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The Influence of Façade Finish Materials on Architectural Identity - Sulaymaniyah City as a Case Study

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Abstract:

Architects have the ability to make material selection decisions, on what basis these decisions are made and what is their effect on architectural identity is the topic of this research. Can we provide architects with framework of material knowledge that helps them to evaluate and compare materials? The research aims to find façade materials selection decisions effect architectural identity, through the study of material class selection decisions and the current state of architectural identity in Sulaymaniyah City. The research problem is the overlooked potential of materials, that can enhance the expression of architectural identity.

The research methodology is graphic analysis and checklist form for selected cases, a total of 21 cases, and collection of 129 architects' opinions through a questionnaire based on indicators from the theoretical framework, then finally a statistical analysis for the two methodologies using SPSS. The findings of the study indicate that Sulaymaniyah either lacks a distinct architectural identity or that it is significantly distorted. Moreover, certain material classes can enhance architectural identity, like brick and natural materials in the case of Sulaymaniyah city, on the other hand certain material can distort architectural identity, like glass in the case of Sulaymaniyah city. Overall, it can be said that façade finish material classes selection decisions play a significant role in shaping architecture identity.

Keywords: façade materials, architectural identity, material classes.

الملخص:

لدى المعماريين القدرة على اتخاذ قرارات اختيار المواد، وعلى أي أساس يتم اتخاذ هذه القرارات وما تأثيرها على الهوية المعمارية هو موضوع هذا البحث. هل يمكننا تزويد المهندسين المعماريين بإطار من المعرفة المادية التي تساعدهم على تقييم ومقارنة المواد؟ يهدف البحث إلى معرفة ما إذا كانت قرارات اختيار مواد الواجهات تؤثر على الهوية المعمارية، من خلال دراسة قرارات اختيار فئات المواد والوضع الراهن للهوية المعمارية في مدينة السليمانية. تتمثل مشكلة البحث في الإمكانات المهملة للمواد التي يمكن أن تعزز التعبير عن الهوية المعمارية.

منهجية البحث هي التحليل البياني ونموذج القائمة المرجعية لحالات مختارة، إجمالي 21 حالة، وجمع آراء 129 معماريا من خلال استبيان يعتمد على مؤشرات من الإطار النظري، ثم أخيرا التحليل الإحصائي للمنهجيتين باستخدام برنامج SPSS. وتشير نتائج الدراسة إلى أن السليمانية إما تفتقر إلى هوية معمارية متميزة أو أنها مشوهة بشكل كبير. علاوة على ذلك، يمكن لفئات معينة من المواد تعزيز الهوية المعمارية، مثل الطابوق والمواد الطبيعية في حالة مدينة السليمانية، من ناحية أخرى يمكن لمواد معينة أن تشوه الهوية المعمارية، كالزجاج في حالة مدينة السليمانية. بشكل عام، يمكن القول أن قرارات اختيار فئات مواد الواجهة تلعب دورًا مهمًا في تشكيل الهوية المعمارية.

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الكلمات المفتاحية :مواد الواجهة، الهوية المعمارية، فئات المواد.

پوختە:

تەلارسازەکان توانای بڕیاردانی هەڵبژاردنی مەوادی بینایان هەیە، لەسەر چ بنەمایەک ئەم بڕیارانە دەدرێت و کاریگەرییان لەسەر ناسنامەی تەلارسازی چییە، بابەتی ئەم توێژینەوەیە. ئایا دەتوانین چوارچێوەی زانیاری مەوادی بینا بۆ تەلارسازەکان دابین بکەین کە یارمەتیان بدات بۆ هەڵسەنگاندن و بەراوردکردنی کەرەستە؟ ئامانجی توێژینەوەکە ئەوەیە بزانێت ئایا بڕیارەکانی هەڵبژاردنی کەرەستەی ڕووکار کاریگەری لەسەر ناسنامەی تەلارسازی هەیە یان نا، لەڕێگەی لێکۆڵینەوە لە بڕیارەکانی هەڵبژاردنی چینەکانی مەوادی بینا و دۆخی ئێستای ناسنامەی تەلارسازی لە شاری سلێمانی. کێشەی توێژینەوەکە بریتییە لە پۆتانسێلی چاوپۆشیکراوی کەرەستە، کە دەتوانێت دەربڕینی ناسنامەی تەلارسازی بەرز بکاتەوە.

شێوازی توێژینەوەکە بریتییە لە شیکاری گرافیکی و فۆرمی لیستی پشکنین بۆ حاڵەتە هەڵبژێردراوەکان، کۆی گشتی ٢١ حاڵەت، هەروەها کۆکردنەوەی بۆچوونی ١٢٩ تەلارساز لە ڕێگەی پرسیارنامەیەکەوە لەسەر بنەمای نیشاندەرەکان لە چوارچێوەی تیۆری، پاشان لە کۆتاییدا شیکارییەکی ئیستاتیستیک بۆ دوو میتۆدۆلۆژیاکە بە بەکارهێنانی SPSS. دەرەنجامەکانی توێژینەوەکە ئاماژە بەوە دەکەن کە سلێمانی یان شوناسێکی تەلارسازیی دیاریکراوی نییە یان بەشێوەیەکی بەرچاو شێواوە. جگە لەوەش هەندێک چینی مەوادی بینا دەتوانن ناسنامەی تەلارسازی بەرز بکەنەوە، خشت و کەرەستەی سروشتی لە حاڵەتی شاری سلێمانیدا، لەلایەکی دیکەوە هەندێک مادە دەتوانن شوناسی تەلارسازی بشێوێنن، شووشە لە حاڵەتی شاری سلێمانیدا. بە گشتی دەتوانرێت بڵێین کە بڕیارەکانی هەڵبژاردنی چینەکانی مادەی ڕووکار ڕۆڵێکی بەرچاو دەگێڕن لە داڕشتنی ناسنامەی تەلارسازی.

کلیلە وشە: مەوادی ڕووکار، ڕووکار، ناسنامەی تەلارسازی، پۆلەکانی مەوادی بینا.

Introduction

Unlike other design disciplines like graphic design or product design, architecture is bound to a specific place, time, culture, and set of values. Not all objects that surround a place can be thought of as the work of architecture; instead, it depends on the formal and structural aspects of the object's design (Deniz, 2016).

Products' appearance is significantly influenced by their materials. One of the best instances of this is architecture. The Parthenon, the Eiffel Tower, and the Golden Gate Bridge are all distinctive examples of what can be done with a certain material and are all key symbols of their eras. Like a Parthenon made of wrought iron or a Golden Gate Bridge made of reinforced concrete, an Eiffel Tower made of stone is unthinkable. Each design was constrained by the material, but the architect managed to produce a shape that will be recognized as structural art by later generations (Ashby & Johnson, 2014). The use of readily available indigenous building materials, such as stone in Amman, brick walls in Baghdad, and Halan in Mosul and other modern towns, has contributed to the distinctive architectural identity of many modern cities (Hassan, 2019).

The basis of architecture is materials and construction methods. It's critical to acknowledge that materials' properties and applications have evolved over time. An architect must first comprehend the potentials and properties of the materials, as well as their historical context, in order to develop buildings (Farrelly, 2008). Building materials are an important part of establishing an identity because they can reflect the value of locality and universality in the long-term sustainability and maintenance of architectural wonders. However, they are not independent of or directly related to science, technology, culture, availability, or the complexity of the user's needs, making the comprehension of these values simple (Hidayatun et al, 2013). Building materials have the ability to create narratives

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through their use, but this potential has been underutilized, which has led to deformed architectural identities or architecture products without identities. It is hypothesized that careful and thoughtful consideration of material types during materials selection decisions can enhance architectural identity. Meaning that certain materials have the ability to enhance architectural identity of a certain place while some others have the ability to deform it. (Fig 1.) provides a comprehensive illustration of the steps of the study.

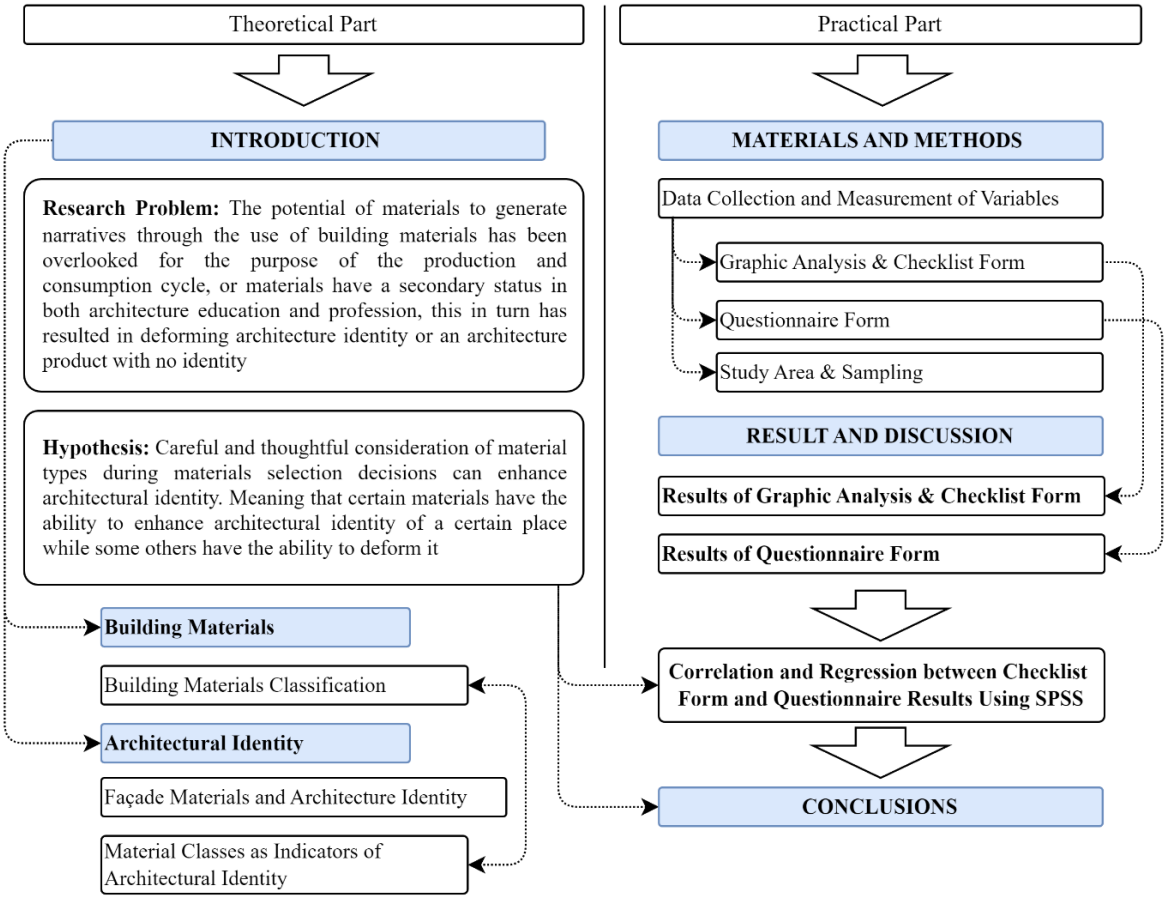

Fig 1. A Flowchart for methodology steps (source: researcher)

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1. Building Materials

For a long time, there was a limited selection of construction materials. Although there were few resources accessible, they were all well-known. The knowledge of how to deal with them has been passed down through the years. This historically matured controllable quality was steadily eroded as industrialization progressed. With the increased quantity of materials accessible, the range of possible performances has expanded as well. Architects are not required to be intimately versed with all of these qualities, but they should be aware of their interconnections and implications. They will incorporate all levels on which materials can be considered in terms of understanding their qualities, within a design, and in the later stages of execution. Perceptional properties, as well as ecological, economic, and technological properties, as well as those connected to use, influence the design process (Hegger et al., 2017). The architect must be informed of the advancements of building materials and their technical specifications, architectural possibilities, and physical features in order to choose the right material for the architectural spaces and use it effectively (Soliman, 2013).

1.1 Building Materials Classification

Several material classifications exist in different fields, the internal structure of the material is the focus of the material science methodology. While primarily descriptive, the engineering approach concentrates on performance factors. In the context of design various arbitrary classifications frequently unique to particular fields are used. In general, each material system takes a specific viewpoint that makes sense for a specific method or application. (Wastiels, 2010). In order to comprehend the reasoning behind the various categorization systems in relation to their unique modes of thought, a quick summary of some of the current classification approaches is presented below.

- Material Science Classification: Classification systems in material science outline the ways in which and reasons behind the differences between diverse materials. Understanding the molecular and atomic properties of materials aids in differentiating between the categories stated above and offers insight into some traits and properties (such as hardness and stiffness) that set different materials apart (Addington & Schodek, 2005).

- Engineering Classification: Engineering science classification schemes explain a material's capabilities and are based on a problem-solving methodology. State (solid, liquid, gas), structure (amorphous, crystalline), origin (natural, synthetic), composition (organic, inorganic, alloy...), property (conductivity, density, etc.), or application (adhesive, paint, fuel,...) are typical classifications. This gives the engineer the ability to select materials depending on their capabilities, behaviors, and resistance to damage. Engineering categorization systems, in their simplest form, describe how a material functions (Wastiels, 2010).

- Traditional Architecture several categorization methods have developed over time within the context of architecture, frequently based on a combination of classification views. These classifications are rarely based on performance specifications, and in order to streamline the material selection process, building codes and standards sometimes supplant such specifications. Architect is limited to choosing between brands when it comes to approved materials because building standards

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frequently clearly or implicitly define them. Architecture classification techniques are typically more descriptive, explaining the material's usage or application. (Fernandez, 2005).

• Architecture Books and Websites: Within the framework of architecture, interest in the creative use of materials or the use of new materials has grown significantly during the past several years. A number of materials-focused publications and online material databases targeted towards an audience of architects have been released or published. (Lefteri, 2007). Fernandez provides a complete picture of materials in architecture by examining a combination of technical and design-focused challenges. He offers helpful guidance in his book on how to assess and choose the best materials for a design job. (Fernandez, 2005).

Taking in consideration the classification suggested by (Fernandez, 2005) as a reference, five major families of materials are specified: Metals, Polymers, Ceramics, Natural materials, and Composites. (Table 1) lists the classification categories used in various architecture books and material database websites in relation to these frequently used material families. Major families are denoted with capital letters. Under the primary material family, they are most closely connected to, additional categories that are mentioned in other sources are added. There are many similarities and some differences between the categories, as seen by the comparison.

As a summary many classifications for materials exist, each relevant to a specific field or purpose, in architecture, classifications of building materials differ according to scope of studies, for example use (finish, structure) or source (natural, synthetic), or composition (ceramic, metal), for the purpose of this study several classifications are reviewed, and the most fit classification for the scope of this study is a hybrid (multidisciplinary) model including classification by composition and source. Main classes of building materials are presented, in (Table 1), along with subclasses belonging to each of them, the table is also used as a guide for in the questionnaire form and checklist form.

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Table 1. Classification of façade materials in architecture (source: researcher)

Material Class	Material Architecture **(Fernandez, 2006)**	Materials and Design **(Ashby and Johnson, 2002)**	Materials for Inspirational Design	Architecture in Detail: Materials **(Girkand, 2002)**	Skin for Buildings **(Keuning et al.,**	Transmaterial **(Brownell, 2006)**	Material ConneXion **(Bayerian et al**	Material Design **(Sbrongfor, 2012)**	MateriO **(Kula, D. and**	Design inSite **(Lenau, T., 2019)**
Ceramics	x	x	x				x	x	x	x
Porcelain					x					
Bricks	x			x						x
Concrete(s)				x		x		x	x	
Glass			x	x	x	x	x	x	x	x
Metals	x	x	x	x	x	x	x	x	x	x
Aluminum										x
Steel										x
Polymers or Plastics	x	x	x	x	x	x	x	x	x	x
Composites	x	x							x	x
GRC & FGRC										
Aluminum plastic composite									x	
Natural Materials	x	x					x	x		
Stone (natural)				x	x			x	x	
Wood			x	x	x	x		x	x	x
Textile or Fabrics				x		x			x	x
Others*						x		x	x	
*Coatings, minerals, plaster, paper, paint, light, digital, fibers, future materials, semi products, biomaterials										

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2. Architectural Identity

Given that it is a critical requirement and an essential element of communal life, identity holds a prominent place on the list of needs for both individuals and organizations in modern society. It is linked to societal problems more closely than any single individual issue (Abel, 2012). Architectural identity can be a cultural tool that enables people to understand how their social life have evolved over time. Evidence for public education may educate people about the past while also assisting them in making sense of the present (Abel, 1980). The three fundamental ideas that Correa uses to describe identity are as follows: First, identity is a process, not a thing that has been discovered, much like the trail that a civilization leaves as it advances through history. By becoming more conscious of ourselves and our surroundings, we learn who we are. Any effort to hasten this process of understanding or to assume a fake identity would be harmful to all of us. Second, since identity is a process, it is impossible to falsify. By addressing what we perceive to be our core challenges, we mold our identities. Third, identity is not a concept that is aware of itself (Correa, 1983).

When considering ideas about cultural formation and historical discontinuity of meaning, the fundamental assumptions of present conventional conceptions that sustain the permanence of architectural identity become dislodged and questioned (Tran, 2010). An architectural identity can be determined using a variety of techniques. An architectural movement's identity, for example, could be reflected in the way it creates structures, environments, and the social life it supports. The community's cumulative attempts over time to capture the meanings and way of life that make up the local culture's architectural identity result in the creation of the national architectural identity. There is a sense of location that unites this living landscape (Nooraddin, 2012).

The architecture of a society is one aspect that defines its entire identity. The concept of privacy in architecture is a reality that includes essential components. Architects and urban designers share a common responsibility in their ability to alter and produce the built symbols that contribute to the complex web of phenomena that make up the identity of people and communities (Adam, 2018). Therefore, it is apparent that some of the most obvious manifestations of each tribe's and nation's civilization and culture are seen in the architecture, design, and outside and interior facades of structures. We might say that stability and change, or rest and motion, are the two main characteristics of identity because it is a brand-new idea created to fulfil the needs of current society. This is so because identification takes into account the societal qualities that have existed historically. Therefore, personal experience is a result of identity. Due to the disparities in these experiences, the definition of identity differs between communities (Torabi & Brahman, 2013).

For this research, identity can be defined as a set of tangible and intangible features distinguishing from others to achieve uniqueness according to their similarity and differences, in this study those features are in the form of façade material classes since they represent a feature or a property of a material and hence the indicators of architectural identity in this study are the different classes of materials, which is mentioned in (Table 1).

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2.1 Façade Materials and Architecture Identity

Building facades have traditionally played a significant role in identifying the front or other particular side of structures and creating their distinctive aesthetic character. (Ching, 2023). The exterior faces of a structure are called facades (Knaack et al., 2014). They have the largest role in a building's outside image, which influences its cultural identity (Norberg-Schulz, 1971). In other words, façades serve as both tangible indicators of the city's aesthetic development and as practical tools for architectural change (Elshahed, 2007). Utilizing regional architectural features that maintain architectural identity and foster a feeling of place is important, and this extends to the choice of building materials (Al-Hinkawi and Hassan, 2014).

Due to its location at the building's front, the façade plays a crucial part in the structure. It represents how the building appears from the outside, gives it an aesthetic trademark, and carries its cultural identity (Norberg-Schulz, 1971). Because façade features in urban contexts vary in look and arrangement, researchers in the field of visual analysis studies have varied perspectives on the factors influencing façade design (Baper, 2011). The influence of culture on the development of building design appears to be a significant component in determining how the façade is shaped (Sari et al., 2011). Common scales, materials, and textures are thought to be the key determinants in forming the architectural facades (Whang, 1998). In parallel, (Askari & Dola, 2009) indicates that the materials used for architectural façades were some of the most significant visual components used to display building facades. Façade studies are intricate research, and each study has a specific set of criteria connected to its area of concentration. However, this study aims to study the material components of the façade in contrast to other studies, which focus on the formal aspect of facades and study façades as a whole.

3. MATERIALS AND METHODS

3.1 Data Collection and measurement of variables

Based on the scope of the study and reviewed literature on the topic, two study methods are to be used in the study, first a checklist form for façade material classes, and second is questionnaire form. Finally, a statistical analysis using SPSS is carried out for the relation between the variables and the test of the hypothesis, the statistical analysis is between the results of the checklist form and the questionnaire.

First, graphic analysis and checklist form, the process begins with site visit and photographic documentation of the building's current façade, then the documented images are used to reconstruct the façade in AutoCAD software, and SketchUp, then percentage of each materials class is derived using the same software. Then the obtained data of the material classes are input into the checklist form according to each case. The material classification mentioned previously is used for the checklist form.

Second, questionnaire form, the questionnaire is composed of three parts, first a description of the study for the respondent, then general information of the respondent, academic qualification and years of experience, and finally a set of four questions about architecture identity and façade materials. The

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questionnaire is designed with regard for the architectural identity and material classification mentioned in the introduction part of the study.

3.2 Study Area and Sampling

The study area, as stated in the title, is Sulaymaniyah city. The study focuses on the facades of the buildings of Sulaymaniyah city. Because it aims to be representative of a wider population, has a lower risk of bias, and offers generalizations, the probability sampling strategy with a simple random sample procedure was chosen for this investigation (Sekaran, 2003).

The city divided into a grid and one case is randomly sampled from the outer grids, while two cases are randomly sampled form the inner grids. A total of 21 facades are sampled for the study as it can be seen in (Fig 2).

Fig 2. Location of the selected cases in Sulaymaniyah city
(source: map: Plattel, K., 2019. Modification and photographs: researcher)

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4. RESULT AND DISCUSSION

4.1 Graphic Analysis and Checklist Form

The graphic analysis, as can be seen in (Table 2), is documentation of the current façade of the building, (Fig 3.), then a visual reconstruction of the current state of the case's façade, then marking areas of each of the material classes and a result each material class can be obtained in this way.

Table 2. Graphic Analysis – Case 8 / Najmaddin Concrete Building (source:researcher)

Name	*Number*	*Location*	*Year Finished*
Najmaddin Concrete Building	**8**	**Kaziwa, near Danya City-Sulaymaniyah**	**2019**
Description			
The building of Najmaddin Concrete, is the main sales office for their Najmaddin Groups concrete factory in Sulaymaniyah. The design is by Mariwani Burueau and implemented by them as well, the building was finished in the year 2019. The façade is composed of concrete, glass, and cement plaster materials.			

Fig 3. Showing façade 1 of the building containing all finish materials (Source: Researcher)

Material Class	Graphic Analysis	Result

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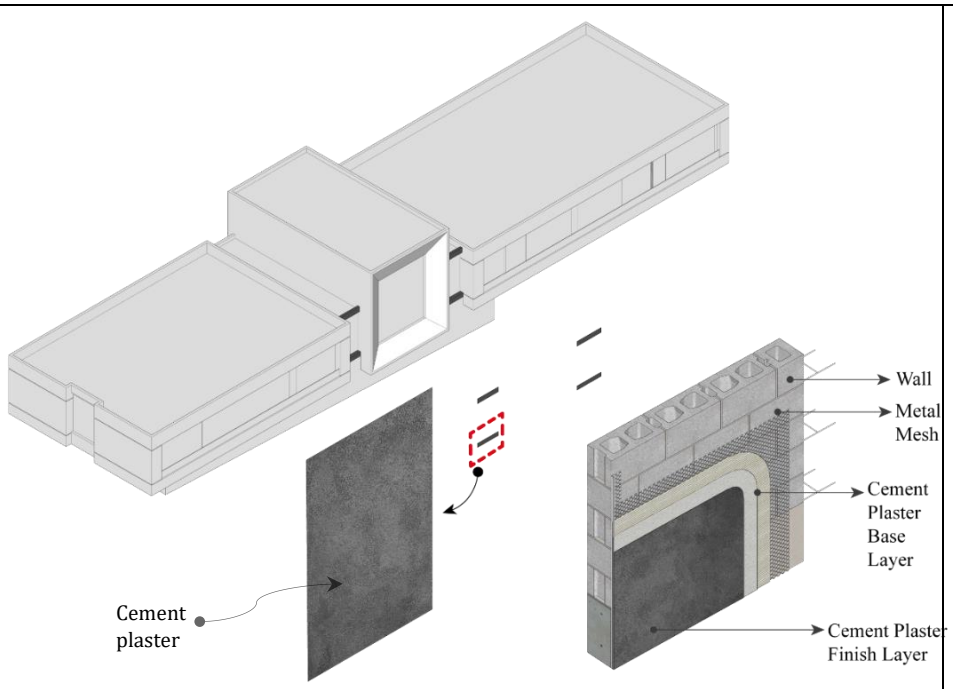
Material Class	Graphic Analysis	Result
Other (Cement Plaster)		3%

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Material Class		Result
	Molding exposed concrete	
Concrete		67%
Glass	Framed glass Molding exposed concrete Wall Aluminum Frame Double Layered Glass Glass layer 1 Glass layer 2 Aluminum frame	30%

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After site visit and documentation of the 21 buildings facades, and their reconstruction using the mentioned software, the results are derived as percentages of each material class for each of the buildings facades. The results of each of the cases can be seen in (Table 3), two material classes, polymers and fabrics, are omitted since they don't exist in the buildings of Sulaymaniyah. This will be later used in the correlation analysis with the evaluation of the 21 cases based on the architectural evaluation of the cases obtained from respondents of the questionnaire.

Table 3. Result of Checklist forms of the 21 cases (source: researcher)

Case No.	Case Name	Material Class Result (%)							
		Ceramics: ceramic, and	Brick	Concrete	Glass	Metal: aluminum, steel, sheet	Composites: GRC or GFRC,	Natural materials: stone,	Others: coatings, plaster
1	Dawa Restaurant	24	0	0	42	0	26	0	8
2	Jalal Ceramic	45	0	0	35	0	0	0	20
3	Bestun Group	40	0	0	52	8	0	0	0
4	Fuga	0	6	0	43	4	47	0	0
5	Zriwa	0	0	0	50	42	7	1	0
6	Rawa Medical Building	0	0	0	25	0	65	0	10
7	Ashley Furniture	0	0	0	70	0	30	0	0
8	Najmaddin Concrete	0	0	67	30	0	0	0	3
9	Pasha Medical Building	0	38	0	26	4	0	32	0
10	Decor Home	30	0	0	20	37	13	0	0
11	Sardam Mobilya	0	0	0	48	12	0	0	40
12	Mawlawi Gate	0	0	0	0	0	0	100	0
13	Tawar Palace	0	0	0	17	0	0	83	0
14	Al-Kasid Motors	0	0	0	54	0	46	0	0
15	Sulaymaniyah Municiplaity	0	53	0	27	0	0	20	0
16	Halabja Group Company Building	26	0	0	66	0	8	0	0
17	Nawroz Gym	0	0	0	37	21	0	0	42
18	Malika Market	0	0	0	48	0	0	0	52
19	Motel Jyan	0	0	0	44	0	56	0	0
20	Hotel Parezh	0	0	0	30	0	70	0	0
21	Jamal Haji Ali Building	0	0	0	75	0	25	0	0

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4.2 Questionnaire Form Results and Discussion

This topic presents the analysis of questionnaire data and also includes the analysis of opinions and responses of the research sample members about the research variables:

4.2.1 Reliability Test of the Questionnaire

The reliability of the questionnaire is intended to give the same results if it was applied several times to the same population and the research sample, that is, there is no significant difference in the results during a specific period of time, and under the same conditions and conditions. The reliability of the questionnaire was verified by two methods (Alpha Cronbach and Split Half), as follows:

- **Cronbach's Alpha test**

Cronbach's alpha was used to measure the reliability of the questionnaire, and the values of (Cronbach's alpha) are considered statistically acceptable when these values are equal to or greater than (0.60).

Table 4. Cronbach's alpha coefficient to measure the reliability of the questionnaire (source: researcher)

Variables	**Cronbach's alpha**	**validity coefficient**
Total	0.698	0.835

(Table 4) shows the value of the reliability coefficient (Cronbach's alpha) and the validity coefficient. It is clear from the table that the value of the Cronbach's alpha coefficient was high for as whole, and it is equal to (**0.698**), and this means that the reliability coefficient of the questionnaire is high and is considered acceptable at a very good level from the statistical perspectives, as well as the value of validity was high for the overall questionnaire, which is (0.835), which means that the validity coefficient of the questionnaire is high and is considered acceptable at a high level.

- **Split Half method**

The items of the questionnaire were divided into two parts so that the first part includes the odd-numbered of items, and the second part includes the even-numbered items. The scores of the first and second part were calculated in each field of the questionnaire. Calculating the Spearman correlation coefficient between the two parts, then adjusting the correlation coefficient using the Spearman-Brown.

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Table 5. The split-half method to measure the reliability of the questionnaire (source: researcher)

Variables	**Spearman Correlation coefficient**	**spearman brown**
Overall variables	0.573	0.729

It is clear from the results of (Table 5) that the value of the adjusted correlation coefficient (Spearman-Brown) is high and statistically significant for overall questionnaire, which is (0.729), and this means that the adjusted correlation coefficient (Spearman-Brown) is very high.

Through the above-mentioned steps, it was concluded that the questionnaire is in its final form, and thus the reliability of the research questionnaire was confirmed, and thus the complete confidence in the validity of the questionnaire, and its validity to answer the research questions and test its hypotheses.

4.2.2 Descriptive Statistic for Questionnaire:

- **Question 1 – Respondent Academic Qualification**

The demographic characteristic of the respondents is related to the respondent background information which includes two aspects academic qualification and years of experience. The total respondents of this study are 129 members whom relating to the field of architecture in Sulaymaniyah city.

The respondent's highest academic qualification is divided into three categories, Bachelors, Masters, and Doctoral, the majority of the respondents, three quarters, hold a BSc degree, more than half a quarter of them hold a MSc degree, and less half a quarter of them holds a PhD degree. (Table 6) shows the academic qualifications of respondents.

Table 6. Distribution of sample study according to Education (source: researcher)

Education	**NO.**	**%**
BSc.	**97**	**75.2**
MSc.	**23**	**17.8**
PhD.	**9**	**7.0**
Total	**129**	**100**

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- **Question 2 – Respondent Years of Experience**

The respondents' years of experience as architect are divided into five categories starting from 1 to 49 years of experience. Nearly half of the respondents, 51.9%, have a 1 to 9 years of experience an architect, more than a quarter of the respondents, 31.0%, have a 10 to 19 years of experience, less than a quarter of the respondents' years of experience as architects are distributed between 20 to 49 years as shown in (Table 7).

Table 7. Distribution of respondent years of experience as architect (source: researcher)

Years of Experience	NO.	%
1-9	67	51.9
10-19	40	31.0
20-29	13	10.1
30-39	7	5.4
40-49	2	1.6
Total	**129**	**100.0**

- **Question 3 – The state of architectural identity and material selection in Sulaymaniyah City**

Starting with the state of architecture identity of Sulaymaniyah city, nearly half of the respondents agreed that Sulaymaniyah city has a distorted architectural identity while the larger portion of the other half stated that the city has no identity, and only a small portion stated that the city has a new acceptable identity or a continuous identity. Hence the majority of the responses are distorted identity and no identity. (Table 8) shows the state of architectural identity in Sulaymaniyah according to the respondents.

Table 8. Response for state of architectural identity in Sulaymaniyah (source: researcher)

State of Architectural Identity in Sulaymaniyah City	NO.	%
Continuous identity	8	6.20
Distorted identity	62	48.06
New acceptable identity	3	2.33
No identity	56	43.41
Total	**129**	**100.0**

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- **Question 4 - Building materials influence architectural identity**

Next question is about whether building materials used in the facades of buildings in Sulaymaniyah city influence the architectural identity of the city or not. The majority of the responses, more than half are divided between the strongly agree and agree, only 5.5 percent of the respondents are neutral and nearly a quarter disagree or strongly disagree to the statement. In other words, more than half agree with this statement, as it can be seen in (Table 9).

Table 9. Response for Building materials influence architectural identity (source: researcher)

Response for Building material influence architectural identity	**NO.**	**%**
Strongly Agree	25	19.38
Agree	57	44.19
Neutral	8	6.20
Disagree	29	22.48
Strongly Disagree	10	7.75
Total	**129**	**100.0**

- **Question 5 – Buildings best expressing an architectural identity of Sulaymaniyah city through utilizing façade materials**

This question seeks the response of the participant in regard to the building that best express and architectural identity of Sulaymaniyah and respondents can choose multiple buildings from 21 choices. The results of this question will be later used as an evaluation with the result of the checklist factors. In the responses **Municipality of Sulaymaniyah is with highest evaluation, with 56.6%,** more than a half of the responses. Followed by Tawar Palace and Pasha Medical Building each with nearly 34 % of the responses. Further details of the responses can be seen in (Table 10) and (Fig 4).

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Table 10. Buildings expressing an architectural identity of Sulaymaniyah city through utilizing façade materials (source: researcher)

Cases	No	%
Dawa Restaurant	7	2.3
Jalal Ceramic	25	8.3
Bestun Group	4	1.3
Fuga Furniture	1	0.3
Zriwa Medical Building	4	1.3
Rawa Medical Building	16	5.3
Najamadin Concret	39	13
Pasha Medical Building	44	14.7
Decor Home Building	5	1.7
Sardam Mobilya & Electronics	5	1.7
Mawlawy Street Gate	13	4.3
Tawar Palace	45	15
Al-Kasid Motors	2	0.7
Halabja Group	1	0.3
Municipality of Sulaymaniyah	73	24.3
Nawroz GYM	2	0.7
Motel Jyan	2	0.7
Parezh Hotel	2	0.7
Haji Jamal Building	1	0.3
Other	9	3
Total	**300**	**100**

- **Question 6 - Façade Building Materials Best Expressing Architectural Identity of Sulaymaniyah**

According to respondents, the façade building materials best expressing architectural identity of Sulaymaniyah are, in first place with the most counts, **Brick**, followed by **Natural materials**. (Table 11) and (Fig 5.) show the responses.

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Table 11. Responses of Façade Building Materials Best Expressing Architectural Identity of Sulaymaniyah (source: researcher)

Façade Building Materials Best Expressing Architectural Identity of Sulaymaniyah	**NO.**	**%**
Ceramics: ceramic tiles, porcelain tiles, terracotta tiles	12	3.5
Brick	109	31.5
Concrete	41	11.8
Glass	25	7.2
Metal: aluminum, steel, sheet metals.	19	5.5
Polymers or Plastics	2	0.6
Composites: Glassfiber reinforced concrete (GRC or GFRC), wood-plastic composite (WPC), Aluminum plastic composite	16	4.6
Natural materials: stone, marble, granite	89	25.7
Textiles or Fabrics	14	4.0
Others: coatings, minerals, plaster, paint, light, digital, fibers	16	4.6
Other	3	0.9
Total	**232**	**100.0**

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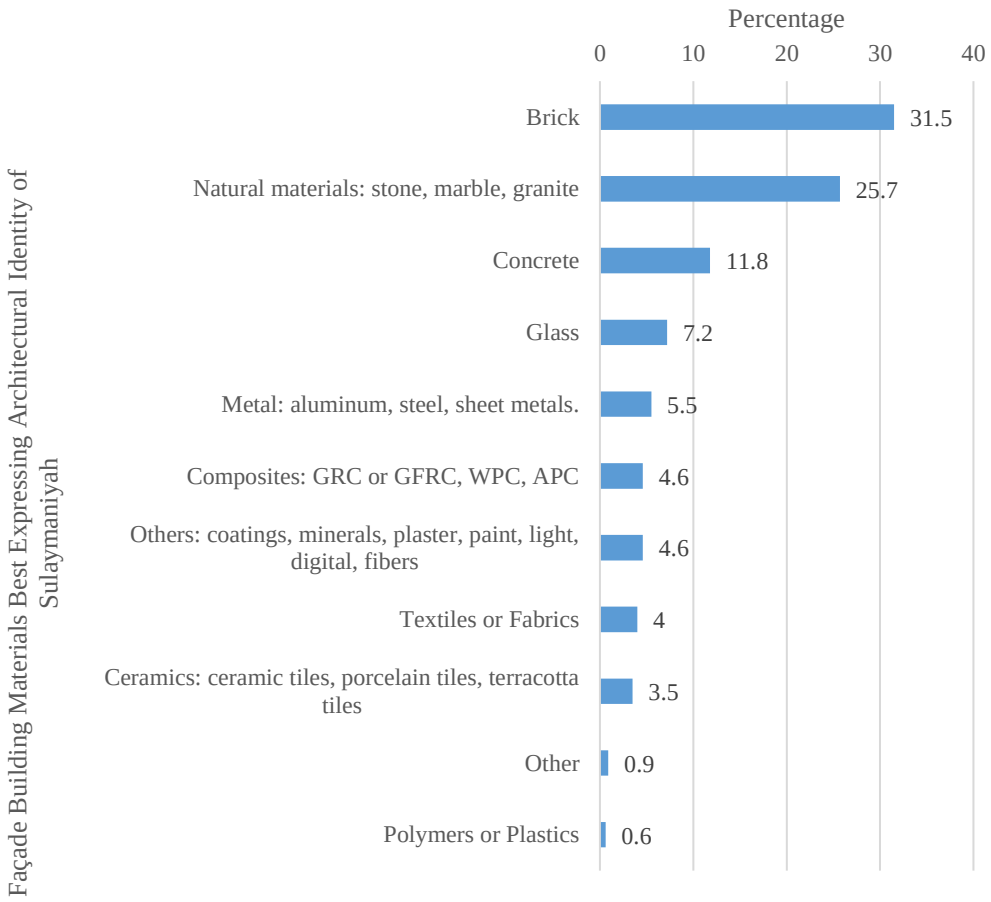

Fig 5. Responses of Façade Building Materials Best Expressing Architectural Identity of Sulaymaniyah (source: researcher)

4.3 Correlation and Regression Tests

The results of Question 5 are used as the evaluation of architectural identity and correlated with the results of materials classes of the cases, SPSS is used for this purpose. In order to determine the correlation value between variables of material class and architectural identity, Pearson correlation is utilized in (Table 12), which displays the value of correlation and p-value between materials classes and architectural identity. It is demonstrated that the significant correlation values are **Brick** (0.759), **Natural Materials** (0.415) and **Glass** (-0.511) p-values less than the acceptable statistically significant level (Alpha) of (= 0.05), indicating a positive relationship between Brick, Natural Materials and architectural identity and a negative relationship between Glass and architectural identity.

The results of (**Table 12) supports** the specific hypothesis that states "**There is a positive relationship between Brick, Natural Materials and Architectural Identity, and a negative relationship between Glass Materials and Architectural Identity**".

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Table 12. Correlation Results of Architectural Identity and Material Class (source: researcher)

Variables	Correlation value	P-value	R-square
Ceramic	-0.111	0.631	0.012
Glass	**-0.511**	0.018	**0.261**
Concrete	0.289	0.204	0.083
Brick	**0.759**	0.000	**0.577**
Metal	-0.224	0.328	0.050
Natural Materials	**0.415**	0.031	**0.172**
Composites	-0.383	0.087	0.147
Others	-0.202	0.062	0.041

The results of this comparison evaluation are shown in (Table 13). This table indicates that there is a statistically significant effect of Brick, Natural Materials, and Glass on architectural identity in all selected buildings with the R^2 values of (0.577), (0.172), and (0.261) respectively indicating that change in the value of Brick, Natural Materials, and Glass explain 57.7%, 17.2% and 26.1% of the change in the variable architectural identity respectively, and the F-test confirms this effect, which equals (25.895), (3.942), and (6.716) with a P-values less than the acceptable statistical level (0.05). The T-test is used to evaluate the impact of Brick, Natural Materials, and Glass on the architectural identity of a building. Highlighting that the calculated value for the variable "Brick", "Natural Materials" and "Glass" are (5.089), (1.985), and (-2.592), with a P-values less than (0.005) there is a significant effect of the variables Brick, Natural Materials, and Glass on the architectural identity of a building by amount (0.365), (0.099), and (-0.185), which are stated in the (Table 13) under the column name (Beta). That is, if Brick is increased by one percent, the architectural identity of the building increases by 36.5%, if Natural Materials are increased by one percent, the architectural identity of the building increases by 9.9%, and if Glass in increased by one percent, the architectural identity of the building decreases by 18.5%.

Table 13. Regression Results of Architectural Identity and Material Class (source: researcher)

Variables	Architectural Identity					
	R-square	T-test		F-test		Beta
		T-test	P-value	F-test	P-value	
Ceramic	0.012	-0.489	0.008	0.239	0.631	-0.050
Glass	**0.261**	**-2.592**	**0.018**	**6.716**	**0.018**	**-0.185**
Concrete	0.083	1.315	0.204	1.728	0.204	0.131
Brick	**0.577**	**5.089**	**0.001**	**25.895**	**0.001**	**0.365**
Metal	0.050	-1.003	0.328	1.006	0.328	-0.121
Natural Materials	**0.172**	**1.985**	**0.062**	**3.942**	**0.062**	**0.099**
Composites	0.147	-1.807	0.087	3.266	0.087	-0.105
Others	0.041	-0.901	0.379	0.812	0.379	-0.084

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The results of (**Table 13) support** the hypothesis which states: **"The use of Brick and Natural Materials can the architectural identity of buildings while the use of Glass in facades does the opposite".**

5. CONCLUSIONS

The study finds that, from the point of view of façade finish materials, Sulaymaniyah city either has a distorted architectural identity or no architectural identity with no common agreement on either one. The building materials used in the facades of Sulaymaniyah affect the architectural identity of the city and hence it can be said that façade materials affect architectural identity. The study also finds that Municipality of Sulaymaniyah best expresses an architectural identity of the city through utilizing façade building materials, followed by Tawar Palace and Pasha Medical Building, with a minority of the responses for Najmaddin Concrete and Jalal Ceramic buildings.

The use of Brick and Natural Materials can enhance the architectural identity of buildings while the use of Glass in facades does the opposite, this is the case for Sulaymaniyah city only but it proves that certain material classes have the ability to enhance architectural identity while other material classes have the ability to distort architectural identity. The two facade building materials capable of enhancing architectural of Sulaymaniyah, that are agreed upon by more than half of the respondents, and also supported by the statistical analysis are brick and natural materials, on the other hand the statistical analysis supports that the use of glass distorts architectural identity, again this is only for a specific location, in this case Sulaymaniyah city, but it also supports that certain materials are specific to certain places and can enhance or distort the architectural identity of that place.

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