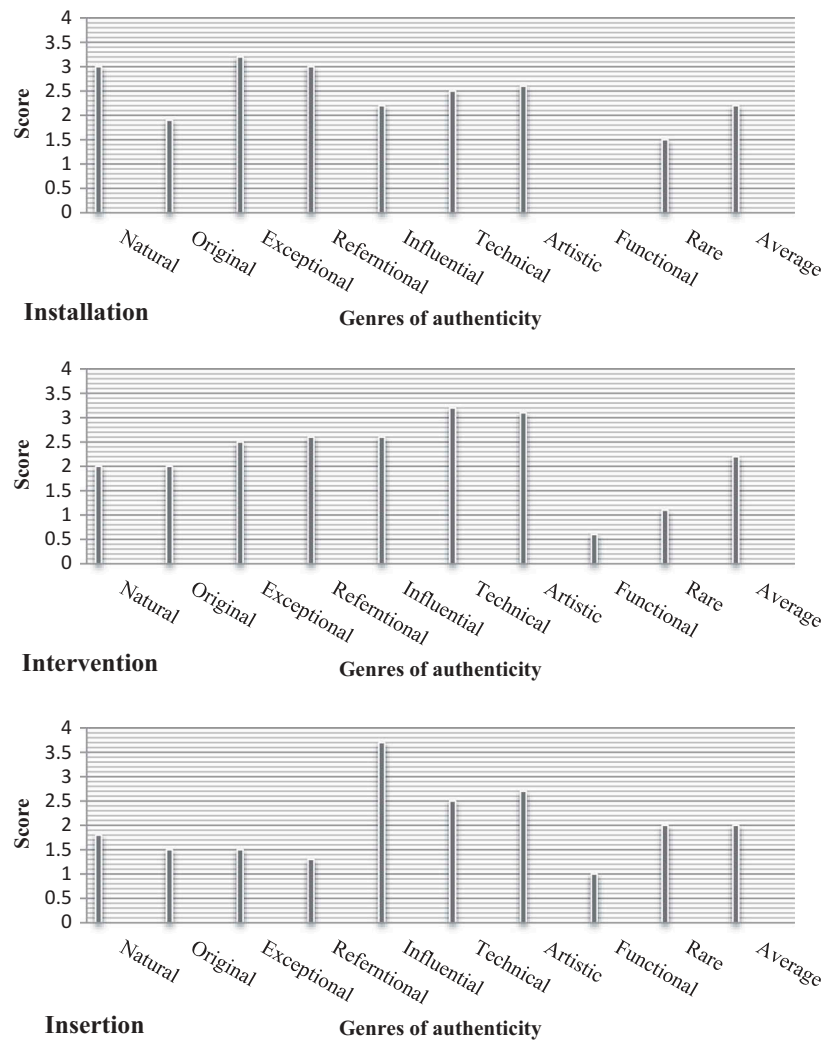


Figure 14. Significance of authenticity in case studies (Authors).



**Figure 15.** Significance of authenticity in renovation approaches in case studies (Authors).

referential, influential, and rare authenticity are conceptual, while technical and artistic authenticity are placed along the bottom axis between the aesthetic and the material authenticity. Finally, original authenticity involves the three aspects which originates from the originality of design, form, technique, and function that can influence on one's sense of identity.

Analysis of authenticity criterions in those Iranian industrial heritage relics which are considered as a practice of adaptive reuse shows that great attention has been paid to the concept of authenticity, as most of them have received a score above the average. Among the aspects, natural, artistic, technical, exceptional, referential, influential, rare, original, and functional authenticity gained respectively highest to lowest mean scores. Devoting a high score to artistic authenticity is associated with immaterial issues which also create a sense of nostalgia for the vanished passed as

one of the main criterions of influential authenticity. Indeed, as intervention is one of the basic approaches in the adaptive reuse of Iranian industrial heritage, referential and technical authenticity have received high mean scores based on the criterions of using of old motifs and paradigms and Commitment to the original construction Process.

In future projects, it is necessary to investigate those industrial heritage monuments of Iran that are vacant or partly vacant, and in danger of demolition. However, special attention should be put on material aspects including original forms and patterns to improve conceptual and aesthetic authenticity. On the other hand, the distinction of the old and the new structures in the installation approach, can help to preserve the original authenticity of the monument, while using original elements in the renovation of the old structure, as it is recognized in the

intervention approach, can improve the influential authenticity of the monument. Finally, because the three approaches of adaptive reuse have received almost the same score in the significance of authenticity in this research, more freedom should be given to the related sectors not to conserve heritage buildings in an unchangeable museum-like way.

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