Providing Design Solutions of Urban Facades Based On the Aesthetics Principles of Colors,Case Study: *Afifabad* Street, Shiraz

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Abstract

There is no particular design of the aesthetics facades, particularly colors, in the Shiraz Metropolitan. This research aims to provide solutions to improve the urban landscape at street levels, and urban facades. This research is an applied-analytical study. The research method was a survey in which a questionnaire was used to collect data. The statistical population and sample size include all the residents of Shiraz City, among which 405 were selected based on Cochran's formula and sampling method. According to the results, it can be said that the perspective of ordinary people was different from the perspective of the experts. ordinary people paid attention to the appearance of the buildings, and their priority is based on their desire. However, experts consider the buildings based on scientific and specialized design principles in the buildings. Finally, solutions of the aesthetics of the colors in designing the urban facades were provided.

Keywords: Urban Facades; Aesthetics; Colors

1. Introduction

Urban facades are one of the urban landscape areas, which are significantly related to the viewers. If these surfaces enjoy compatible visual values to the environment and context, they will have aesthetic values. Beauty and aesthetics have been studied and evolved by theorists for centuries. It can be said that the aesthetics in the category of urban facades is a product of the physical elements used in it. Therefore, considering the aesthetics in designing the urban facades is of significant importance (Ashraf Nahand, 2018). The purpose of any good architect is to provide good architectural work. Good, on the one hand, means observing all the physical rules of the building, economic and functional factors and alike, and on the other hand, developing a beautiful and satisfactory structure. The purpose of aesthetics is to understand the surrounding environment and the individual's place within it (Grutter, 2015, p.53). Moreover, facades are one of the significant elements of the urban landscape, consideration of which can be practical in many ways, such as increasing the visual quality of the city. Urban facades are one of the significant and fundamental subjects for urban designers, architects, and practitioners, on the one hand, and the executive institutions involved in the urban affairs, on the other hand; because they are the visual identity and urban showcase, which are fist viewed by the viewers of the space. Thus, it is necessary to take measures to organize the urban landscape (Mohammadi, 2016, p.11.The quality of the ground level of the facades has a significant impact on how citizens use the urban space, the duration of presence, and their probable behaviors (Shams, 2019). Since the urban design has always dealt with its audience's perception, i.e., citizens, the urban facades consisting a great part of the residential

Nowadays, there is nothing but disorder, chaos, and disorganization in the cities of Iran the reason for which are the adverse combination of the relationship between the façade of the buildings and the bad qualities of the construction of urban buildings, fashionism, and the culture of construction, land value, and construction regulations of the urban wall (Adibzadeh, 2017). One of the cities that lacks the principles of the urban facades is Shiraz Metropolitan. The irrelevant combination and height of the buildings in urban façade have caused visual pollutions in the city. Also, the poor legibility of the facades and walls led to visual disturbance. Since the spatial physique was poorly designed, and subsequently, the facades were implemented aimlessly without particular coloring and designing, the façade of the urban streets requires conceptual and effective components. Given that very desirable solutions were provided and implemented in many parts of the world on the urban facades, whether in terms of aesthetics of the color or visual aesthetics and compatibility with the environment, one can hope to see a beautiful environment and landscape in Iran, particularly in Shiraz. The current study aims to provide solutions to design the urban facades in Shiraz Metropolitan to create a desirable and appropriate place in the urban landscape in terms of the aesthetics, harmony, and compatibility among the urban elements through colors.

2. Research Background

In recent years, to study urban facades, extensive research has been done on the aesthetics of urban walls and facades and urban walls, as well as urban elements and walls. Many books have also been written in this regard, including topics such as the basics of urban design, elements of urban design, and urban facades. Some of the

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research was studied in Table 1. Color is one of the significant and main elements in understanding the spaces, urban elements, and aesthetics. However, color in urban facades has not been studied based on the aesthetics in any book or paper. Thus, the current research addresses it in the city to investigate the cause of the visual disturbance in urban facades while studying the solutions to deal with the abandoned facades in the city without taking any measures for them.

3. Definition of Walls and Theorists' Views on Definitions of the Urban Facades

Various terms have been used interchangeably to define the urban walls. Sometimes the term of urban bodies is used, and sometimes they are referred to as urban walls. The wall refers to the surfaces of the walls of areas to which no building is directly attached, such as garden walls and alike (Iran's Supreme Council for Planning and Architecture, 2008). Habib believes that an urban facade that could present a good image of itself can also play a social role; because it helps people know where they are and, as a result, read the environment and better adjust their activities. It can even enhance collective memories and group communication (Habib, 2006, p.53). Urban bodies are often defined as the enclosing elements of the street and square. For Headman, the landscape of a street is defined by the walls longitudinally and transversely. The ratio of the walls to the width of the street and their collective combinations create a different sense of space in the viewer. One of the influential components in the urban landscape is the façade of the buildings. The façade is the constituent surface of every wall and is a part of the wall, shaping the skin or superficial skin of each building. The façade is a factor, separates the interior of a building from its exterior and directly affects the function and value of the street and square. If the façade of the building is constructed, disregarding the façade of the other buildings of the city, the homogeneity of the urban façade will generally be destroyed (Shavir Haghighi, 2016). Pakzad considers the urban walls as urban spaces defined by a limited number of the building mass that have visible surface and volume of the public space. The walls are closed surface or volumes of a building. Each volume consists of different surfaces. These surfaces of the building are called the architects of the façade. However, all the surfaces or volumes consisting of the space are considered urban walls in the urban design. Any wall of the urban space consists of several façades. On the one hand, the walls are limited to the ground and sky, and on the other hand, they are limited to the building or the adjacent roads (Pakzad, 2005, p.2). Malek Tabatabaei also knows the walls as the defining vertical surfaces of a route. He also believes that a wall is not closed surface or a facet of a building as it might be a continuous vertical surface without any opening, a continuous vertical surface with several openings, or a transparent surface, such as a tree or column (Tabatabaei, 2011, p.1). He determines the recognition and design of the urban facades in five parts or purposes in his book as follows: 1) physical purpose,

2) semantic and environmental perception, 3) activity and functional, 4) protection, 5) utilization.

In other definitions, Zekavat considers the facades of the street as the main part of a body of the street. This element (facade) determines the street space and gives it an environmental concept (Vahdat, 2015). The term of urban facades was used in the current research as it is in line with Habib's view on the representation of a proper image and enjoys the aspects of the collective memories. It is also in line with Pakzad's perspective that he believes the facades are limited to the ground and sky on the one hand, and the building, on the other hand. Environmental and semantic perception, activity, functional, and protection parts of the classification presented by Tabatabaei have been addressed in the current paper.

4. Types of Facades

4.1 Pedestrian façade 4.2 Dead-end façad 4.3 Local Street façade 4.4 Through Street 4.5 Highway façade

4.6 Façade of urban square

mental expectation: it should not enjoy order and discipline due to shopping and recreational activities. The façade of the square must be formed based on its constituent elements. The visual connection must be in a way to create unity in the whole façade (Esmaeili, 2020). Furthermore, the types of the façade based on the type of function are as follows: 1) Residential façade, 2) commercial street façade, 3) Integration of the commercial-administration façade, 4) Ecological façade (post-modern) (Peiro Olia, 2014).

Postmodern facades: in contrast to modern, postmodern does not consider the human a biological being, disregarding time and place, and accordingly, it includes history, meanings, culture, and climate in addition to the physiological aspects in designing an environment. Urban designers first consider the visual-content quality of post-modernism in their aesthetical evaluation. These qualities focus on the continuity of the contemporary architecture of the historical architecture of any country. This continuity is nostalgic for the people of every country and has historical continuity, which is significant in attracting tourists as well (Bahreini, 2014).

Contextual facades: Gestalt laws in designing a facade are as follows:

1. Similarity: the similar elements are in a group and seen as a whole.
2. Proximity: the human mind perceives the elements in the proximity of each other as a whole and explains the boundary between distinct wholes based on their distance.
3. Closure: first perceptions of the human of a form are based on this law- open and close.
4. Symmetry: the symmetric elements are perceived sooner than the asymmetric elements.
5. Common fate: the human's mind expects that the direction of the movement and changes in some parts that are not visible to be continuous.

6. Continuation: if facades are designed based on this law, they will be perceived as an integrated whole (Moradian, 2016).

The current study investigates the street of Afif-Abad in Shiraz. Also, due to being pedestrian-oriented in some parts of this street and being one way, the facades of the pedestrian street are considered. Furthermore, this street has a façade of the local street. Thus, the façade of the pedestrian street, the façade of the local street, and the façade of the through street are considered the facades of this street. Also, all the types of the stated façade can be seen in the function of this street, including commercial-residential, commercial-administration, and postmodern. All the mentioned factors must be respected in the contextual facades.

5. Influential Factors in Analyzing the Urban Facades

The influential factors in analyzing the urban facades based on Bahreini's book are as follows: 1) The principles, including 1.1) Horizontal rhythm such as skyline, a ground line, roofline, and composition line, baseline, horizontal lines of the façade, the horizontal extension of the components. 1.2) vertical rhythms: vertical joints of the skyline and ground line- vertical elements of the façade-vertical extension of the components. 2) Components (openings, decorations, and extensions: fine-grained and coarse-grained components of the façade, the color of the materials of the façade-the ratio of the openings to the surface of the façade- general contrast of the façade-the texture and material of the façade- the shape of the façade components (Bahreini, 2014).

The definition of the façade elements in Malek Tabatabei's book includes the following classifications:

1) continuity: not opening the façade aimlessly, and as a result, improving the sense of belonging to the place.
2) the architecture of the street: architectural elements.
3) Context: a set of public aspects of the architecture, color, frequency of the components, and physical elements.
4) Rhythm: the repetition of the horizontal and vertical elements of the façade, intensified in the view angle.
5) Being aligned: architectural and social order.
6) Proportions: height to width ratio.
7) Twist: it causes the closure of the view and introduces the movement direction (Malek Tabatabaei, 2011). In 2014, Atarod classified the pillars and constituent components of the urban façade into three types and several parts, including the main parts of the façade (corner, roof, middle part, base part), pillars of the facades (horizontal rhythms, vertical rhythms, façade lines), the components of the façade (window, entrance, balcony, decorations, etc.). Bahreini's book was more considered in the current research regarding influential factors in analyzing the urban facades. It also included street's architecture , context, and rhythm mentioned in Tabatabaie's book. The current study also consists of Atarod's classifications, including the pillars of the façade. Table 2 shows the applied parts in different sections in the facades of Afif-Abad Street of Shiraz.

Table 1
The physical components and quality of the facades from scholars' perspective

Scholars	Year	The physical component of façade	Qualities of façade
Pakzad			
Tavakkoli	2017	Zoning of the surfaces- skyline and ground line- transparent and opaque surfaces, entrance, balcony, console, stairs, the type and color of empty and full spaces, the dominant lines in the façade, the width of the parts, decorations, extensions	Proportions- latent geometry
Tavassoli	2007	Vertical rhythms, horizontal rhythms, skyline, entrances, windows, details, particularly the ground floor.	Order- unity, composition, scale and proportion, harmony, balance, and symmetry
Zekavat	1992	Skyline, the architecture of the street, twist, corner, landmark, sequence elements.	Unity and identification, rhythm, alignment, proportion, and continuation
Tabatabaei	2011	The roofline, a ground line, and building, context, divisions and dominant lines of the façade, the width of the parts, the height and volume of the mass, console, openings, materials, decorations, signs, corner, and twist.	Alignment, proximity, continuation, proportion, scale, simplicity, complexity, symmetry, similarity, rhythm, balance, harmony, and order.
Bentley	2007	Vertical weights, horizontal weights, skylines, details of the wall, windows, doors, components, and elements of the floor.	Visual proportions, legibility, diversity, flexibility.
Headman	1991	Windows, entrance door, ornamental elements, style, materials, the building skyline .	Context, proportions, unity, integration, harmony, contradiction, contrast.
Components	-	Skyline, vertical rhythms, horizontal rhythms, entrances, windows, decorations, and materials	Unity, scale, harmony, continuity, proportions, rhythm, balance, symmetry, alignment.
Differences	-	Style, elements and components of the floor, twist, corner, landmark, Sequential elements, the architecture of the street.	Composition, order, legibility, diversity, flexibility, latent geometry

6. The Main Elements in Facades

Physical elements (scale, proximity, simplicity, complexity, composition, diversity)-visual elements

(harmony, rhythm, alignment, proportion and continuity, landmark, balance, context, integration, contradiction, contrast, legibility)-mental elements (order, unity, symmetry, balance, unity, and identification, flexibility).

7. History and Concept of Aesthetics

Aesthetics means recognizing beauty in terms and is a psychology discipline, such as physics, chemistry, or biology or act based on the methods of these sciences. However, in contrast to the natural sciences, it was revealed that aesthetics has an emotional effect and cannot be examined in the laboratory. On the one hand, like psychology, aesthetics deals with the inner emotions and moods of the human, i.e., perception and affection, sorrow and happiness, beauty, will, and instinct. On the other hand, its concept and rules are dramatically relative (Yousefian, 2000).

8. Approaches of Aesthetics Based on Epistemology (Subjective, Objective, Combined)

Based on a macro and significant classification of the linguistic and epistemological analyses, it can be said that the concepts are divided into three parts: 1) subjective concepts, 2) objective concepts, 3) combined concepts- all the concepts and terms in the sciences. Thus, according to this definition, the concepts are either subjective and mental, which do not have an objective actuality and existence in the external world, such as psychological and emotional concepts, including fear, disappointment, hope, happiness, or sorrow, or are objective concepts that have objective realization in the external world in the definition of which our feelings, attitude, and desires are not involved, such as a table, wall, book, and other external objects. However, they might also be the concepts affected by personal and individual characteristics as well as the external features, among which are beauty, ugliness, goodness, badness, or the definition of art. In these concepts, both the external origin and the fact that the cognitive agent is involved in its cognition and realization so that these concepts find meaning with human beings and cannot be realized without human beings. Thus, it seems that the concepts belong to the third group are far more than the first and second groups; because in most definitions and concepts, in addition to the objective and external existence of objects, the mind, abilities, tastes, and desires of human beings are also involved (Mohammad Sadegh, 2020).

The subjective indices of the aesthetics in the urban facades are as follows: alignment in the façade and proximity, continuation, proportions, human scale, simplicity and complexity, symmetry, similarity in the form, color, texture, and shape, rhythm or rhythmic repetition, balance, harmony, order. Also, the objective indices of the aesthetics in the urban facades include the skyline, ground line, the context of the façade, divisions and dominant lines of the façade, the width of the parts or graining, height control, mass volume control in the façade, console, openings, color, texture, and decorations, extensions, signs, corner of the façade, separation of the surface, twist in the facades. What can be perceived from aesthetics is based on the subjective and objective aspects of the aesthetic. The studies show that, first, the objective approach and then the subjective approaches were considered in the relationship between two approaches in the urban landscape (Amir Shaghaghi, 2013).

Table 2

Aesthetics based on epistemology

Types	Scholars	Main elements
Subjective and objective	Hegel (Pakzad, 2009, 56)	The harmony between components, proportion.
	Peter Eisenman	Non-natural
	Birkohff(1714,62)	Order and harmony
Objective and external	Frank Lloyd Wright	Balance, and legality
	Heidegger (Tamizi, Nochehri, 2016)	Being natural
	Goethe (Hegel, 1984)	Truth, color, light
	Post enlightenment school (Proteus, 90)	Complexity, proportion
	Le Corbusier	Automation
	Modernism (G Douglas, Proteus, 90)	The complexity and challenging nature, the aggression, and the critique
Subjective and internal	Kant (Grutter, 2007, p. 117)	Pleasant for no reason
	Herbert Reid (J. Douglas Proteus .90)	Symmetry and balance
	Surrealism school (Douglas, Proteus, 90)	Ratio- proper usage
	Neo-Modernism School (Tamizi, Nochehri, 2016)	Balance, complexity

9. Main elements in Aesthetics
9.1 Subjective and objective elements

Physical identity of the building, vitality, adaptation of the form and function, emphasis, turning point, inviting, continuity, contrast, contradiction, entertaining.

9.2 Subjective elements (internal)

Pleasant memory, vitality, attachment, friendliness, the passage of time, effectiveness, peace, authenticity, spirituality, identity, meaningfulness, culture, style, continuity and integration, contextualism, creativity, attractiveness, legibility, effect on the audience, unity.

9.3 The Objective and external elements

Truth, nature, balance and symmetry, visual permeability, security, cleanness, legibility, access, pillars of the façade (color, light, etc.).

9.4 Visual perception and aesthetics

Perception is a purposeful process and depends on the culture of attitude and ruling value on the perceiver's thought. Therefore, the perception process has always been associated with the human's recognition of the environment. Understanding the aesthetics of the environment is visual and depends on the aesthetic. However, such experience of the urban environments includes all of our senses. In the meantime, eyesight leads to receiving a new experience of the surrounding environment, and the environment perceived through this sense is called the visual environment. The visual environment has a direct and indirect effect on the human and his/her behavior and physiological characteristics. Also, its positive or adverse effects in the city are inevitable. Thus, perception is a purposeful process, depending on the culture of the attitude and the ruling

values on the perceiver's thought. Therefore, the perception process is always associated with the human's recognition of the environment. Similarly, recognizing the environment leads to feelings and understanding the environment, eventually. The aesthetics values of the urban image of the street space are different than other values of the physical elements of the city. The street space has particular terms to introduce its image while having linear content and through function. Considering that the street is a space consisting of different architectures, the aesthetic of the street in its physical aspect includes a set of formal regulations of the street and its components are unlimited: proportions of the facades, proportions of the floor, color, skyline, sequence, rhythm, harmony, architectural course and projection, and niche. The aesthetics of the street is the knowledge of interpreting the constituent components of the street that must work in harmony with each other and create an integrated complex (Shahabian, 2017).

Table 3
The components, criteria, and indicators of the aesthetics-visual urban landscape (Resource: Vahdat et al., 2015).

Components	Criteria		Indicators
Aesthetics-visual	Objective	Visual	Street art, visual arts such as graphics, graffiti, urban advertising and billboards and materials, color and form, as well as how to distribute windows in the facade of the building and the enclosure and proportions of the facade components and the balance and symmetry in the building or skyline and facade line, unity, and spatial integration.
		Physical	Artificial elements: Street furniture and equipment, such as bus stop shade, bench, trash bin, pavement, and lighting
			Natural elements: Vegetation and green space, tree planting, and using water
	Subjective		Relaxation, cheerfulness, creativity as well as the meaningfulness and attractively of the space

10. Aesthetics of Urban Facades

According to experiences, the aesthetics in architecture is based on the abstract relationships between the forms, definition of space, and the elements that make them pleasant, such as rhythm, color, and contrast (Whittick, 2006, p.39). All the necessary and unnecessary elements in the city and urban physique, as well as the climate and

culture, are required to create the aesthetical urban facades (Mortezaei, 2018). The physical elements in the landscape of the urban facades include environmental elements, landscaping, successive landscapes, landmark, corner, skylines, and façade. Façade also includes continuity, context, alignment, proportion, street architecture, and twist (Khakizadeh & Ardalani, 2016).

Table 4
 Scholars' theories based on aesthetics and urban facades

Row	Author	Year	Title	Key concepts of aesthetics and urban facades
1	Cullen	1961	Urban landscape	Emphasis on the relationship between facades, connection, and integration, unity in plurality, contrast, and integration.
2	Lang	2017	Creating Architectural Theory	Order, proportion, wholeness in design and integration.
3	Bentley	1985	Responsive environments	Vertical and horizontal weights, skylines, details of the wall as well as materials, color and patterns, divisions of the windows and doors, the elements and components of the floor.
4	Sitte	1893	The Art of Building Cities: City Building According to Its Artistic Fundamentals	Totality in the building, harmony, diversity in a whole, uniform and perfect design
5	Carmona	2010	Public places, urban spaces	Order, rhythm, balance, harmonized communication
6	Grutter	2014	Aesthetics in architecture	Harmony, conflict, unity, proportion
7	Bacon	2003	Designing cities	The principle of the second person (the relationship among the adjacent buildings)
8	Lynch	1960	Image of the city	The distinction or clarity of the role or context, simplicity of the form, continuity between symbols

9	Zucker	1959	Town and square	Establishing order and relationship between the volume and building facades
10	Headman and Jaszewski	1985	Fundamentals of Urban Design	Creating unity and integration through the skyline, the proportion of windows and projections and niches of the facade, general form and shape of the building and distance between buildings, material and finish and texture of the facade, shading pattern, building scale, architectural style
11	Alavi and Pourjafar	2012	Visual Ecology in Architecture and Urban Design	Pillars of façade: volumes, surfaces, geometry, compatible criteria with eyesight (affecting the design of the facades), the constituent factors, lines, and soft and hard surfaces.
12	Tavassoli	2009	Urban Design: Art of Renewing Buildings- Urban Spaces	Order, unity, composition, harmony, symmetry, balance, rhythm, centrality, divisions of the window, visual strength in the façade, connectivity, building mass enclosing the street space, vertical and horizontal rhythms, entrances and windows, formal continuity, paying attention to the corners, composition of the elements and lines of the façade, harmony in color and materials, and identifying the valuable symbols
13	Pakzad	2004	Theoretical Foundations of Urban Design	The zone of the façade, transparent and opaque surfaces, empty surfaces, the lines of the façade, console or projection, signs, lighting, plants, corner, the building line or ground line, the commonality of two facades, the dominant color of the context, materials, and texture of the facades, the proportion of the openings, observing the basic pattern, the body and sky in the design of the façade to be recognizable from far and near distances.

11. The Main Elements in this Part Include

1. Physical elements: material and texture- form and shape, building scale, architectural style, proportion and divisions of the windows, volumes, entrances, corners, components, and console.
2. Subjective elements: creating unity and integration, creating building line, contradiction, proportion, order, distinction, clarity of the context, integration, connection in the façade, components and elements of the floor, composition, observing the building pattern and sky in the design, symmetry, centrality, the relationship between volume and façade.
3. Visual elements: lines of the façade, visual strength, empty surfaces, rhythm, continuity of the facades, soft and hard surfaces.

The current study focuses on subjective and visual elements, including environmental and semantic perception. The facades are residential and non-residential in terms of function. Also, identity and culture were studied in terms of conservation.

12. Color in Aesthetics and Architecture

Color is a reflection of light shaped in different forms. Such reflection has an extensive range. Color is one of the characteristics that, along with shape, shows us the texture of an object or its volume and space. Interestingly, color does not exist. According to physics, what comes to existence has a body or material and can be shaped or touched. A colorful object can be touched. However, the color itself cannot be touched. Color only has appearance seen at the moment (Forouzan, 1998, p.73). Every color has three visual dimensions that can be changed independently: 1) color, 2) radiance, 3) Richness. The aesthetics of color can also be a way to achieve the following factors: 1) Color impression, 2) Color expression (emotion), 3) Construction or building (symbolic), 4) Color harmony, 5) Color composition or color harmony (Rezghi, 2013). Color is used to transfer feelings and affect the general characteristics of a design or parts of a design.

Table 5

Classification of the type of colors. (Resource: author, derived from (Mirzaei, 2020)

Color	Distance	Feeling	Mental effectiveness (creator of the feeling)
Blue	Farther	Cold	Balance, purity, calmness, relaxation, isolation, introversion, gloom and spirituality, comfort - blue lowers heart rate and body temperature and increases vital cell activity.
Green	Farther	Cold	Very comforting, hopefulness and satisfaction, peaceful and vital, order, balance and peace, friendship and kindness.
Red	Close	Warm	Provoking, activity, movement, passion and aggression, invasion, excitement, being the material, energetic, and very powerful driver, healing some skin diseases.
Orange	Very close	Very warm	Stimulating, joy, excitement, sociability, aggression, pride, mobility - stimulates the nervous system and makes the mind clear, and stimulates the appetite.
Yellow	Very close	Very warm	Motivating, cheerfulness, optimism, passion, hope, movement, creativity, self-confidence, relaxation - activates the motor nerves and produces energy in the muscles, and strongly strengthens the human mind.
Brown	Very close	Neutral	Motivating, simplicity, purity, calmness, humility, and modesty - this color indicates a special feeling for the human body. Brown transmits depressive autumn colors. It sometimes creates a sense of sadness and isolation.
Purple	Very	Cold	Self-esteem, dignity, and sadness, aggressive and depressing - has a sense of rest and drowsiness. It

	close		lowers body temperature, reduces pain in a body, and increases venous activity.
Black	Very close	Neutral	Power and hopelessness, sorrow, emptiness, it is a sedentary, quiet, static, and non-stimulating color and does not cause any kind of psychological and physical stimulation and reduces other activities, and causes laxity and sluggishness. It is conquering and affecting.
White	Farther	Neutral	Purity, cleanness, freshness, joy, emptiness, and meaninglessness - regeneration and restoration, regulates the chronobiological rhythm and increases the secretion of serotonin. It adjusts sleep and creates a balance between the physical and hormonal systems.
Gray	Farther	Neutral	Balance, indifference, soullessness - it neither creates anxiety, nor it is calming, nor exciting. It is neither mental nor objective, neither internal nor external.
Silver	Close	Neutral	Creativity, thinking
Turquoise	Far	Cold	Happiness, protection
Dark blue	Farther	Cold	Concentration and kindness, patience, sacrifice, peace, comfort, and trust.
Indigo	Far	Cold	Tranquility, healing, reflection
Greenblue	Farther	Cold	Concentration, patience, strength
Golden	Closer	Warm	Purity and comforting
Crème	Close	Warm	Tranquility and healing

13. Aesthetics of color in Urban Facades

The aesthetical quality or the concept of aesthetics in the city can be identified by the following factors: 1) light, 2) façade, 3) color, 4) urban furniture, 5) Greenspace.

Colors and their psychological effects on the people are known as one of the causes of the disorganization of the cities. Color can be seen in all parts of the city, such as the wall, building façade, roof covering, pavement, urban furniture, green space, vehicles, sky, and even people's clothes. In addition to thebeautification of the surrounding environment, colors have numerous mental-emotional effects. Color can be used to reduce fatigue and stimulate the eye. Color can also be applied in the integration of space, vitality, and diversity. It can unite the space or make it distinguished and recognizable. Today's buildings and facades of the cities have become colorful faceless spaces, leading to depression, psychosis, and aggression of the communities' people. In the old cities, the buildings were composed with several particular colors in line with the climate and weather, including tones of homogenous colors, and different colors were used for making different. However, natural elements play a diminished role in people's lives in contemporary modern cities (Rezghi, 2013). Color makes an urban landscape beautiful and sustainable by compatibility with the scale, architectural style, materials, context of the façade, transparency, simplicity, and legibility. The lack of harmony between color and the stated elements leads to visual disturbance and instability. Color is one of the most significant yet simple and low-cost elements, contributing to the city in creating legibility, a sense of unity, a sense of place, and beauty to define the space. The color of the lights and colorful lights of the city and its landscape in the night results in pleasance and beauty. Therefore, selecting the type of color, intensity, and different degrees of light of the city at the night is of significant importance (Seyfaldini, 2012).

Eventually, executive solutions to proper use of the color in urban landscapes are presented to create desirable urban landscapes in night and day as follows (Mortezaei, 2018):

1. The proper and relevant color to the form and function
2. Paying attention to the concepts of color when using it
3. Considering light resources neglecting of which is a significant factor for color deviance
4. Considering the psychological and physiological effect of color on human reactions at different temporal and spatial conditions
5. Paying attention to the proper understanding of the color and space in which that color was used
6. Coloring based on the climate conditions of the city
7. Providing proper regulations for urban coloring, which is updated based on the environmental conditions
8. Preparing colored map of the region or the city
9. Preparing and developing a master plan of color for a city and paying attention to the high capability of its implementation and adherence to color harmony rules
10. Improving the vitality of the urban spaces using various and attractive colors in designing the façade, graffiti, and pavement of the sidewalks
11. Using colors proportionate to people's culture and identity to create individuals' sense of belonging.

13.1 Main elements in designing urban facades based on the aesthetics principles of colors

Based on the above-mentioned and research theoretical foundations, the main components of the research that develop a questionnaire are as follows:

13.2 Physical elements (the objective aspect of aesthetics

materials of the façade based on the color, function-form relationship, proportions, coordination, climate conditions, rhythm, harmony, and legibility, light and shadow, sequential view, transparent and opaque surfaces, empty and full spaces, the kind of materials, being horizontal or vertical, contrast, contradiction.

13.3. Semantic perception (Subjective aspect of aesthetics)

vitality, distance, concentration, peace, security, creativity, balance, being social, happiness, optimism,

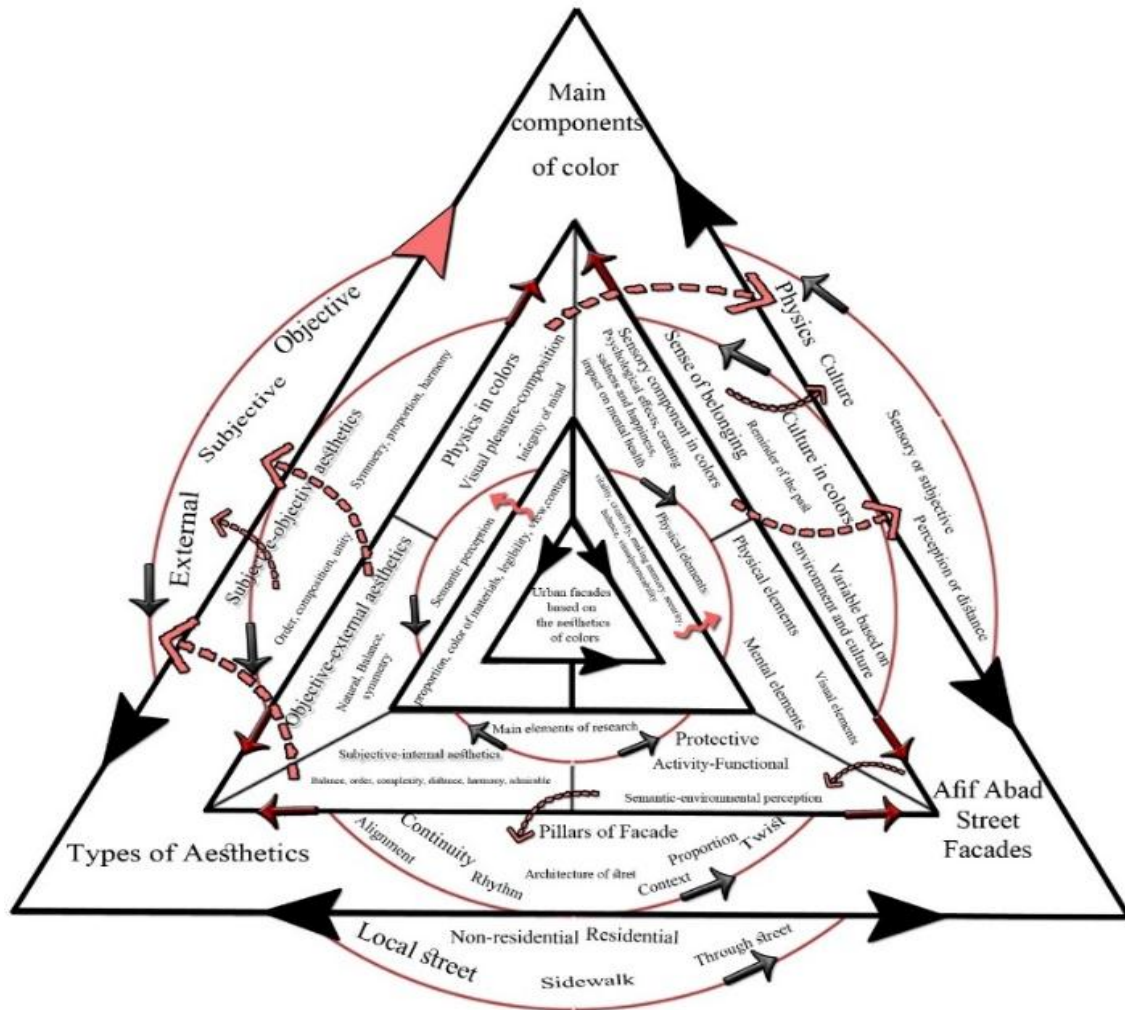making a memory, visual permeability, and entertaining.

Fig. 1. Urban Façade Design Model Based on Aesthetics Principles of Colors

14. Research Method

The current research was a qualitative-quantitative study, which was applied-analytical. In the field studies, the survey method was applied to collect the data using a questionnaire. The data were studied in the form of applied study. Considering that the questionnaire is a significant technique to collect the data, the statistical population and sample sizes must be determined. The statistical population included all the residents of Shiraz, among which 450 were selected based on Cochran's formula and using the convenience sampling method. Then, the electronic questionnaires were distributed among the samples. It must be noted that the questionnaire draft was tested to confirm its validity to determine probable problems and issues and ensure its comprehension. The initial test was conducted as open-ended questions by participating a great number of experts in architecture. The collected data were analyzed using SPSS version 22 software. Furthermore, the

reliability of the researcher-made questionnaire was obtained at 0.94.

14.1 Case study

The Afifabad Street is located between Qasr Al-Dasht Street and Sattar Khan Street. This street in Shiraz is an axis with a length of 950 meters and a width of 10 to 11 meters with sidewalks and 13 meters of vehicle space. The main feature of this street is Afifabad Garden. Afifabad neighborhood of Shiraz has become one of the important streets of this city in recent years with the construction of shopping malls and large and small shopping centers. Due to the number of shopping centers in this neighborhood, this street is a horizontal shopping center. Also, due to the increase of tourists entering this city and this street, many restaurants have been built along Afifabad Street. Shiraz Municipality has also turned a part of this street into a pedestrian street.

Fig. 2. Case study location

14.2 Data analysis

The data obtained from the questionnaires were analyzed in the following two sections:

- Descriptive statistics, demographic characteristics of the respondents, and prioritizing the indicators of the aesthetics of the colors in Afifabad street, Shiraz were analyzed.

- Prioritizing the selected images by people and experts based on the aesthetics approach.

14.3 Demographic characteristics of respondents

Table 1 shows the age, education, relevancy of the field of study with the subject, and the gender of the respondents.

Table 6
Age, education, the field of study, and gender of the respondents

Field of study	Number	Frequency percentage	Gender	Number	Frequency percentage	Age	Number	Frequency percentage	Education	Number	Frequency percentage
Relevant to the subject	152	37.5	Female	236	58.3	20-30	23	5.7	Diploma	16	4
						31-40	190	46.9	Associate degree	74	18.3
Irrelevant to the subject	253	62.5	Male	169	41.7	41-50	147	36.3	Bachelor's degree	88	21.7
						51-60	45	11.1	Master's degree	101	24.9
									Ph.D. degree	126	31.1

As Table 1 shows, most of the respondents had education degrees irrelevant to the subject and were female. The age range of most of the respondents was 31-40 years old and they had a Ph.D. degree.

14.4 Frequency distribution of the indicators

Table 7

9 indicators were identified in studying the aesthetics of Afifabad street. Then, the indicators were prioritized from experts' and people's perspectives in residential and non-residential land use in terms of aesthetics.

A) Residential land use

Prioritizing indicators based on the people's and experts' points of views

Priority	People's opinion			Priority	Experts' opinion		
	Indicator	Frequency number	Frequency percentage		Indicator	Frequency number	Frequency percentage
1	Making memory	152	100	1	Creativity	248	98
2	Creativity	146	96.1	2	Color the façade materials	247	97.6
3	Legibility	145	95.4	3	Visual permeability	244	96.4
4	Contrast	144	94.7		Contrast	244	96.4
	Proportion	144	94.7		Making memory	244	96.4
5	Visual permeability	143	94.1	4	Legibility	243	96
6	Color of the façade material	141	92.8	5	Vitality	242	95.7
7	Security and balance	140	92.1	6	Security and balance	234	92.5
8	Vitality	137	90.1	7	Proportion	218	86.2

According to people, making memory had the maximum frequency, and creativity and legibility had more frequency than other indicators. Also, contrast and proportion obtained similar frequency. According to experts, creativity and the color of the façade materials had the maximum frequency. Also, visual permeability, making a memory, and contrast obtained a similar frequency.

B) Non-residential land use

Table 8
Prioritizing indicators based on the people's and experts' points of views

Priority	People's opinion			Priority	Experts' opinion		
	Indicator	Frequency number	Frequency percentage		Indicator	Frequency number	Frequency percentage
1	Vitality	152	100	1	Color of the façade materials	248	90
2	Making memory	150	98.5	2	Contrast	247	97.6
3	Creativity	149	98	3	Security and balance	244	96.4
4	Visual permeability	148	97.6	4	Visual permeability	243	96
5	Proportion	146	96.1	5	Proportion	242	95.7
6	Legibility	145	95.4	6	Creativity	240	94.1
7	Color of the façade materials	144	94.7		Vitality	240	94.1
8	Security and balance	141	92.8	7	Legibility	239	93.7
9	Contrast	136	89.7	8	Making memory	238	93

According to people's opinions, vitality ranked the priority, and contrast ranked the last. For experts, the color of the façade materials was the priority and making memory ranked next.

The following charts show the highest degree of making memory based on people's opinion in residential and non-residential land uses. Also, they considered the highest impact on the vitality and creativity in non-residential land use. According to experts, the materials and creativity in the residential land use and the color of the façade materials and contrast have the maximum advantages in non-residential land Use.
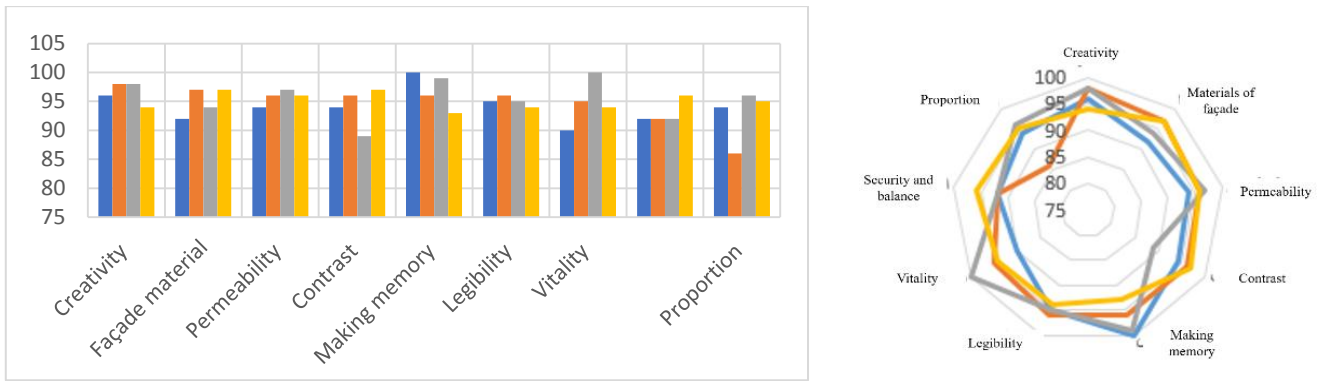
Fig. 3. Prioritizing indicators based on the people's and experts' points of views

14.5 Prioritizing the images selected by people and experts based on the aesthetics approach of the color

Besides evaluating aesthetics indicators, 10 images from non-residential areas (with diverse color composition s) and 4 images from residential areas (with light color composition s) were distributed among the samples as examples of the places in Afifabad street. Tables 4 and 5 show their prioritizing.

Table 9

Prioritizing the images of the residential areas based on people's and experts' opinions

Table 10

Prioritizing the images of the non-residential areas based on people's and experts' opinions

Selection priority	Frequency	Frequency percentage	Selection priority	Frequency	Frequency percentage
Experts' opinion			People's opinion		
Image 8 (Namak Fast Food)	87	97.5	Image 1 (Sepehr Complex)	93	95.3
Image6 (Sa'di complex)	84	96.6	Image 8 (Namak Fast Food)	84	87.8
Image 4 (Hafez Complex)	80	92.3	Image 4 (Hafez Complex)	83	87
Image 3 (Stores and fast foods)	74	86.2	Image 3 (stores and Fast Foods)	81	85.9
Image 7 (restaurants)	68	80	Image 5 (Setareh-Fars)	79	83.4
Image 5 (Setareh-Fars)	66	78.6	Image 7 (restaurants)	75	79.6
Image 2 (Banks)	60	72	Image 2 (banks)	70	74.6

According to the following charts and figures consisting main components of Afifabad Street in a non-residential area, people's opinion on the color of the street facades is different than the experts' opinion on some samples, such as Namak Fast Food, Saadi Complex, Setareh-Fars Complex, and Hafez Complex, indicating the difference between people's perspective and experts' perspective. Sepehr Complex and Namak Fast Food obtained the highest score, showing people's and experts' interest in the color, composition, creativity, and innovation.
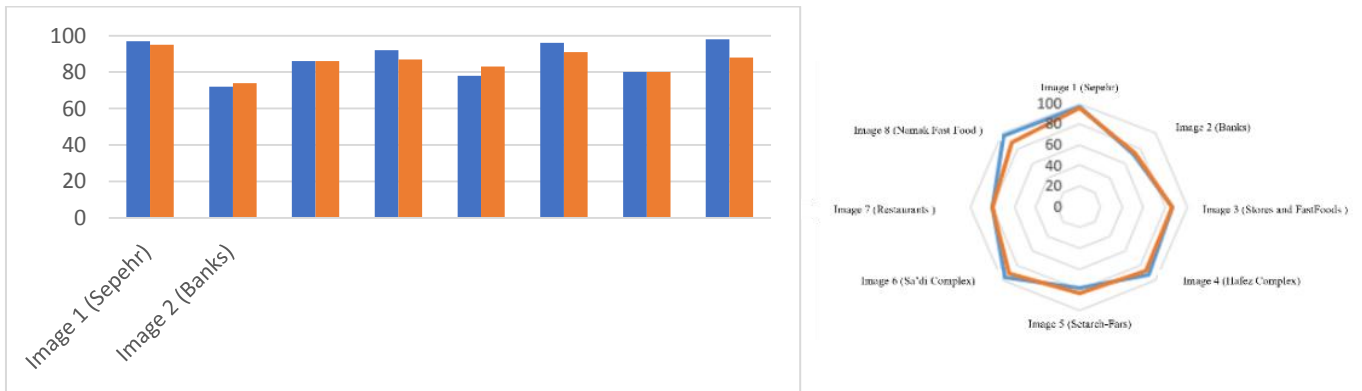
Fig. 4. Prioritizing the images of the non-residential areas based on people's and experts' opinions

14.6 Prioritizing Residential areas based on people' and experts' opinions according to aesthetics approach of the color

Table 11
Prioritizing the images of the residential areas based on people and experts' opinions

Selection priority	Frequency	Frequency percentage	Selection priority	Frequency	Frequency percentage
Experts' opinion			People's opinion		
Image 2 (creative apartment)	95	97.9	Image 3 (Garden house)	95	97.9
Image 1(old house)	93	95.3	Image 2 (Creative apartment)	89	91.5
Image 3 (Garden house)	88	90.9	Image 1 (Old house)	88	90.9
Image 4 (Apartment)	81	85.9	Image 4 (Apartment)	84	87.8
Image 5 (view of the houses)	81	85.9	Image 5 (view of the houses)	81	85.9
Image 6(Combined)	71	78.2	Image 6(Combined)	78	83.7

As the following chart shows, people's perspective is different from experts' opinions. According to people, as the Tables show, the memories and old houses were important in terms of color composition. For experts, creativity had the highest importance. According to the scores, the view of the houses in the street indicates the incompatibility of the skyline and color. The composition of the non-residential houses and non-residential areas shows the inconsistency and lack of attention to the composition and proportions in terms of coloring both from people and experts' perspectives with a difference in its degree.
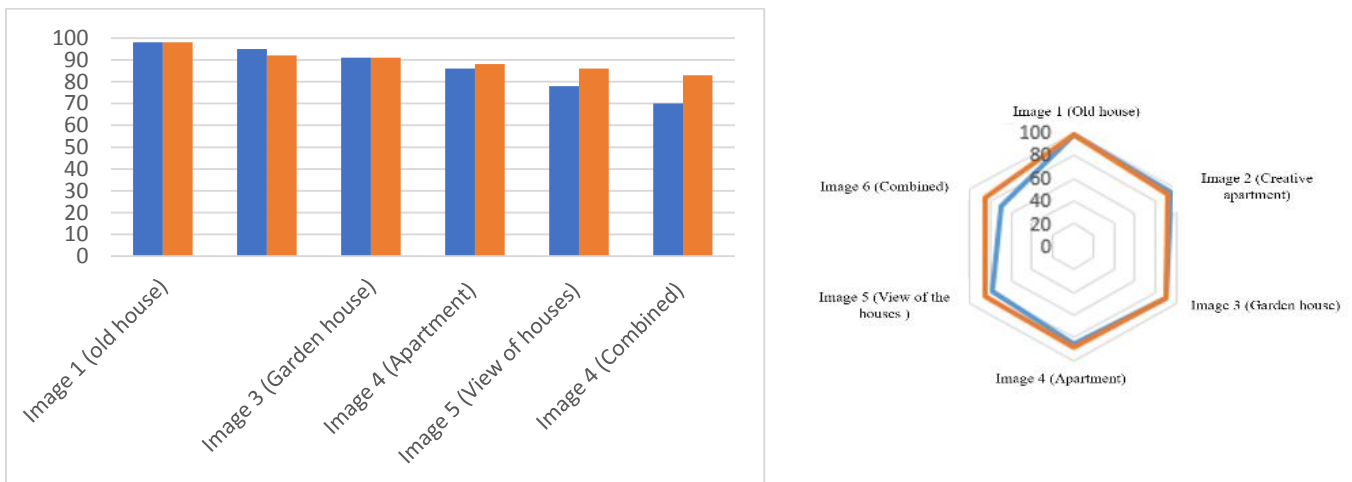

Fig. 5. Prioritizing the images of the residential areas based on people and experts' opinions

15. Conclusion

Investigating the aesthetics aspects showed that, in people's opinion on the environment and landscape, aesthetics has always been one of the main attributes of interpretation of the environment and landscape. In this perspective, the visual-artistic qualities of the landscape of Afifabad Street were emphasized. The current study aimed to develop design solutions of the urban facades based on the aesthetics principles of colors and then, provide the solutions. The following Table provides the first choices, the middle choices, and the last choices or the experts and people based on the residential houses and non-residential areas, based on which a definition was provided.

Table 12
The first choices, the middle choices, and the last choices or the experts and people based on the residential
houses and non-residential areas

Group	Number	Land use	Aesthetic	Element of the façade	Definition
People	First	Residential	Subjective-objective	Making memory	Returning to those spaces, the elements remind you of particular environments.
	Middle		Objective	Contrast and proportion	Contradiction and difference in shadows, colors, and harmony between the elements
	Last		Subjective	Vitality	Happiness and dynamicity
Experts	First	Residential	Subjective	Creativity	It is a very attractive and practical element in residential houses.
	Middle		Subjective-objective	Making memory	Returning to those spaces, the elements remind you of particular environments.
	Last		Objective	Proportions and contrast	Contradiction and difference in shadows, colors, and harmony between the elements, returning to those spaces, some of the elements remind you of particular spaces.
People	First	Non-residential	Subjective	Vitality	Happiness and dynamicity
	Middle		Objective	Contrast	Rhythm in buildings and harmony between the elements
	Last		Objective	Contrast	The contradiction and difference in shadows and colors.
Experts	First	Non-residential	Objective	Color of the façade materials	Elements, such as brick, stone, etc.
	Middle		Objective	Proportions	Rhythm in buildings and harmony between the elements
	Last		Subjective-Objective	Making memory	Returning to those spaces, the elements remind you of particular environments.

In explaining these findings, it can be said that people's views are different from those of experts. People pay attention to an appearance of the building and prioritize it according to their taste. As the table above shows, their priority in residential houses in terms of color aesthetics is making memory and their lowest priority is vitality in space. However, according to experts, the first important characteristic in residential buildings is creativity in color and the building itself, and the last option is contrast and proportions, which is due to the expertise they have in their field. Experts pay attention to the building based on scientific and specialized principles in implemented design. In the meantime, before examining the general strategies, it is necessary to pay attention to the priority of the economic aspect of these spaces, which leads the owners of capital to the prominent designs. However, experts consider the context of the design environment along with other factors, such as the aesthetic dimension of colors. It must be said that the application of unprofessional tastes and interventions and the dominance of the culture of construction and selling sometimes overshadow the authority of experts and the taste of the people. It is not possible to compile a guide to designing urban facades by simply modeling non-vernacular ideas that have been formed in completely different socio-economic and historical-political conditions than the conditions of Iranian cities. One of the main problems in this field is the lack of basic and specific studies. Therefore, it seems necessary to address these shortcomings by searching for urban identity as one of the most basic related studies in this field and identifying the original urban identities in the geographical context. Accordingly, this study identified the factors affecting the creation of a beautiful and desirable street facade in terms of aesthetics of colors in a case study by examining the theoretical dimensions and field study. Following this process, the following solutions are suggested to improve the situation of the street facade, research goals and strategies as general solutions, by taking into account the indicators prioritized by the people and experts and considering a participatory approach (taking into account the people's opinions and scrutinizing them by the experts).

- Creating a space with identity (by creating harmony in colors and developing skyline),
- Creating visual quality in the urban space (by creating color contrast and the color of the materials of the facades, including residential and non-residential) '
- Shaping the street using contextual elements (Providing the context for shaping by elements and creating contrast and color composition for

cost-efficiency and speed of the implementation, as well as creating the required harmony in different areas).

- Identifying and eliminating the elements destroying aesthetic (as mentioned in the research, these elements are the hideous skyline and lack of color contrast, and the lack of coordination between the buildings.
- Integration of the suggested models to identify the street through aesthetics of color.
- Achieving integration, order, and visual harmony by combining the colors all over the street.
- Using identifying elements of the Iranian architecture in the urban facades and walls (by the contextual color of the materials of the façade and color contrast)
- Creating consistency in the walls of the stores along the street in terms of the aesthetics in color composition.
- Developing a particular format to construct the façade of the building, including residential and non-residential buildings (this format could be formed by color contrast, which is one of the cost-efficient ways).
- Employing experts and artists to create the integrated and continuous facades (Through designing the facades by the color of the materials and creating the harmony between the facades, floor, and sky by colorful lines.
- Creating legibility (Through particular elements in the street or symbolic elements, such as a street with a different color).
- Creating collective spaces and some spaces for entertainment in the environment (through particular contextual and cultural colors)
- Preserving the authenticity of the existing buildings and reconstructing and repairing them (This solution is one of the significant factors in this street because, considering that most of the buildings in this street are non-residential spaces, the existence of the residential houses and preserving them contributes to the memorability and durability of this street in terms of color and contextual composition.)

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