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RESEARCH ARTICLE

Evaluation of fitness of design in urban historical context: From the perspectives of residents

Hesamaddin Sotoudeh*, **Wan Mohd Zakri Wan Abdullah**

Architecture Department, Faculty of Built Environment, Universiti Teknologi Malaysia, Johor 81310, Malaysia

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Abstract
Historic city cores in many countries either fell into neglect or suffered from harmful developments. Due to a variety of reasons, conservation projects failed to preserve socio-cultural assets of historic environments. One of these reasons is that experts who involve in the development of historical context completely disregard the communities in such historic areas or their inhabitants. This paper looks into residents' preferences on infill design projects as part of urban development in historical contexts. It aims to investigate preference ratings of those residents who live in urban historical context in terms of the quality of new infill design and its relationship to the historical surroundings. This research attempts to evaluate the best design strategies from the point view of the residents as well as the effects of cognitive properties on their preferences. Methodologically, a case study approach was adopted with 204 residents as participants in this survey. The contributive elements that are essential to the quality of fitness are identified through quantitative analysis. The findings of this research indicate that the most preferred design strategies are "Literal Replication" and "Invention within Style" from the perspective of the residents, who prefer, to a greater degree, new buildings in historical context replicating something from their surroundings. These findings are useful to experts and major organisations to conduct successful infill development, with consideration of the perceptions of the residents on the changes in their historical context.

*Corresponding author. Tel.: +60 127875861.
E-mail address: hesam.hds@gmail.com (H. Sotoudeh).
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1. Introduction

Historic buildings and historical context involve both tangible and intangible aspects of a specific culture. Architecturally, the intangibles, such as belief, language, culture and the spirit of the people, are manifested through physical forms of buildings, spaces and places. Historic city cores,

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such as those in Shiraz, Isfahan and Yazd in Iran, boast unique arts and architecture amidst vibrant culture, tradition and ritual practices (Sotoudeh and Wan Abdulah, 2012). These cities share similar traditions of compact planning that are filled with spaces and places endowed with unique characters that are testimony to the existence and development of the spirit. However, today this spirit is missing due to the deterioration of spatial quality and sense of place in these cities. There are many interlinked threats presented to the spirit of the spaces or places, resulting in the abandonment of these areas, the loss of cultural heritages and unsustainable practices (Rai, 2008). At present, the concerns of historic places are largely placed on monuments and houses. However, it is necessary to emphasise proper management and appropriate new interventions in order to maintain cultural values that are still relevant to the changing time.

The expansion of cities and relevant construction activities are inevitable for the development and livability of these cities. During this development, historic cores and historic urban sites also need to develop as an integral part of those cities. In developing historic settings, various actors play different roles according to their specialties and interests: developers and owners, residents, communities, government officials, and designers (architects, planners and landscape architects). Operating within their specific scopes of interests, rules and regulations, or professional expertise, each decision maker perceives the city and its future development differently.

In the field of architectural design, in the case of infill design for new development in historic context, it is important to understand the design principles that gave rise to the existing conditions. The development of conservation principles in the second half of the 20th century was regarded internationally by many as the most significant achievement of these conservation activities. These principles or guidelines, promulgated either as charters, recommendations, resolutions, declarations or statements, were drafted and adopted mainly by international organisations, such as UNESCO and ICOMOS, with the aim to protect cultural properties, including historical monuments, buildings, groups of buildings, sites and towns around the globe, from various threats (Ahmad, 2006).

In contemporary design practice, attitudes toward architectural design often reflect architects' personal preference, even though it is governed by design guidelines laid out by relevant commissions, organisations and/or local councils. An important aspect of an appropriate design is measured based on the quality of viability and vitality in its context (Wan Mohd Zakri Wan Abdullah, 2008) or the quality of sensibility to that particular setting (Bentley et al., 1985). In addition, various methods and policies are formulated by local authorities to deal with the development of historical urban environment. Central to these methods and policies is full participation of urban stakeholders: policy-makers, professionals and users of these cities. Residents, as the main user of historical contexts, who live in these historical settings, occupy buildings and gain senses of places in their surroundings, must participate in the decision making as well as design process. Introducing public opinions, especially those of the residents of historical context, could be helpful to professionals for better developing these valuable areas.

The approach of user participation could be carried out in two different ways to better assist designers and developers. The first is by means of encouraging direct user participation. Kaplan (1979) (428) described the advantages of this approach as follows: ''...when the people take part in transforming their own environment, striking social-psychological as well as design consequences can be seen''. A feasible and effective participatory approach would require evolving mechanisms through which users can better assess and express their environmental needs and, at the same time, design adequate techniques for acquiring meaningful inputs from users, which would benefit the professionals. The other approach that would complement direct user participation is research; the role of research in assisting environmental professionals is described by (Kaplan and Kaplan, 1982) (230) as follows: ''Research will hopefully contribute to a more adequate conception of human functioning. It must be possible, with increasing understanding, to do a better job of incorporating human concerns into the development of alternatives''. Designing surveys for collecting people's inputs, enquiring users and comparing their preferences and evaluations might yield information, providing designers with a broader understanding of people's viewpoints on projects in order to pay attention to important issues. Therefore, the main purpose of this research is to investigate commonalities and differences of the perceptions of residents on aesthetic fitness as well as their attitudes towards design quality in historical context.

1.1. New buildings in urban historical context

From the 1930s through the 1960s, modernist-trained architects generally dismissed old buildings and their styles, attempting to design in a ''modern'' manner. Historical elements were overlooked, often resulting in mantling or defacing many elegant facades of 19th-century buildings (Tyler, 2001). The ''Modern'' approach brought unambiguous buildings of the time, drawing inspiration from the past and showing respect for their historic context (Davies, 2003). After this period and during the phase of postmodernism, the awareness of historic preservation increased. In postmodernist architecture, designers were more sensitive with contextual design and tried to design new buildings that were more compatible with historic surroundings.

Additions to historic settings have always been a big issue in the preservation field. There have been many discussions on the proper ways to deal with historic contexts when it is necessary to create more usable spaces or new expansions (Sotoudeh and Wan Abdulah, 2012). The appearance of infill part, as well as its relationship to the surroundings, is a serious design problem (Groat, 1983) that becomes a critical issue in many places. It touches the essence of architectural design: new methods of construction and new functions that influence built environment, creating visual forms that coexist with their context (Ai-Izzi, 1989).This issue becomes more sensitive when new construction requires addition in historic districts or areas that involve a significant number of historic buildings.

There are various design guidelines laid out by different commissions, organisations and city councils. For new additions

in the urban historic context, there are no simple rules for achieving quality of design, although a clear and coherent relationship of all parts of the new work to the whole, as well as to their surroundings is essential. New work should pursue the quality of both design and execution related to its settings, which may be valuable both for now and in the future. This neither implies nor precludes working in traditional or innovative ways, but demands respect for the significance of a place in its setting (English Heritage, 2007). The 1964 *Venice Charter*, considered as the founding document of modern preservation movement, declares that the purpose of conserving and restoring historical monuments is to "safeguard them no less as works of art than as historical evidence". But it also states that any addition to the landmark must be "distinct from the architectural composition and must bear a contemporary stamp" (ICOMOS, 1964). *The Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, first issued in 1977, were closely based on the *Charter* and called for additions to be, at the same time, "differentiated" from the historic fabric and "compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment" (Penn, 2007). Both the *Charter* and the *Standards* assumed that any new work would be modernist in style and would be monitored to ensure its compatibility. In dealing with urban historical context, such international organisations as UNESCO and ICOMOS, in propagating the conservation of architectural as well as urban heritage, encourage new architectural intervention to be distinguishable from its settings so as to protect the historical fabric and yet still aesthetically fit within such environment.

Establishing a congenial relationship with neighbouring buildings can be achieved using an infinite variety of techniques. However, generally speaking, two major approaches are usually decided upon at the initial stage of design process and applied to various degrees: replication and contrast (Eleishe, 1994). Moreover, in recent years, in the field of infill design in historical context, some experts considered a scale between replication of and contrast to the historical surroundings, from slavish replication in forms and details of the original buildings, to sharp confrontation of the historic setting by a building that does not acknowledge that it has a context (Mills, 2002). This paper explores some of these professional opinions about the variety of infill design. According to Tyler (2006), there are three ways to design new buildings among old surroundings; matching, compatibility and contrasting the new with the old. By matching, new buildings or additions seek to replicate the adjacent historic properties as much as possible, making it difficult, if not impossible, to tell them apart. This approach often appeals to owners of historic properties and civic organisations. Compatible design, usually defined as "capable of existing together in harmony", when applied to historic preservation projects, typically refers to the design of additions of historic buildings that modifies the historic interiors and constructs new buildings in historic districts or landscapes. Advocates of contrasting approach argue that the design of new additions or buildings should be in nature contemporary design and distinguish the new from the old. Architects often favour the contrasting approach because they perceive that in this way they are free to interpret the context in current architectural idioms in much the same way as the original architects did in their time.

In addition, Davies (2003) believed that there is therefore more than one way to design in the historic environment, and much will depend upon other influences, such as aspirations of the building owner, cost, aesthetic sensibilities of planners, skills of the designer, and so on. He believed that "as in age and politics, design for the historic environment is polarized by two extremes: the very historic and the very modern. Then everything else fits somewhere in between on a sliding scale, and it is possible to place any building on the scale to determine its stylistic relationship with its surroundings" (Davies, 2003) (3). He considers five different approaches to design: the pastiche approach, traditional approach, subtle approach, Modern approach, and arrogant approach. Semes shares the same opinion and mentions that the balance between differentiation and compatibility will, in fact, vary from case to case, and so the architect-preservationist must approach each project with a range of options rather than a single rule. Putting aside the issue of particular style or language, a set of four possible attitudes toward the relationship of the new and the old may be defined, ranging from maximum compatibility to maximum differentiation, with two intermediate positions that favour the one or the other: literal replication, invention within style, abstract reference, and intentional opposition (Semes, 2009). He explains each design strategy as below:

(1) "Literal replication. The strategy of replication prioritizes compatibility and minimizes differentiation. This strategy will likely sustain the characteristics of an existing setting so long as its historic elements to be replicated are well understood, the technical means to effect replication are available, and the scale of the replication is modest relative to the original building".
(2) "Invention within style. This strategy, while not replicating the original design, adds new elements in either the same or a closely related style, sustaining a sense of continuity in architectural language. The intention is to achieve a balance between differentiation and compatibility, but weighted in favor of the latter".
(3) "Abstract reference. The third strategy seeks to make reference to the historic setting while consciously avoiding literal resemblance or working in a historic style. This approach seeks to balance differentiation and compatibility, but with the balance tipped toward the former. This is a difficult strategy to execute because it requires an artistry and skill that are not often available".
(4) "Intentional opposition. The fourth strategy is one of conscious opposition to the context and the determination to change its character through conspicuous contrast, prioritizing differentiation at the expense of compatibility".

In the case of historical settings as a cultural heritage, decision making for design requires particular considerations and understanding of the context in order to respect and continue the visual harmony of this area with special values because finding key elements and basic principles for design is essential. The strategies presented by Semes (2009) and Davies (2003) provide a useful framework for

examining recent buildings in historic districts. However, both do not address the questions of how the balance between the relationship with the context and contemporary design can be achieved. And what specific elements of design enable a new building to aesthetically fit to an historic district and to create continuity of character. Therefore, it is very important to find some basic principles for evaluating urban design in terms of the relationship between the proposed new projects and their immediate surroundings. While these evaluation principles are not developed explicitly for historic districts, many of the issues to be considered and the questions to be asked on a new project are applicable to historic districts. Moreover, fitness between a new building and its old settings can raise debate from aesthetic, functional, economic, technical, or social perspectives (Eleishe, 1994), among which the aesthetic fitness of the new building to its adjacent neighbours is the main aspect of this study as the most commonly referred issue in architectural field.

1.2. Assessing the quality and value of design in urban context

The visual quality of a city is not the result of any successful individual building, but rather of a conscientious scheme of urban design that relates not only to the physical part of this city but also to the activities in this city, as an intricate entity. Therefore, the increasing concern on aesthetic fitness of design in urban historic setting is relevant because aesthetics is an important aspect in the analysis of environmental impact of design of buildings and open spaces (Reis et al., 2010). Furthermore, aesthetics and community appearance is so important that they cannot be left to developers or to designer intuitions since they often clash with public values, such as historic context value (Nasar, 1994). Architectural aesthetics is a coherent system of criteria which are both formal and symbolic. The formal is concerned with questions of proportion, harmony and contrast, etc… The symbolic is concerned with inspired symbolism. Both of these aspects of aesthetics must be dealt with in the investigation of the issue of fitness (Al-Izzi, 1989).

In evaluating the quality and value of architectural designs, different perspectives can be adopted, depending on the disciplinary focus and the purpose of discussion. Several perspectives on perception, assessment, evaluation and judgment of design quality are considered that, in my opinion, contribute to the understanding of assessing design quality. The work on perception and evaluation is based on the psychological concept that what we perceive is the result of the interaction between physical environment and the person.

Most researches on the perception of built environment have been carried out in terms of aesthetic preferences for building exteriors and natural landscapes (Gifford et al., 2002; Karmanov, 2009). Aesthetics is an important aspect in the analysis of the environmental impact of design of buildings and open spaces. Design reviews have been implemented in most large cities in all countries around the world (Reis et al., 2010). In terms of aesthetics, evaluative responses have been identified to consist of nine cognitive properties. Research measures were assembled according to these cognitive properties and adapted from the works of Berlyne (1974), Nasar (1994), and Gifford et al., (2002). The goal was to include a relatively small set of properties that would cover most of the cognitive "territory" associated with preferences. These cognitive properties are: pleasantness, excitement, and calmness, complex (as opposed to simple); friendly, sociable, warm (as opposed to cold, unsociable, unfriendly); rugged, strong, potent (as opposed to delicate, weak, wimpy); unique, original, creative (as opposed to typical, unoriginal, uncreative); clear, coherent, unified (as opposed to disorganised, confusing, ambiguous); and meaningful, symbolic, expressive (as opposed to meaningless, messageless, unexpressive). As an alternative, design review should strive to elicit the cognitive properties (pleasantness, excitement, relaxation, complexity, friendly, rugged, originality, creativity, coherence, meaningful) appropriate to social and physical context.

This research deals with the visual qualities of new buildings in urban historical context from the perspectives of residents. Therefore, the aim of the present research is to identify most preferred design strategies and the relationship between cognitive properties of aesthetics and the level of formal replication as well as their influences on residents' selections.

2. Methodology

This research focuses on the aesthetic qualities of building elements and the degree of replication in order to define aesthetic fitness of new architectural design in historical context. Moreover, based on Gifford et al. (2002), six cognitive properties for aesthetic evaluation are considered as well as Semes' (2009) categorisation of design strategies in order to determine the degree of replication in historical context. Methodologically, this research adopts the case study approach as it deals with site specific issue, which is of the utmost importance in the field of architectural research (Johansson, 2004). Shiraz, one of the historical cities in Iran, is selected. Shiraz has a lively historical context, with 300,000 inhabitants. The historical context of Shiraz has evolved with problems that little by little destroyed the historic fabric. During the development of the historic center in Shiraz, lack of appropriate policies, laws and guidelines resulted in inconsistency and confusion between the physical characters of new buildings and their historic surroundings.

The research method to investigate the above aspects is to conduct a survey, in which residents' perceptions of the relationship between new buildings and their historical settings are examined as well as their preferences and attitudes toward aesthetic fitness in the built environment.

All questions were rated using a 5-point scale, with varied labels for the points on the scale. However, in all cases, a rating of 1 is the lowest or the most negative assessment and a rating of 5 the highest or the most positive one. The research design requires that the respondents should have lived more than 5 years in the historical area in Shiraz, leading to 204 residents participating in the survey.

As mentioned, according to Semes (2009), there are four different strategies that are useful for historical contexts. These strategies consider the relationship between a new building and its historical setting. At the first stage, one

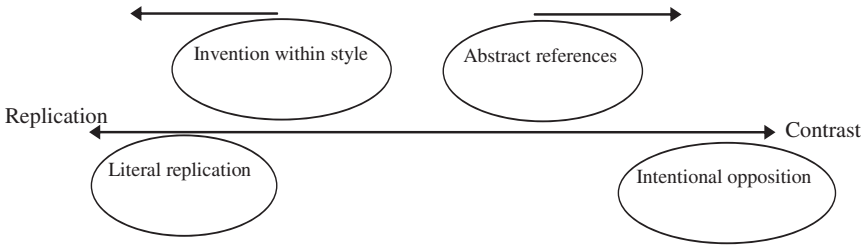

Figure 1 Position of each group in the range between Replication and Contrast.

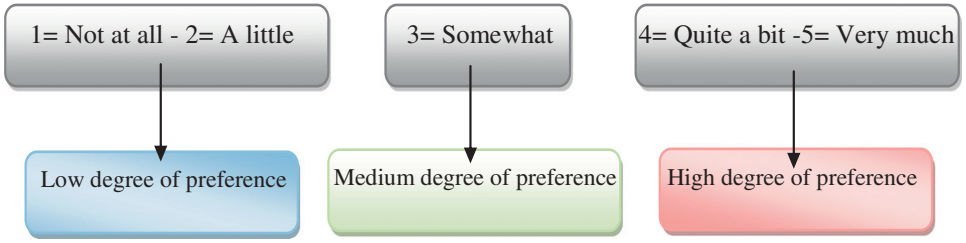

Figure 2 Classifying scores of preferences into 3 levels.

Table 1 Number of respondents, their gender, and education level.

	No. of respondents	Gender		Education			
		Male	Female	Diploma	Bachelor	Master	Ph.D.
Residents	204	101	103	139	57	6	2

exploratory test is conducted asking 12 experts to score 96 building scenes, categorising into four strategies. The 96 building scenes are selected from both Iranian context and European contexts.

These groups of data can be ranged between two opposed points, Replication and Contrast design. All the above strategies can be put between them as shown in Figure 1.

In the next stage, 12 buildings are selected from the pool of 96 buildings for the questionnaire, which means that for each design strategy, three buildings are selected from Shiraz's context and nine from European context. As mentioned before, for aesthetic evaluation, in each building scene, six cognitive properties are investigated by asking the residents which of these cognitive properties will affect preference ratings of the best strategy. These cognitive properties are Coherence, Friendly, Novelty, Complexity, Meaningful, and Pleasant aspects of a building.

Based on questionnaire scale, the scores of preferences are classified into three categories. On the scale of evaluation from 1 to 5, a high (H) level of fitness will score 4 or 5, a medium (M) level of fitness will score 3, and a low (L) level of fitness will score 1 or 2, as illustrated in Figure 2.

In addition, the IBM SPSS Statistics software is used for analysing data by means of correlation tests.

3. Findings and discussions

Totally 204 respondents participated in the survey, who were all selected from the residents of historical areas in Shiraz. Female participants are slightly more than male ones. Some of the background descriptive data is shown in Table 1. This table demonstrates the number of respondents, their gender and education level.

Generally, the participants were inhomogeneous in age, ranging from 20 to 62, as shown in Table 2. More than 60% of the participants are between the ages of 26 and 37.

In term of the length of residence, around 66% of the residents have lived in the historical areas of Shiraz for 11-42 years (Table 3), which indicates that many participants are familiar with these historical areas.

3.1. Reliability

Table 4 shows the internal consistency reliability of respondents, based on De Vaus (2002) rules of thumb. Since $0.8185 > 0.7$, the results are "good" for this study.

3.2. Means and standard deviations

Mean and standard deviations of residents' scores for four design strategies are ranked in Table 5.

Table 5 demonstrates that residents preferred "Literal replication" strategy ($M=3.76$, $SD=0.867$), and buildings with low degree of differentiation with the context and with high level of replication of the historical context in Shiraz. This table also shows that the second preferred design strategy is "Invention within style" ($M=3.57$, $SD=0.793$) with more contrast with the surroundings than "Literal replication" strategy, especially in style. Based on this

Table 2 Age group of respondents.

	No. of respondents	Age							
		20-25	26-31	31-36	37-42	43-48	49-54	55-60	61-66
Residents	204	16	57	47	28	14	15	10	9

Table 3 Length of residence.

		Frequency	Percent	Valid percent
Valid	**3-10**	32	14.9	15.7
	11-18	82	38.1	40.2
	19-26	22	10.2	10.8
	27-34	33	15.3	16.2
	35-42	28	13.0	13.7
	43-50	3	1.4	1.5
	Total	193	94.9	
Missing	**System**	11	5.1	
Total		204	100.0	

Table 4 Internal consistency reliability of respondents.

Cronbach's alpha	No. of items
0.877	35

Table 5 Preference ratings for each design strategy among residents.

Rank	Residents ($N=204$)			
	Design strategy	Mean	SD	Degree of preference
1	**Literal replication**	3.76	0.867	High
2	**Invention within style**	3.57	0.793	Medium
3	**Abstract reference**	3.18	0.894	Medium
4	**Intentional opposition**	2.28	0.868	Low

table, the least preferred design strategy is "Intentional opposition" with high contrast with the surroundings.

3.3. Degree of preference in aesthetic evaluation properties

In order to investigate the effect of residents' preferences on the relationship between new buildings their historical surroundings, six conceptual properties that affect symbolic and formal aesthetic evaluations are enquired in the questionnaire. Table 6 shows the experts' preference for each factor.

Based on Table 6, Pleasant ($M=4.25$, SD=0.963) and Friendly buildings ($M=3.76$, SD=1.031) score highest with a high level of preferences. However, in the next chosen factor, residents select Coherent, Novel, and Meaningful buildings with medium level of preferences. This table shows that the least scored factor is Complexity ($M=2.97$, SD=1.215). This result demonstrates that the most preferred aesthetic factors for evaluating new buildings in historical context are Pleasant and Friendly.

In order to identify which aesthetic factors affect residents' preference in choosing design strategies, this research conducts correlation tests between four main design strategies and six conceptual properties.

3.4. Relationship between conceptual properties and design strategies from the perspectives of residents

In order to investigate the perceived level of fitness for each design strategy to its surroundings as well as the levels of Friendly, Coherence, Compatibility, Pleasantness, Meaningful, Novelty and Complexity of new buildings from the perspectives of residents, Table 7 shows the results of correlation test between the design strategies and the level of perceived conceptual properties.

Table 7 indicates that there is no significant relation between the selection of design strategies and the conceptual properties, except one case that demonstrates that there was negative correlation between Intentional opposition and Coherence, as Pearson's $r(204)=-0.174$, $p<0.013$.

4. Results

With the sets of dimensions resulting from resident groups, several conclusions can be drawn:

(1) The high score of the design strategy of "Literal replication" indicates that the residents believe that aesthetically fit buildings which harmoniously relate to their historical surroundings can be achieved by highly replicating design strategy. This finding is also consistent with Groat's (1983, 1987) conclusions as well as Eleishe's (1994) saying that "respondents generally preferred contextual relationships in which the infill building was highly replicative of the surrounding building".
(2) The residents' lower preferences for the design strategies of "Abstract reference" and "Intentional opposition" indicate that they dislike buildings with modern or postmodern styles that strongly contrast with their old, traditional neighbours, although these new buildings share some formal similarity such as shape, proportion, height, etc. This finding also supports the results from previous studies

Table 6 Preference ratings for conceptual properties for new buildings in historical context.

Rank	Residents (N=204)			
	Conceptual properties	Mean	SD	Degree of preference
1	Pleasant building with context	4.25	0.963	High
2	Friendly building with context	3.76	1.031	High
3	Coherent building with context	3.50	1.164	Medium
4	Novel building with context	3.41	1.186	Medium
5	Meaningful building with context	3.28	1.063	Medium
6	Complex building with context	2.97	1.215	Low

Table 7 Correlation results between four design strategies and six conceptual properties in residents group.

		Literal replication	Invention within style	Abstract reference	Intentional opposition
Coherent building with context	**Pearson correlation**	0.077	−0.070	0.034	−0.174*
	Sig. (2-tailed)	0.276	0.318	0.628	0.013
	N	204	204	204	204
Friendly building with context	**Pearson correlation**	0.062	0.015	−0.091	−0.114
	Sig. (2-tailed)	0.382	0.835	0.196	0.106
	N	203	203	203	203
Compatible building with context	**Pearson correlation**	−0.020	−0.016	0.053	−0.131
	Sig. (2-tailed)	0.779	0.819	0.452	0.062
	N	204	204	204	204
Pleasant building with context	**Pearson correlation**	0.044	0.048	−0.073	−0.088
	Sig. (2-tailed)	0.534	0.499	0.303	0.211
	N	204	204	204	204
Meaningful building with context	**Pearson correlation**	0.008	−0.001	0.087	0.025
	Sig. (2-tailed)	0.907	0.992	0.214	0.724
	N	204	204	204	204
Novel building with context	**Pearson correlation**	0.050	−0.007	−0.031	0.013
	Sig. (2-tailed)	0.477	0.920	0.663	0.852
	N	202	202	202	202
Complex building with context	**Pearson correlation**	−0.085	−0.064	0.053	0.076
	Sig. (2-tailed)	0.227	0.361	0.448	0.277
	N	204	204	204	204

*Correlation is significant at the 0.05 level (2-tailed).

where judgments for fitness are found to be strongly associated with low level of contrast (Groat, 1992).

(3) In general, residents, when scoring new buildings in historical context, just perceived the level of fitness as the degree of replication of the context. Based on the above results, residents evaluate the best design strategy for new buildings in historical context as high degree of replication. The perceived level of aesthetic properties of case studies has no effect on the perceived level of fitness of buildings with their surroundings as shown in Table 7. This finding verifies Al-Izzi's (1989) research results that state that the perceived level of familiarity, interest, pleasure, or ugliness of buildings has no effect on their perceived level of fitness to their context.

The reason for selecting high degree of replication for new buildings in historical context as best strategy could be to the fact that the public are predominantly predisposed towards buildings that incorporate traditional elements, as called ''historicist''. As Hubbard (1994) states: ''This appeared not to be because of their perceived beauty per se, but because of the contribution that such traditional architectural reference made to people's sense of stability and identity. This indicates that people appreciate a sense of continuity in the townscape and that a violent disruption of the built environment can be antithetical to the wishes of the populace. Attachment to buildings and places results when the lifestyles symbolized by a place are congruent with traditional community values with which people can identify''. It can be concluded that for residents, traditional or vernacular design strategies are more preferred in historical context due to their essence of stability against changing in their historical environments.

5. Conclusion

User participation is a significant approach for experts to develop a product that will function suitably for users. As such, taking residents' opinions into consideration in the development of historical context is inevitable. One aspect of the preservation of historical context is reconstruction and regeneration by infill design with compatibility of this addition to its historic surrounding. Based on this research, the best design strategy for infill design in historic context from the perspectives of the residents is Literal replication which rated as the most preferred strategy. This finding indicates that residents preferred a building highly replicating the context rather than contrasting it. Based on these results, residents, when choosing a special design strategy and rating the effect of conceptual properties, consider just the degree of replicating without taking account of novelty, coherence, friendly, meaningfulness, complexity, or pleasantness for new design.

The findings of this study may contribute to the knowledge of experts, community, major organisations, design reviewers, as the main part of decision makers, for developing and constructing historical settings in an appropriate way. These are very important findings as they may give better understanding in formulating the frameworks toward establishing guidelines for architectural intervention in such environmentally sustainable development of urban historical context.

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