INFLUENCE OF MODERNITY VERSUS CONTINUITY OF ARCHITECTURAL IDENTITY ON HOUSE FACADE IN ERBIL CITY, IRAQ

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by

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Thesis submitted in fulfillment of the requirements
for the degree of
Doctor of Philosophy

June 2011

DEDICATION

THIS IS FOR
SUSAN,
ZHEEN,
AND ALAN
WITH LOVE AND APPRECIATION
FOR THEIR CONTINUOUS
SUPPORT AND ENCOURAGEMENT

بسم الله الرحمن الرحيم

الحمد لله رب العالمين والصلاة والسلام على سيد المرسلين، سيدنا محمد وعلى آله وصحبه أجمعين

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SPSS	Statistical Package for the Social Sciences Software

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ABSTRAK

Tesis ini membincangkan salah satu daripada isu utama dalam perdebatan senibina mengenai identiti moden dan senibina. Ia bertujuan mengukur pengaruh moden terhadap identiti senibina pada fasad rumah di Bandar Erbil, Iraq. Objektif penyelidikan ini ialah untuk menyedia faktor ukuran terhadap tahap perubahan, membangun model untuk analisis visual, menilai variasi dalam persepsi responden, dan memeriksa korelasi antara faktor moden pada fasad rumah dengan arus kesinambungannya terhadap identiti senibina. Berasaskan kajian literatur yang dijalankan, kajian ini menilai model berkonsepsual modenisasi dengan membangun formula ciri-ciri identiti senibinanya. Kajian ini menggunakan kaedah metodologi bercampur iaitu kombinasi bancian kualitatif dan kuantitatif. Pemilihan sampel bancian kualitatif menggunakan kaedah berstrata yang mana kawasan-kawasan yang dipilih dalam kajian ini dibahagikan kepada empat zon (Zon 1 hingga 4), manakala proses persampelan rawak-mudah diaplikasikan untuk bancian kuantitatif semasa kertas soalan bancian diedarkan kepada para responden terdiri daripada pelajar jurusan senibina di universiti tempatan dan arkitek di Bandar Erbil. Untuk analisis kualitatif, kaedah pemerhatian secara langsung dan pendokumentasian visual digunakan. Analisis ini adalah berkaitan dengan membuat perbezaan stail pada fasad rumah. Analisis kuantitatif walaubagaimanapun mengandungi hasil daripada analisis deskriptif, faktor, korelasi dan regresi berganda. Penemuan kajian hasil daripada analisis ini menyokong andaian kajian dengan bukti data statistik yang menyatakan bahawa faktor modenisasi pada fasad rumah memberi pengaruh terhadap arus kelangsungan identiti senibina. Kajian ini menyimpulkan bahawa “Jisim dan Artikulasi” dan “Perincian Senibina” merupakan faktor yang paling berpengaruh dalam interpretasi arus kelangsungan identiti senibina. Kajian ini memaparkan sumbangan penting kaitan dialek antara modernisasi dan identiti senibina yang dapat menyelesaikan konflik dalam kaedah pendekatan teori pengaruh moden dan identiti senibina. Penemuan-penemuan kuantitatif ini merupakan bukti statistik yang menunjukkan faktor-faktor kemodenan fasad rumah mempunyai pengaruh langsung pada kesinambungan identiti senibina.

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This thesis discusses one of the most distinctive issues of architecture debates about modernity and architectural identity. It aims to measure the influence of modernity to architectural identity on house facade in Erbil City, Iraq. The objectives of this research attempt to evaluate the factors' degree of change, develop a model for visual analysis, examine the variations in the perceptions of the respondents and investigate the correlation between house facade modernity factors and its continuity of architectural identity. Through the literature review, the study investigates a conceptual model for modernity and formulates the properties of architectural identity. The study adopted a mixed-methodological approach, which combines qualitative and quantitative surveys. Sample selection for qualitative survey uses stratified method in which the selected areas in this study are divided into four zones (Zone 1 to 4), whereas simple random sampling process is applied for quantitative survey when distributing the questionnaires to the selected respondents who are architecture students at the local university and architects in Erbil City. For qualitative analysis, the methods used rely on direct observation and visual documentation. This analysis deals with stylistic differences of the house façade. Quantitative analysis however comprises results of descriptive, factor analysis, correlation and multiple regression analysis. Findings from the results of this analysis support the research assumption with statistical evidence that house façade modernity factors have direct influence on the continuity of architectural identity. The study concludes that “Mass and Articulation” and “Architectural details” are the most influential factor in interpreting the continuity of architectural identity. The study makes an important contribution to address dialectical relationship between modernity and architectural identity, by ending the conflicting theoretical approaches regarding the influence of modernity on architectural identity. The quantitative findings provide statistical evidence that house façade modernity factors have direct influence on the continuity of architectural identity.

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CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter is an introductory chapter that intends to clarify the background of the study and discuss several related studies to identify its problem statement. Based on these discussions, the study determines the specific research problem. Accordingly, the research question, research objectives, and research assumption will be formulated. Finally, the chapter presents the scope of the study, research framework, and the structure of the thesis organization.

1.2 Research Background

Recently, concept of modernity and its influences on architectural identity has become a common topic in architectural debates. Scholars in the field of building design explain that "architecture" is affected by two conflict directions, the first forcing it toward new horizons based on upgraded technologies, whereas the second is trying to stabilize its norms, through the local traditions (Tomlinson, 2003; Zein, 2004; Todd, 2005). Consequently, identity is a key concept of the modern era due to the massive changes that have turned modernity into a powerful force bringing unusual transformations (Popescu, 2006).

The pertinent studies show that our new era is marked by increasing globalization and the affirmation of modernity, which is under constant tension with traditional identities (Saleh, 1998; Mehrotra *et al.*, 2004; Zein, 2004; Welz, 2005; Vale, 2008).

As a reaction to this sweeping trend, the phenomenon of architectural identity is observed in many parts of the world. In case of Erbil city in this study, this historical city has passed through rapid transformations after Iraq liberation 2003. Profits from Kurdistan region oil revenues have allowed Erbil city to initiate its reconstruction and rapid development programs much faster than other cities in Iraq. The political, economic, and cultural transformations have impact on the visual appearance of the buildings' façades in Erbil. These rapid developments lead to a state of disintegration in architectural forms that reflected, in many cases, a strange ideological orientation.

In other words, the deterioration of the traditional scheme requires a need to re-emphasize the local identity. It is the result of modernization forces, strengthened by the maturation effects of globalization. In this regard, Tomlinson (2003) argues that globalization is really the globalization of modernity and that modernity is the harbinger of identity.

Generally, the process of approaching the issue of identity in architecture urges architects to create proposals in social development. As the concept of identity refers to lived experiences and all the subjective feelings connected with everyday consciousness, experiences, and feelings are supposed to be embedded within wider norms of social relations (Zein, 2004). Hence, the importance of the identity issue refers to its relationship with the nation's cultural behavior, languages, beliefs, attitudes, and values. Therefore, this concept of identity enables design issues to be debated in social and political terms (Rose, 1995).

Based on Carmen (2006), architecture is a worldwide feature of human experience, which derives its meaning from cultural concepts of place, time, and a certain form of the reaction between man and place. It appears as a unique medium of expression, which conveys local identity. Hence, identity is people’s source of meaning and experience. It is a sort of collective treasure for local communities (Castells, 1997; Tomlinson, 2003). In light of the above, the study investigates the influence of modernity versus continuity of architectural identity on house façade in Erbil City. The focus is limited to the process of continuity and change of house façade in different periods of the city’s evolution.

1.3 The Rationale behind this Study

The main reasons for conducting this study are as follows**:**

i. The architecture in Erbil city is undergoing a transformation from traditionalism to modernism due to globalization. These changes ultimately have transformed the appearance of buildings and created various challenges in architectural expression in all economic, cultural, and social aspects of life (Heshmati, 2007).

ii. The lack of studies measuring the influence of modernity on the issue of architectural identity and the absence of an obvious professional discourse about the directions of these two conflicts are the main reasons behind conducting this study.

iii. Modernity creates new disintegrated architectural forms within the body of local traditions in Erbil City. The generation of these forms affects the process of cultural continuity and leads to ruptures in the physical and moral aspects of architectural identity (Moreira, 2006; Egenter, 2008).

iv. The conflict tension between the desire for modernization and the nostalgia for traditions in housing design creates a state of chaos and confusion in house façades. This tension affects local architects' attitudes to design new modes of structure, order and regulation on the one hand, and the spirit of conventions and traditions on the other (Chadirji, 1986; Asfour, 2004).

v. The shortage of housing projects and the poor quality of existing structures encouraged the investors to make rapid developments in housing sector (Nagy, 2006). Most of these developments translated into Western concepts and neglected the fundamental aspects of local identity traditions.

1.4 Previous Related Studies

To understand the distinctive attitudes regarding the concept of modernity and its role on architectural identity, many similar studies have illustrated, described and summarized their approaches and methodologies. These previous related studies will be classified in main categories namely philosophical approach, descriptive approach, analytical approach, and experimental approach. The following sections describe each approach accordingly.

1.4.1 Philosophical Approach

This section discusses relevant philosophical approach studies regarding the influence of modernity to architectural identity. The aim is to clarify the dialectic relationship between architectural identity and modernity. These studies are listed as follows:

a) Tomlinson (2003): The role of globalization and its effects on cultural identity is the main direction of Tomlinson's inquiries. This study uses a philosophical approach toward the issues of identity in architecture based on the assumption that globalization destroys identities. It explains the role of globalization in reproducing cultural identities as a sort of collective treasure of local communities. The main conclusion of this study sheds light on cultural identity as a product of globalization and suggests that globalization is the most significant force in creating the cultural identity rather than destroying it.

b) Cripps (2004): How the concept of identity is embedded in architecture is the main focus of Cripps's investigation. Through the assumption that modernity in architecture is above and beyond culture, this study examines the formation of local identities in terms of architectural design. It explains the conflictual relationships between identity and modernity. Moreover, it clarifies that identity comprises two main aspects; the first urges human beings to organize themselves in a system of meaning, whereas the second resists the idea of a universal language "Global Architecture" in which the issues of race and identity are marginalized.

c) Zein (2004): This study discusses the idea of reflexive modernization to explain the issue of identity in contemporary architecture. It suggests the idea of appropriate modernity that provides a proper balance between the importance of the past (heritage values) and the needs of the present (better living opportunities). Appropriate modernity is the equilibrium between opposite dead ends (modernity and identity). The study reveals a strong correlation between identity and modernity. As a result, the study concludes that any consideration of cultural identity leads to a careful thought toward modernity.

d) Todd (2005): This study explains identity change in terms of three variables: existing identity structures, power relations, and resources. It presents the path of identity change in six possible directions: reaffirmation, conversion, privatization, adaptation, assimilation, and ritual appropriation. The study proposes a model of analysis to recognize the six identity categories, their internal complexity, their effects in framing interactions, and the possibility of both gradual, and sudden changes.

1.4.2 Analytical Approach

This section focuses on the most important analytical studies discussing the concept of identity and modernity. These studies use an analytical approach (i.e., quantitative methodology) to analyze the vocabulary and elements of creative works through their physical characteristics. The most relevant studies are as follows:

a) Salama (2007): The study focuses on “Surface Treatment” by analyzing buildings’ visual elements. It clarifies two types of identity: visual identity and activity-based identity, and it suggest a fresh look at the issue of meaning in architecture. The study adapted the visual analysis of building façades to identify the physical aspects of architectural identity by classifying the visual world into fixed features (components of the built environment: walls, doors, windows, entrances, etc.). The process of analysis relies on a number of physical characteristics that define objects and their relationships in the comprehensive whole. The study concludes that perceiving and interpreting the visual environment is a complex process involving the interaction of cultural sets and values.

b) Asfour (2004): **“**Identity in the Arab Region” is the title of Asfour’s investigation. The study adopted an analytical approach to understanding the negative impact of modernism on Arab architecture and urban fabric. It explains the phenomenon of traveling theory as a simplistic version of modernism. This process means cutting ideas from their original cultural field and pasting them into a new cultural field. Therefore, the Western models are embedded in the Arab society and the soul of heritage is rejected. The study concludes that by merging traditional values within contemporary architecture, a new version of architectural identity becomes visible.

c) Al-Naim (2008): This study attempts to analyze the event of change in contemporary architecture. It uses an analytical approach to clarify how people have accepted new forms in their home environment and how alterations to private houses have been conducted to meet social needs. The study shows identity in architecture to be a dynamic phenomenon. Architectural identity can be changed and reformed over time due to the forces of modernization. The study concludes that satisfaction of the cultural core is more important than the physical appearance of the house façades because the forces of change cannot completely succeed in shifting the core values of architectural identity.

d) Watson and Bentley (2007): This study focuses on the dynamic nature of the identity-construction process by analyzing several case studies to indentify guidelines and address place-identity issues in the field of architecture. The study discusses the importance of identity-construction strategy that comes from an influential version. It obtains “roots” by using “deep” building types in local traditions. The study concludes that the size of the blocks and the pattern of the plot subdivisions are critical factors in determining the continuity of architectural identity.

1.4.3 Descriptive Approach

The studies in this section describe the role of modernity and its influence on architectural identity. These studies use a descriptive approach to explain the phenomenon of identity in architecture. The relevant descriptive studies are as follows:

a) Bornberg *et al.* (2006): **"**Traditional versus a global, international style" is the title of Bromberg's research. The Study investigates the effects of globalization on the local traditions in Erbil city. It sheds light on the urban pattern arrangements and clarifies the influence of the imported contemporary projects on the existing urban fabric, which leads in most cases to a loss of identity. This study concludes that the process of urbanization should be adapted to the climate and physical environmental needs of local areas.

b) Rasdi (2005): The study attempts to classify the various approaches to address the problem of a national architectural identity. It classified identity into three different types: natural identity, forced identity, and manufactured identity. Likewise, it attempts to elucidate the philosophical concerns of identity in architecture. The study explains the three 'traditions' of modernism. The first is the pure machine approach. The second presents an intellectual beauty of platonic forms, whereas the third is an organic architecture steeped in the regional climatic and cultural responses, complete with a serious system of ornamentation. In conclusion, this study takes a descriptive approach in clarifying the relationship between modernity and identity.

c) Moreira (2006): This study examines the role of modern architecture in constructing national identities. It clarifies that the involvement of modern architecture within local traditions leads to the integration of modern identity. The study shows that the spread of modern architecture throughout the world is a complex phenomenon that cannot be reduced to a single continuous path. It permitted national culture to be framed in new ways. This study concludes that tradition cannot be found in specific architectural forms and elements, but rather it is found in old patterns of living and architectural experiences. Likewise, the concept of identity can be adapted to different forces and changes without losing its essential characteristics. Thus, the old and the new could be reunited in dialectic continuity through time.

d) Abdel-Kader (2002): This study investigates the role of the political economy on the issues of identity. It focuses on the effects of globalization on shaping urban forms, space as representative of social experiences and the concept of identity through forms of representation. The study concludes that the changing political economy reinforces social identity through architectural forms of the residential built environment.

1.4.4 Empirical Approach

This section discusses architectural studies that adopted the empirical approach in determining the appropriate measuring scales. The research methodologies of these studies varied in terms of the specific methods and tools used for data collections. These studies can be listed as follows:

a) Malhis (2003): This study presents a systematic understanding of how architecture is influenced by different socio-cultural aspects. Through a combined analytical and empirical methodology, the syntax and the semiotics of façades are investigated. House forms are analyzed at three levels: façade complexity, layout configuration, and semiological perceptions. A system of recording stylistic diversity is formulated by combining the formal basis with stylistic features. Constructing a relationship between the structures of syntax and semiotics is the study's main contribution. The findings indicate that socio-cultural factors have a direct impact on the elemental arrangements within house façades.

b) Mahgoub (2007): This study investigates how cultural identity is being expressed in contemporary architecture. The study focuses on design strategies in expressing cultural identity. They developed a three-dimensional matrix as a measuring tool to understand the contradictory relationship between globalization and identity. The study concludes that the climate and the environment have a major influence on architectural identity. Likewise, the impact of religion on culture is very important and fundamental for realizing the needs of the individual for privacy, family interaction, and space configuration and orientation.

c) Tucker and Ostwald (2007): This study summarizes the use of algorithms in studying the visual properties of the built environment. It relies on a software program to compare the visual characteristics of building façades. The process of visual analysis aims to identify the characteristic features of house façades to compare the shared patterns. This study investigates the relationship of elements with each other and to the building as a whole, the use of ornaments and visible textures, and the scale of elements within the composition. The study concludes that analyzing the visual properties of building façades can show the degree of the building's homogeneity within its surroundings as well as evaluate its visual influence in sustaining the heritage value of a streetscape within a conservation area.

d) Sari *et al.* (2011): The aim of this study was to determine the impact of socio-cultural and socio-economic factors on the formation of traditional and modern house outlines. The methodology adapted in this study is based on the morphologic analysis of house layouts and façades. Several parameters have been investigated to determine the influence of culture accumulation on house shapes. The study concludes that the traditional house met all the requirements of daily life in terms of functional efficiency and visual attractions. It achieved a successful result through its link to a very deep cultural accumulation. In contrast, radical transformations occurred in modern houses due to the changes in family structure and the lifestyle. Therefore, modern houses cannot reflect the success of the houses of the past because these houses are alienated from their own culture.

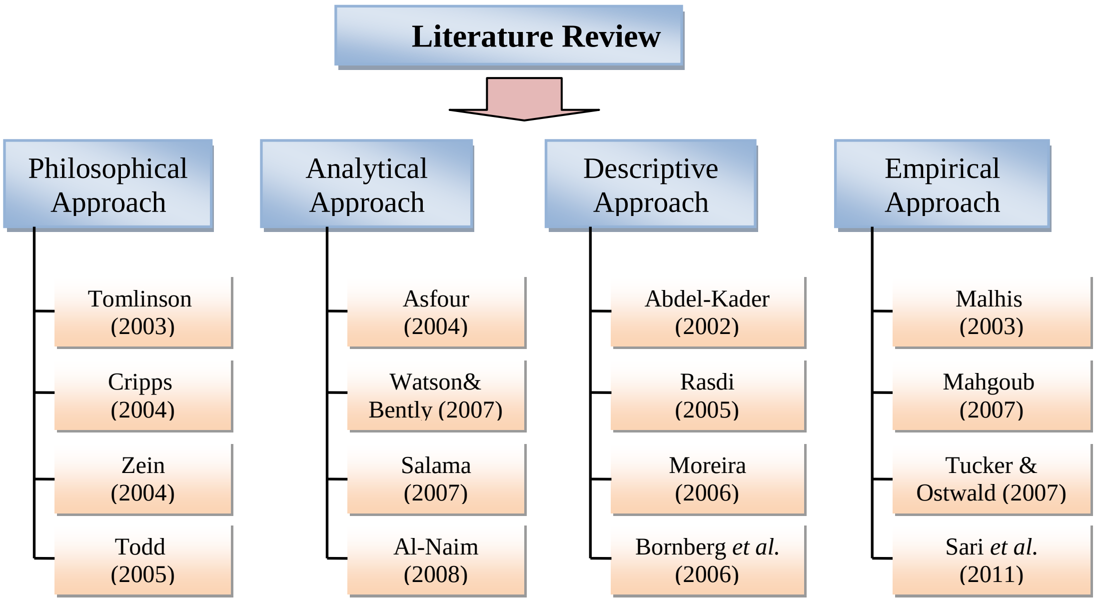


Figure 1.1 Summary of the Literature Review of Previous Related Studies

1.5 Problem Statement

Based on the previous studies, architectural identity is a dynamic phenomenon. It can change and reform over time to create a link between the past, present and future. These previous studies illustrate that the issue of architectural identity has two conflicting vectors: the first is the vector of similarity and continuity, and the second is the vector of difference and dissimilarity. Through discussions of previous pertinent studies on the concept of modernity and its influence on architectural identity, the following two directions of conflict have been detected:

1. Modernity is a destructive force that destroys the existing architectural identity
2. Modernity is an evolutional force to construct and renew the existing architectural identity

These two conflicting directions act as an indicator to show the existence of a close relationship between modernity and architectural identity. However, the direction of this relationship is not clear. Despite the multiplicity and variety of trends regarding the relationship between modernity and identity, several questions remain unanswered: How do we measure the influence of modernity on identity in architecture? How and why did such a phenomenon occur? What are the pillars of architectural identity? How and why did these pillars change?

Based on the problem statement, the main assumption of this study is formulated to be the role of modernity and its influences in shifting architectural identity in terms of house façades in Erbil City. The study will focus on the process of continuity and change to clarify the dialectic relationship between modernity and identity in architecture.

1.6 Research Questions

This study attempts to answer the following research questions.

1- What is the influence of house façade transformations on the continuity of architectural identity?
2- Do the stylistic features of house façades change over time?
3- What are the main pillars of architectural identity for house façades?
4- Are perceptions toward the continuity of architectural identity and the modernization factors of house façades constant?
5- Does the theoretical model comprise the inclusive factors affecting the continuity of architectural identity?

6- Do the modernity factors of house façade positively correlate with the continuity of architectural identity?

7- What are the most influential factors in interpreting the continuity of architectural identity?

1.7 Research Objectives

The objectives of this research were chosen to emphasize the holistic phenomenon of identity and its conflict with modernity. The objectives attempt to measure the influence of house façade modernity factors on the continuity of architectural identity in Erbil city. The objectives of this research are as follows:

1- To evaluate the factors' degree of change in terms of house façade transformations in determining the continuity of architectural Identity.

2- To identify house façade checklist factors and develop a model for visual analysis.

3- To examine the perception of respondents toward the continuity of architectural identity and house façade modernization factors and check factors dimensionality in the theoretical model.

4- To examine the strength and the direction of relationships between the house façade modernity factors and the continuity of architectural identity.

1.8 Scope of the Study

The scope of this study is the visual morphology analysis of house façades in terms of architectural identity. It aims to examine the process of continuity and change as the main conflicting forces between modernity and identity in developing countries influenced by globalization. Erbil city is the longest continually inhabited place in the world (UNESCO, 2008) with strong recent economic developments. Thus, its selection as the area for the study is appropriate. It is interesting to note that a new feature is reshaping the built environments in Erbil city, and this feature is related to modernization forces. These developments have resulted in new systems of user requirements, and to satisfy these developments, new materials, building techniques and architectural details have been applied. These changes have ultimately transformed the appearance of building façades in the city. Hence, the research is limited to evaluating the visual analysis of housing façades in the different periods of Erbil city evolution.

1.9 Research Framework

The research framework (Figure 1.2) has four phases as follows:

a) First Phase: In this phase a theoretical study on modernity and architectural identity will be investigated. From the literature review the study explore a conceptual model for modernity and formulate a comprehensive framework including the most effective properties of architectural identity. The expected outcomes from this phase will summarize a theoretical framework for the concept of modernity and illustrate the main properties of architectural identity.

b) Second Phase: This phase intends to formulate house façade checklist factors that affects the design of house façades. These factors are derived from previous related studies and rearranged in a new format to formulate a model of visual analysis. Moreover, this phase examines and evaluates the pervious proposed architectural models in measuring and analyzing building visual elements. Finally, through composing the theoretical propositions in the current models with the guidelines from literature review, the study formulates a comprehensive framework including the most effective parameters and assigning each parameter by a range of relevant values.

c) Third Phase: data collection is the third phase of this study. The research data will be collected through a mixed method techniques including qualitative and quantitative surveys. The qualitative case study survey includes the observational study for building elements in Erbil City. It covers site visits, observation, checking, comparing and documenting of four different periods starting from traditional period before 1930, modern period (1930-1980), transitional period (1980-2003) and advanced modern period after 2003. The purpose of observational study is to explore, explain, and describe the physical elements of local traditions in different periods. The quantitative part will be a questionnaire survey. This survey attempts to measure the degree of continuity in house façade physical elements. It needs to be distributed among respondents to get comparable data in which the influence of modernity versus continuity of architectural identity on house façade in Erbil City can be tested statistically.

d) Final Phase: Finally, the data will be analyzed in two aspects. The first will focus on qualitative analysis for visual building elements using comparative tables while the second analysis will rely on quantitative analysis (descriptive, factor analysis, correlation analysis and multi regression analysis). Then the outcome data will be statistically analyzed by SPSS program. The research results (contribution of the analysis) will illustrate final conclusions and recommendations.

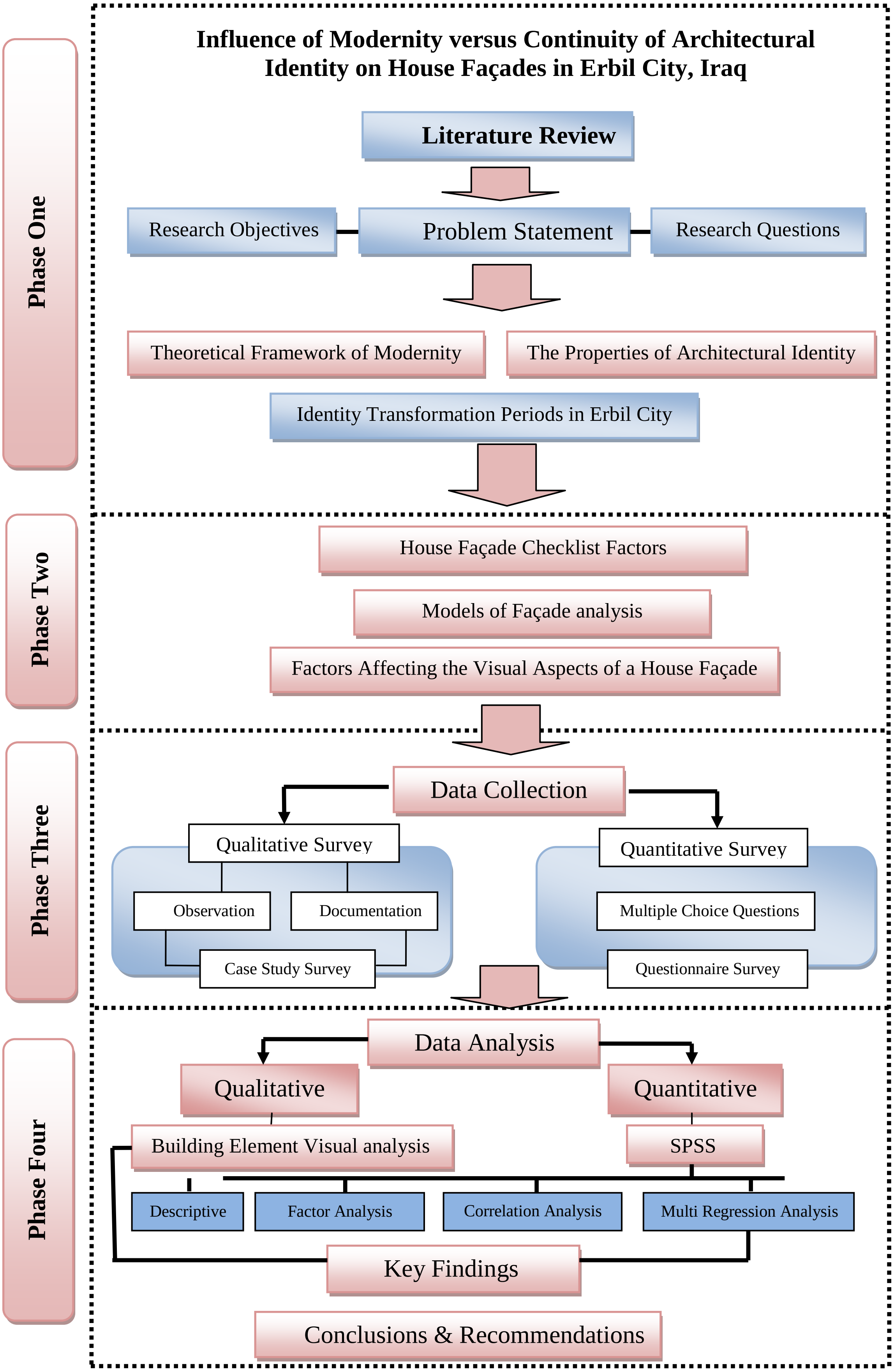


Figure 1.2: Research Framework

1.10 Structure of the Thesis

This study is organized into seven chapters as follows:

Chapter one is an introductory chapter presenting general information about the study background and discussing previous related studies grouped into four approaches namely: philosophical, descriptive, analytical, and empirical approaches. It outlines the research questions, the research objectives, the scope of the study, research framework, and the organization of the study.

In chapter two, through a literature review, the concept of modernity and its indicators will be defined, analyzed and investigated from different point of views. The chapter also presents periods of modernity, discusses the modernization theory and summarizes a theoretical framework for the concept of modernity in architecture.

Chapter three discusses the idea of identity as a phenomenon in architecture. It illustrates the operational definition for architectural identity and clarifies its main properties. The chapter crystallizes the characteristic features' transformations in different periods of Erbil city evolution and discusses the traditional elements of cultural identity.

Chapter four intends to formulate house façade checklist factors. It presents a review of house façades and discusses factors affecting the design of house façades. In addition, it examines and evaluates the proposed architectural models in measuring and analyzing building visual elements. Finally, the study develops a comprehensive framework of the most effective parameters for visual analysis.

Chapter five presents the research methodology and describes the pattern of methodology that will be used in each part of the study. It provides information on sampling methods, data collection strategies and, finally, gives an acceptable explanation for methods of analyses that will be used in the next chapter.

Chapter six presents the overview of data collection and demonstrates the analysis of the results. The findings of the research will lead to the conclusions and recommendations.

Chapter seven presents the research conclusions and key findings. It attempts to validate the main assumption of the study and discusses the manner in which the study has answered the research questions. Also, it indicates the research contribution to measure the level of modern influence that has damaged the traditional building identity in Erbil city. Finally, it discusses the study limitations and proposes recommendations for future research.

CHAPTER TWO

A THEORETICAL STUDY ON MODERNITY IN ARCHITECTURE

2.1 Introduction

This chapter discusses one of the main keywords in this study "Modernity". There are two parts of the study in this chapter; the first part reviews the definitions of modernity, the periods of modernity in architecture and the sources of its motivation, whereas the second part clarifies modernity features through a bidirectional strategy:

a) Concept of modernity will be investigated from the architectural point of view, according to multiple attitudes and definitions to discover the key variables upon which the study depends.

b) Habermas' theory of modernization will be explained to introduce the important account of modernity. The aim is to identify the main features of modernity from the philosophical point of view.

Finally, this chapter covers the degree of change and summarizes possible values for the mechanisms of modernity achievement.

2.2 What is Modernity?

Modernity has multiple sources of origin and indications in history. Its fragmental nature, on one hand, and its constant search for progress and new forms, on the other, would give the impression of precluding any summarizing definition. According to Whyte (2004) modernity has several meanings, it means current and actual, as opposed to past or new in contrast to old. For Simon (2005), modernity is the period of the new. It expresses historical transformation across the range of disciplines, periods and locations by connecting the events, people and ideas of the past to construct an account of the meaning in the present. Hence, modernity is a period of constant transformation that affects all aspects of experience from science and philosophy to urbanization and state bureaucracy (Colquhaun, 1985; Handa, 1999; Simon, 2005).

Scholars proposed that modern literature began with Boethius in the fifth century, modern astronomy with Copernicus, modern philosophy with Descartes, and modern physics with Newton theory. For other scholars, modernity is fundamentally a condition of the twentieth-century (Hvattum & Hermansen, 2004). The American cultural critic Marshall Berman (1994) argues that:

> *" To be modern is to find ourselves in an environment that promises us adventure, power, joy, growth, transformation of ourselves and the world – and, at the same time, that threatens to destroy everything we have, everything we know, everything we are….."*

The central claim of Berman's argument is that to be modern is to be confronted with disruption and change (Berman, 1990, Yoon, 2003; Whyte, 2004, Simon, 2005). On the other hand, Berman's notion of modernity also defines it as a period of continual transformation, clarifying that the "concept of modernity expresses the belief that the future has already begun; it is the epoch that lives for the future, that opens itself up to the novelty of the future" (Berman, 1994).

Zein (2004) explains modernity in terms of challenging forces, by consolidating Marcel Gauche's argument that modernity characterized as the historical challenge of moving from a received order to a produced one. The study emphasizes that modernity is a quest for which there are no ready-made formulas. Modernity is not a translation of pseudo-truths excerpted from other realities that is the source of all disruption, but rather is a changing force to accept and make use of for its occasional benefits. Finally, Heynen (1999) classifies the concept of modernity within three attitudes: the first attitude refers to the present as the opposite of the past; the second attitude refers to the notion of new in contrast to the old; and the final attitude is transient. Hence, the current, the new, and the transient: all three of these attitudes describe the concept of modernity.

2.3 Periods of Modernity in Architecture

Architecture has passed through different epochs. Each period has its distinctive features due to its philosophical background and historical evolution. To discover the influence of modernity on each period, the study will seek and find the seeds of modernity in each phase. For the purpose of this study, these periods are classified in three categories according to most theorists' classifications of architectural history and theory (Nesbitt, 1996; Jencks & Kropt, 1997; Rowe, 1998; Vidler, 1998).

2.3.1 Modern Movement Period

The modern movement of architecture was a revolution that destroyed the existing classical architecture and replaced it with a new order (Peter, 1994; Khanuddin, 1998). The starting point of the modern movement returns to the democratic movement and industrial revolution (Scully, 1975; Peter, 1994). It was a new style that came into view in many Western countries with its fundamental concepts of "rational" use of modern materials, the principles of functionalist planning, and the rejection of the historical model. Figure 2.1(a & b) shows the international and local samples of modern movement in architecture.

In general Bauhaus influence on modern architecture was prominent. The Bauhaus, as the chamber of the avant-garde, gave the modern movement a philosophical as well as practical ground in the early twentieth century. Accordingly, concept of modernity is developed in the work of five masters of modern architecture namely Walter Gropius, Le Corbusier, Mies van der Rohe, Alvar Aalto, and Utzon.

Molnar (2005) defines modern architecture as the architecture of functionalism to fashion a new sense of space supported by new technologies and modern materials. The modernist motto of "form follows function" prescribed that the form and appearance of buildings should grow out of their applied materials and structural engineering, and called for the desertion of ornamentation. It requires harmony between function, technology, and artistic expression. For Vidler (2000), modern architecture is that which represents space and form abstractly and avoids the decorative and constructional codes of historical architectures.

Moreira (2006) argues that the spread of modern architecture all over the world was a complex phenomenon that cannot be reduced to a single and continuous path. Modern architecture also legalized national culture to be framed and originated in new ways since the time that its abstraction and universality broke with the main historicizing styles (Khanuddin, 1998; Morris, 1994). Finally, modernity in the period of modern movement can be crystallized into three principal themes: Memory, Expression, and Morality (Gibson, 1984).

(a) Villa Savoy (International) (b) A House in Azady Sector-Erbil city.

Figure 2.1 (a & b): Samples of Modern Movement in Architecture
Source: (a) www.GraetBuildings.com (b) The Author

As a conclusion, modernity in the period of the modern movement in architecture is a passion for the new. It is a project of rejecting tradition to create new forms. It is an exploration of possibilities and a continuous search for uniqueness and individuality.

2.3.2 Postmodern Architecture Period

The great expectations of modernist architecture, industrialization of construction, prefabrication and functionalism interpreted into a macabre truth and indicated the failure of modern architecture (Jencks, 1991). Postmodern architecture was born out of a reaction to these failures (Venturi, 1992; Hutcheon, 2004). In the 1970s, a new generation of architects led by Venturi fought against the featureless nature of modern architecture. They planned to mix technological aspects of modernity and classical forms from history (Figure 2.2 -a & b). Postmodern architecture has also been described as "neo-eclectic" by returning the reference and ornamentation to the façade and substituting the forcefully unornamented modern styles (Jencks, 1990; Nesbitt, 1996; Venturi, 1996).

Postmodern architecture is a hybrid language with a positive approach toward metaphorical buildings, the vernacular, and a new ambiguous kind of space (Jencks, 1991). Postmodern architecture searches for various styles in different periods to become eclectic and involves a return to the past as much as a movement forward by employing new materials and resisting the uniformity of the International Style. For Nesbitt (1996), postmodern architecture addresses a crisis of meaning in the discipline of architecture. It is a sensibility of addition in a period of pluralism (Derani, 1994). In conclusion, the concept of Modernity in postmodern architecture can be clarified within the following three directions:

a) Renew the significance of historical typology using imitation strategy and emphasis on history as the main sources for creation.
b) The juxtaposition of multiple layers of traditional, contemporary and newly-invented forms to create pluralism in architecture.
c) Utilization of advanced technologies and readdressing the crises of meaning in architecture by mixing styles based on three main details: the context of the building, the variety of its function, and the specific taste of the culture of its users.

(a) Neue Staatsgalerie (International) (b) A house in Bakhtyari Sector-Erbil City

Figure 2.2(a &b): Samples of Postmodern Architecture
Source: (a)www.GraetBuildings.com (b) The Author

2.3.3 Post-Structuralism and Deconstructivism

Deconstructivism in architecture, is one of the developments of postmodern architecture that began in the late 1980s. It is illustrated by ideas of fragmentation, incomplete and twisted grids disoriented rather than organized, and dynamic forms (Kipnis, 1997). The visual appearance of deconstructivist styles is characterized by a motivating randomness and a controlled chaos. Deconstructivism in contemporary architecture rises in opposition to the well-organized rationality of modernism. The generation of deconstructionist architecture is not based on the physical matter of space, but rather on spiritual matter, which originated from the space concept of architecture. Therefore, the spirit of deconstruction is to see things with a critical eye and to have a worldwide vision transcending time and space (Jo, 2000; Burke, 2001; Yoon, 2003; Redhead, 2005). Geometry is the subject of complication for deconstructionist architecture, as ornamentation is to postmodern. Dematerialization in architecture is observed in deconstruction when the architecture ultimately frees itself from reality altogether(Figure 2.3-a & b). Form does not need to call for external justifications. In this dematerialized world of concepts, architecture is removed from its most intricate and complex element: space (Bruke, 2001).

(a) Denver Art Museum, (International)

(b) A House in Zaniary Sec. -Erbil City

Figure 2.3(a &b): Samples of Post-Structuralism and Deconstructivism
Source: (a)www.GraetBuildings.com (b) The Author

Modernity in deconstruction can be clarified within the concept of displacement that aims to break down or rearrange the characterized view of a building, revealing its inside formerly invisible aspects of its outside, rebuilding different modifications of space, forcing different means of access, and changing the principles of what it contains.

2.4 Modernity Motivations

Modernity is motivated by multiple sources; the most effective source for its manifestation is technology, which is the restless and accelerating process of transformation (Rasoul, 2003). For most architects technology means the fundamental tools for modernization. It is the continuous technical progress in science and technology that feeds as motivators to introduce new dimensions to social life and regular changes to the traditional cultures.

According to Berman (1982) the sources and motivation of modernity can be clarified as follows:

a) Great discoveries in the physical sciences

b) The industrialisation of production, which transforms scientific knowledge into technology

c) Huge demographic upheavals and rapid urban growth

d) Systems of mass communication

e) Powerful national states

f) Mass social movements of people

g) Variable capitalist world

2.5 Modernity Features

Modernity is understood in distinct ways by a wide range of authors and critics as a process of newness. Several inquiries have been made to clarify the characteristics of modernity. To summarize these inquiries, the features of modernity will be crystallized by adopting two different attitudes as follows:

2.5.1 Modernity in the Architectural Point of View

The most distinctive features of modernity, according to the architectural point of view (Figure 2.4), can be clarified as follows:

a) Capitalist Approach: One of the most distinctive features of modernity is the capitalist approach which is formulated through globalization as a means of integration. According to King (2004), the notion of modern was strongly fixed in the world through the rough relationship of colonialism and global capitalism. In this context, Burbach (2001) argues that globalization is a capitalist approach that refers to the process of modernization and is highlighted technologically by the information age. In view of that argument, globalization is the globalization of modernity that merges the logic of capitalist growth with the rapid development of anti-regional communication technologies (Tomlinson, 2003). Hence, modernity reflects the consequences of capitalist development.

b) New conditions distort traditional rules: According to Stern (1980), Modernism in architecture describes the need for a new production to distort the relations and formal rules of traditional knowledge. The goal of modernity is to use separate programs (regardless of the time and place) for buildings through globalization (Ibelings, 2002). Modernity aims to create comfortable environments without any connections to cultural backgrounds. Thus, modernity is always in conflict with tradition; it gives the present the specific value that makes it different from the past and points the way toward the future (Heynen, 1999).

c) Mode of power: Modernity is not a modification of the past, but a new form of human self-awareness as a mode of power (Berman, 1994). Thus, the features of modernity as a phenomenon can be clarified into two aspects: an objective feature that is related to socioeconomic developments, and a subjective one that is connected with personal experiences (Heynen, 1999).

d) Establishing New Rules: Through the investment of new technologies, transformation, physics, theories of life and communication around the world, modernity sets up new rules (Decq, 1990). It establishes change and crisis as values, to be the period of new, forming new rules and passing over any connections with the past (Heynen, 1999).

e) Form Phenomenon: The modernity is a various forms phenomenon and an intellectual context full of meaning, ramping up to chase behind and looks forward to new discoveries of the worlds (Giddens, 1991).

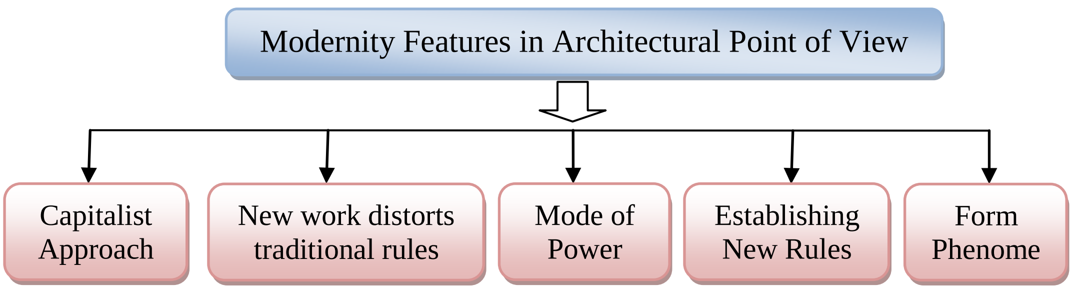


Figure 2.4: Modernity Features in Architecture Point of View
Source: The Author

2.5.2 Philosophical Point of View (Modernization Theory)

One of the most influential factors in architectural design is the philosophical approach. This section briefly sets out Habermas' social theory in relation to modernity to introduce the important account of modernity from the philosophical perspective. The theoretical writings of Habermas (as one of the most important and widely read social theorists in the post-Second World War era) are influential the concept of modernity, particularly with respect to the discussions of rationalization. His central question of modernity is how society should be organized; this question means the justification of social choices in a world of fundamental equal moral opportunity (Froomkin, 2003; Li, 2005; Bolton, 2005). The main feature of modernity according to Habermas' point of view (Figure2.5) can be formulated as follows:

a) Modernity is a Project: Habermas' title makes two points. First, modernity is a project rather than a historical period; second, this project is not completed. According to Habermas' historical analysis, modernization leads to the liberation of subjects from traditional roles and values. It aims to increase their dependence on communication and dialogue to harmonize actions and create social order (Finlayson, 2005).

b) Modernity is a Civilized Phenomenon: In the view of Habermas, modernity is a civilized phenomenon with various forms and intellectual contexts in multiple meanings, and it looks forward to new discoveries of new worlds. The phenomenon of modernity does not depend on the creation of crisis because they contain many elements, but often lead to tensions and explosions that may contribute to the resolution and accelerate the transformation of all (Afaya, 1998).

c) Modernity is an Event of Multiple Faces: Modernity has multiple faces and may combine traditional cultural elements with contemporary ones or re-draft the infrastructure of modern society. It may also mean the process of selecting elements of other civilizations or cultures. Thus, the theory of modernization, which references Habermas, separates modernity from its assets and applies it as a model of social developments (Afaya, 1998).

d) Modernity is a communicative discourse: Habermas' social theory is an analysis and critique of modern forms of social life, and in that discourse, principles are a justification and clarification of modern morality. However, modernity is more than a period. It designates the social, political, cultural, institutional, and psychological conditions that arise from certain historical processes. Modernity in this sense is related to, but distinct from, the various aesthetic works and styles that fall under the label modernism (Finlayson, 2005).

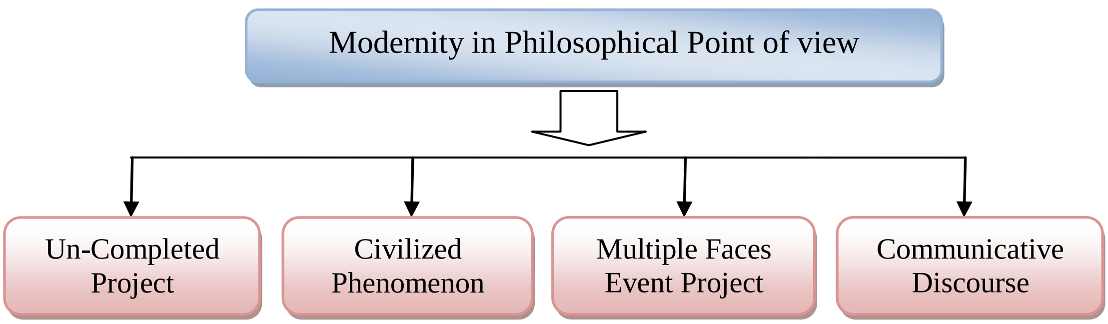


Figure2.5: Modernity Features in Philosophical Point of View
Source: The Author

In this thesis, the operational definition of modernity is described as a process of constant transformation. It is a course of action that creates new architectural forms through the process of change. Its continuous quest for novelty makes it different from the past and points the way toward the future.

2.6 Modernity Achievement Mechanisms

Modernity realization and its achievement mechanism in architecture can be conducted through the process of Adaptation and change. For the purpose of the study, these mechanisms will be clarified briefly.

2.6.1 Adaptation

Adaptation in architecture is a process that can be defined as the generation of a target model from a source model (Brawne, 1992). This concept has also been used to link the form adaptation and the architectural meaning as a maximum response to external and internal forces (Watson, 2002). The word transformation in the English language means the act of changing in form or shape or the appearance of an object (Hornby, 2005). Adaptation means a change of shape, form, or structure without a loss of substance. It involves two different steps: adaptation of material and adaptation of content (Hays, 2000).

The concept of adaptation is revealed by the fact that any system capable of working must be integrated and balanced to carry a special feature associated with its originals and distinguished from the rest. For that reason, Antoniadis (1992) defines adaptation through the visual analysis of the schemes on the grounds that the shift in architecture is physical and moral changes on the main sources. Hence, adaptation is a set of operations on a specified system to access another one, within three strategies: traditional formula, metaphor formula and deconstruction formula. On the other hand, Abel (1997) discusses transformation in terms of a straight adaptation. It is an interaction between different cultural forms, one imported and the other traditional. In contrast, for Ekomadyo (2007), adaptation is a process of exploring the origins of architectural form and reconstructing them in a new form that is adjusted with its related context. In light of the above attitudes, the process of transformation can be achieved through the following options:

i. Reshaping an object
ii. Changing its inner pattern
iii. Visual shifts by changing physical and moral aspects of form
iv. Straight adaptation and interaction between different culture forms

2.6.2 Change

Definition of modernity is radicalized to a new meaning, which is a process of change as it argued by Inglehart (2005) that it gradually becomes aesthetics of change for the sake of change. Hence, the change is the human intervention to shift the mores of cultural structure (Watson, 2002). Architecture, as a culture, is one of the objectives of this change. It has two types, preservation changes and destructive changes, the first leading to the stability of phenomena generation whereas the second trying to produce new types of phenomena. In this sequence, Kobler clarifies the difference between Ordinary Change and Purposeful change, and illustrates the idea of Purposeful change through the shifts taking place on scientific theories (Schulz, 1971). On the other hand, Chadirji (1995) discusses the concept of change through three poles: the need, the individual, and technology. The study classifies the first two factors under Ordinary change whereas he defines the third under Purposeful change.

Change can be classified into four levels according to the senior sociologist (Murdoch) in his study "How Culture Changes", explaining four main levels of renewal and change of a culture as follows:

a) Variation: It is a continuous modification of the existing model and a gradual change to improving the system specifications.
b) Cultural borrowing: It is the embodiment of historical and heritage features and their transfer to a contemporary form.
c) Invention: It is a displacement of the relations among the rules of the system.
d) Temptation: It is a rupture of traditional laws and a challenge to the prevailing system. It aims to establish a new system with new elements (Razuki, 1996).

Finally, the etymology of the word modern suggests that it comes from the Latin modus, meaning measure (King, 2004). Therefore, modernity can be clarified as the degree of change that the study will depend on in the next chapters. Accordingly the possible degrees of change as in Table 2.1 can be summarized in the following five categories:

Table 2.1: Degrees of Change as Measurable Scale for Modernity in Architecture

Degrees of change	Descriptions
No change	Copying the source without any modifications
Minor change	Partial change of system elements
Adaptation	Mixing the source with new elements
Major change	Changing the system relations
Total change	Altering the system rules and regulations

Consequently, the first degree of change can be likened to the copy and paste procedure, whereas the second, third and fourth changes are under transformation procedures and the last change is under the concept of rupture, which omits any relation with traditional sources.

Table 2.2: Theoretical Framework for the Concept of Modernity in Architecture

S	Parameters	Possible values	
1	**Modernity Aims**	To rebuild the existing body of knowledge	
		To change elements of a system	
		To change relations of a system	
		To change orders of a system	
2	**Concepts of Modernity**	Present as opposite of past	
		New as contrast with old	
		Transient as opposite of perpetuity	
3	**Modernity Motivations**	Great discoveries in the physical sciences.	
		The industrialization of production, which transforms scientific knowledge into technology	
		Huge demographic upheavals and rapid urban growth	
		Systems of mass communication	
		Powerful national states	
		Mass social movements of people	
		Variable capitalist world	
4	**Modernity Features**	Architectural Point of View	Capitalist approach
			Form phenomenon
			Process of newness
			Anti-Traditions
			Establishing new rules
		Philosophical Point of View Modernization Theory	Uncompleted project
			Civilized phenomenon
			Multiple faces Event
			Communicative discourse
5	**Modernity Achievement Mechanisms**	Adaptation	Reshaping an object
			Changing inner pattern
			Visual shifts
			Adaptation of cultural structure
		Change	Variation
			Cultural borrowing
			Invention
			Temptation

2.7 Review

This chapter addresses the theoretical framework of the concept of modernity in architecture as illustrated in Table 2.2. The first part of the study presented modernity definitions through different attitudes in the literature review. It provides a descriptive study on the modernity definitions and periods of modernity in architecture. Moreover, the second part of the study concentrated on the concept of modernity in architectural and philosophical viewpoints. Thus, the theory of modernization has been discussed intensely. These two directions have constructed a theoretical framework that contains modernity aims, concepts of modernity, modernity motivations, modernity features and modernity achievement mechanisms. Furthermore, this chapter clarified the degree of change and summarized five possible values of change as modernity achievement mechanisms. The degree of change in the theoretical framework will be used as measurable tools for the qualitative and quantitative survey in the next chapters.

CHAPTER THREE

THE PROPERTIES OF ARCHITECTURAL IDENTITY

3.1 Introduction

The chapter reviews current knowledge on architectural identity. It expresses the debates around the issues of identity in the theoretical perspective to introduce an operational definition for the concept and clarify its main properties. It discusses the key related issues to explore how these properties are related and how they affect the issue of identity in general and architectural identity in particular. The second part of this chapter reviews the modes of identity transformation and sheds light on architectural identity transformations in Erbil city.

3.2 What is Identity?

Based on literatures from social science and humanities, this inquiry of "what is the identity" leads one to a question of personality (who are you?). The question of identity is often interpreted to be a question about people's concepts of "who they are" and how they relate to others (Hogg & Abrams, 1988; Koc, 2006). Identity is a way of preserving the continuity of the self. It means lifestyle or life values that link the past to the present (Ozaki, 2005). It is a fundamental link with others to increase meaning, contrasting ourselves with others within a defined community (Giddens, 1991; Chadirji, 1995; Josselson, 1999; Bechhoefer, 2000).

Identity is a distinguishing character or personality of an individual (Deaux, 1992; Kuo & Margalit, 2010). It is a sense of who one is and what one stands for in the world (Sadalla & Sheets, 1993; Nasar, 1989). It combines one's meaning to oneself and one's meaning to others; it offers a combination between what one considers as central to oneself and how one is viewed by significant others in one's life (Leary & Tangney, 2003). In this sense, identity refers to the ways in which individuals and collectivities are distinguished in their social relations with others (Jenkins, 2003). Identity is a complex system that involves various determinants of political and social order. It is a kind of changeable network that grows until it either collapses or continues to adapt as a kind of "complex adaptive system" (Holland, 1995). In other words, it is a fundamental network that clarifies and investigates the diversity of human culture, society, and the overlapping systems of interactions organizing peoples' lives (Mann, 1986).

In conclusion, identity has a double meaning, both social and personal. In the first sense, identity refers simply to a social category, a set of persons marked by a label and distinguished by rules with characteristic features and attributes. In the second sense of personal identity, an identity is some distinguishing characteristics in which a person takes special pride and dignity (Akash, 1998; Fearon, 1999). In this regard, Castells (1997) distinguishes three kinds of collective identities: legitimizing identity, resistance identity and project identity. Accordingly, legitimizing identity is a preservation approach to extend and rationalize the society domination, whereas resistance identity is a form of collective resistance against the otherwise unbearable oppression. The third approach is related to building a new identity that redefines their position in society. Ultimately, identity refers to human beings' perception Therefore, it has two aspects: first, it is an instrument to keep control of people's mind, and second, it is a source of power for formulating new societies.

3.3 Architectural Identity Definitions

Architecture is one of the well-organized instruments in constructing and expressing identity. It appears as a preferred medium of expression that conveys an identity. It is a subjective and evolving concept, which is constructed under the direct guidance of power and culture (Popescu, 2006). It is a combination of the set of features in which a building is crucially distinguishable (Salama, 2002). Hence, architecture is a vehicle and an instrument of identity, it convey the features of identity as a vehicle and functions as a model to impose a certain image of identity as an instrument (Popescu, 2006). For Erem and Gur (2007) identity is “a syntactic series of meanings and images assigned to a legible space as a result of perception in mind". It is the special context and meaning of an environmental image that links with the symbolic characteristics of form. It aims to express the sense of essentials of cultural values (Lynch, 1960).

The issue of identity in architecture contains two broad concepts, as explained by Mehrotra *et al*. (2004). The first one is imagination, which related to the peculiar features of its origin and acts as the fundamental structure of identity. The second theoretical illumination of identity is an evolving process rather than a fixed entity. Hence, identity is not an accomplished project but rather a process of production that is never complete, always in a process, and always comprised within the representation. In this context, Woodward (1997) explains that identity is not a static or predefined concept but a flexible idea that can be significantly developed. On the other hand, Correa (1983) summarizes identity as a process of continuity. The development of identity is related to our real problems. It can be achieved by understanding ourselves and our environment. The search for identity gives greater sensitivity not only to the environment but also to the society of communities. It is a by-product of looking at the real problems rather than self-consciously trying to find identity as an end in itself (Correa, 1983).

According to Hall (1996), identity reflects the cultural heritage and cultural common codes. It is inclined to stability over time because, as a legacy, it has been selected and reinforced by many generations. Also, architectural identity has two conflicting vectors; the first is the vector of similarity and continuity, whereas the second is the vector of difference and rupture. Hence, architectural identity can be defined as a link between the past and the future. For Elkadi (2005), building visual elements has distinctive effects on the issue of identity. Accordingly, façades are very important factors in this process of creating the identity of a place. The aesthetics of façades guide architectural identity toward new horizons in the built environment. The arrangement of façade elements and their distinctive features serves to provide identity to the place.

3.4 The Properties of Architectural Identity

Discussions on previous sections of this chapter have clarified the notion of identity as a cultural phenomenon in general and architectural identity in particular. Ultimately, it provided an overall clarification for architectural identity. In this section, the study will derive variables and key indicators for the concept of identity by analyzing and investigating various attitudes related to the issues of identity in architecture. These investigations aim to construct different attitudes in a comprehensive way. The distinctive properties of architectural identity are as follows:

3.4.1 Vocation of the Place

Sense of place is one of the most vital issues of architecture. It is a multidimensional concept that incorporates the construction of architectural identity (Kyle & Manning, 2005; Bernardo *et al.*, 2007). It is associated with the feelings and perceptions that people have by experiencing a place to be an important component in architectural identity (Devine-Wright, 2007; Hernandez *et al*., 2010; Droseltis & Vignoles, 2010; lewicka, 2010). It can be described as an element of personal identity, as pointed out by Hernandez *et al.* (2007). Place identity is a component of personal identity that develops according to the elements that characterize a specific area and the nature of the place's interactions (Droseltis & Vignoles, 2010). Thus, the interaction with place guides people to describe their identity in terms of belonging to a specific place.

The meaning of the place is related to individual as well as to collective experiences. It is a reflection of the continuity and diversity of cultural identity (Bonta, 1979; Kelly & Hosking 2008). It is associated with the ability of the place to evoke human senses through qualities that make it distinctive from other places (Lynch, 1960). In this regard, Shuhana and Norsidah (2008) argue that places are formalized by three interrelated components in conferring meanings to places. These components are as follows: the physical setting, the individual's psychological and social processes and the place activities.

For Carmen (2006), time and space are the main references in forming architectural identity. Time is related to history and thus brings authenticity to the identity construction, whereas Space is related to geography, which grants the identity construction with an analytical spirit and suitability. Both approaches are founded on principles: time reinforces ideology whereas space prefers aesthetics. One calls upon the genius of history, the other, the genius loci. Consequently, places play a vital role in developing and maintaining self and group identity of people (Davenport &Anderson, 2005; Devine-Wright, 2009). It is an area designed to accommodate certain human activities. In the light of the above, place identity offers a sense of stability and continuity to create and conserve architectural identity. It is a process by which, through interaction with places, people express themselves in terms of belonging to a specific area.

3.4.2 Authenticity

One of the main properties of architectural identity is authenticity. This term means the “realness” of buildings (Cornejo, 2008). It is an undisputed prototype, an archetype and a master-piece of architecture (Theodoraki, 2007). There are two different conceptions of authenticity in architectural identity, the first related to self-expression and the second associated with credibility (Cornejo, 2008). According to Taylor (1989), the concept of identity refers to one’s sense of authenticity, whereas for Boyle (2004), authenticity appears as a kind of arena of meanings, an event adaptable to the most varied situations.

On the other hand, Cornejo (2008) argues that authenticity is a cultural value that arises as part of the process of formation of the modern individual. It is a reactive power to form our cultural identity as an oppositional nature that will constantly appear in the form of resistance. In contrast, Huyssen (2006) explains that authenticity in architecture is a mode of nostalgia to form our cultural identity. In the light of the above, Authenticity in architecture is related to the interpretation of its direct aesthetic skills. It can appear as a vehicle to bear meanings and to serve as a supporting role in framing social dramas (Benedikt, 2001) and, therefore, the analysis of authenticity is related to the subjective views of people more than to the material values embedded in the object. Hence, authenticity is considered as one of the most important moral forces of architectural identity.

3.4.3 Symbolic Function

Architecture symbols are the resources to understand the identity of a culture. The symbolic representations of identities are materialized through items such as dress, architecture, and arts (Jones, 1997). Symbols have a significant role in creating identity (Hershberger, 1970; Eco, 1980). They refer to the moral aspects of meaning in architecture. Thus, the most impressive relationships between society and environment relate to the symbolic function of architecture. These relationships aim to set up and emphasize the physical and moral aspects of identity. In this manner, the symbolic representations of identity relates to its meaning because identity formation, as defined by Jenkins (2003), is an ongoing process that includes and covers the diversity of experiences and attitudes of society members.

In other words, the concept of the symbolic function of architecture is similar to the formation of personal and social identities. In the history of architecture there are various analogies and comparison between both concepts. Hence, the idea of architecture as identity emulates that of architecture as space or architecture as language (Jencks, 1990). The basic act of architecture is therefore to understand the vocation of the place (Abel, 1997). On the other hand, Mehrotra *et al.* (2004) argue that the discourse of symbolism and the idea of local are the two fundamental concepts to establish the relationship between architecture and identity. The dialogue of the symbol proposes that architecture become an instrument to understand the identity of a culture. Therefore, the process of identity construction is essentially about the production and transformation of power relationships. In conclusion, the symbolic function of architecture represents the moral aspects of architectural identity, and therefore architecture is a means of interpretation of cultural identity.

3.4.4 Process of Continuity

Identity can be defined as a process of continuity. As Hall (1998) explains, identity is a production that is never complete, always in process, and always constituted within representation. Accordingly, Castells (2004) argues that cultural identity is the process by which social actors build their own meaning according to cultural attributes. On the other hand, Correa (1983) explains that the architectural identity is a continuous process that can be developed according to the cultural transformations. In this regard, Welz (2005) cites architectural identity as the sense of continuity; it is self-constancy in the route of life changes. In contrast, Theodoraki (2005) argues that tradition is the evidence of the continuity of identity through time.

In other words, change and continuity are two opposite vectors of identity formation. The first pushes toward new horizons whereas the second tries to preserve its norms to produce a sense of locality. There are two types of strategies in dealing with the issues of identity in architecture: preventive and destructive policies. Preventive means reacting by way of control whereas destructive is reacting by the removal of everything that leads to identity (Saleh, 1998). Continuity in architecture is related to the conservation approach. This approach concretizes the need to certify continuity by preserving existing signs. In this sequence, the formation of identity relies on the idea of locality. It aims to bind the culture, the climate, and the lifestyles together and use these as a basis for urban form. In conclusion, the process of continuity is one of the most powerful properties of architectural identity. It intends to link the past (the idea of local) with the present (the concept of contemporary).

3.4.5 Privacy

The term “privacy” is strongly connected to the issue of identity because one of its major functions is to serve the individual’s self-identity by creating personal boundaries (Altman, 1975; Westin, 1967). It is an interpersonal boundary-control process that aims to regulate the interaction with others (Witte, 2003). Privacy in individuals is achieved and regulated by the creation and controlling of interpersonal boundaries.

According to Georgiou (2006), the idea of privacy as a characteristic of the built environment coincided with the beginning of civilization as a mode of personality. The protection from the environmental conditions was the fundamental needs of human societies. These needs produced the architectural place that providing both security and privacy for societies. Based on Witte (2003), architecture intends to meet people’s need for privacy by enhancing the concept of personal space within built environments. Therefore, privacy is not only a physical human need, but it has different multiple layers connected to the issue of architectural identity. Consequently, architectural privacy can be formulated as a diagram of relations between different defined spaces (Georgiou, 2006). It can be defined as a static, inherent property that has different kinds of spaces (Robinson, 2001). The relation between spaces and its special organizations will guide the creation of a model of architectural identity (Malhis, 2003). Based on this model, architectural space and its different elements operate as regulators of privacy (Witte, 2003). Therefore, spaces with their spatial borders can function to either separate or bring together other spaces. This procedure adopts architectural communication and affects the language of its inner pattern.

In other words, visual privacy as in Figure 3.1 is one of the major factors affecting the visual aspects of architectural identity. The impact of religion on constructing the cultural identity is very significant and is essential for understanding the needs of the individual for privacy (Mahgoub, 2007). Based on past architecture, and particularly residential buildings, the use of traditionally-covered window openings (*mashrabiyya*) is a social device to provide visual privacy and formulate the visual aspects of architectural identity (Asfour, 2004).

Figure 3.1: *Mashrabiyya* as a Mode of Privacy in Islamic Architecture
Source: Asfour (2004)

3.4.6 Diversity

Diversity is another powerful force of architectural identity. It creates differentiation integration between multiple societies (Noschis, 1999). According to UNESCO "The cultural wealth of the world is its diversity in dialogue". It means that cultural plurality and cultural identity continue each other in a reciprocally strengthen method. In this regard, Elkadi and Kuchler (2008) define cultural diversity as a living and renewable treasure. It provides power for expression, creation and innovation that contains two obvious perspectives in culture dialogue: the first calls for the continued confirmation of beliefs and practices grounded in a homeland, whereas the second supports innovations in traditions in which diverse cultures come to share both the advantages and objectives for securing a better future (Elkadi & Kuchler, 2008). In this regard, Noschis (1999) defines cultural diversity as the organization of human groups in their shared conception of morality to interact with their environment. This interaction will identify them as belonging to a specified group.

In other words, diversity aims to set the environmental preferences in conformity with local traditions and conventions. In this sense, Steemers and Steane (2004) argue that diversity aims to organize a dynamic environmental approach with the spatial and social intentions. It intends to ensure that the architecture presents a series of suitable and motivating settings that vary over time and space. It is the articulation of environmental inclinations in accordance with local traditions and conventions. For Lahoud (2008), architectural heritage is thought to be a physical manifestation of cultural diversity. It expresses the nation's image and identity to provide the main components of a nation's character.

3.4.7 Climate Consideration

Climate has a crucial impact on identity formation. It is a fundamental factor in shaping architectural identity. The environmental variables have a significant influence on place meanings because climate is a nested structure in places; it constructs the functional use of a place as well as its meanings (Knez, 2003). It is interesting to note that building materials play an important role in response to the climate consideration. It connects man to his ancient origins in the process of identity formation. Climate is one of the major factors in the formulation of regionalism (Saleh, 1998). The environmental response to the climate is a key factor in reflecting the physical and moral aspects of architectural identity (Mahgoub, 2007). In this regard, Asfour (2004) explains that the most essential technique in adopting traditional ideas in a subtle way return to the orientating spaces with respect to climate. This point means that climate consideration has a major influence on the construction of architectural identity.

Architecture as an image reflects two issues. The first is paying respect to the local environment, whereas the second is a response to its authentic characters. The homogenization of climatic, social and economic factors plays a large role in constructing architectural identity. In this regard, Lim (2003) explains that the idea of contemporary vernacular aims to reveal tradition’s responses to spatial arrangements, place and climate and thereafter to construct these established and symbolic identities into creative forms. Hence, climate consideration is a vital factor in architectural design because environmental consciousness is increasing all around the world. It aims to restore identity and harmony with the surrounding environment by introducing traditional values in a subtle way within modern imaging.

In light of the above concept, the operational definition of architectural identity can be formulated as follows:

Architectural identity is a power of expression that reflects the visual language of building façades. It intends to symbolize a set of physical and moral cultural values to reflect the characteristics of the human existence within a society or a particular environment. Its values are derived from the authenticity of its cues that typify architectural composition by using visual elements.

Architectural Identity covers cultural continuity to create differentiation and integration between multiple societies. Thus, the physical image of identity may take variable frameworks across time and space, but the way of understanding the meaning of identity remains clear, according to our perception of the architectural forms. In other words, the architectural identity (Figure 3.2) does not rely on the material composition and form of the building only, but it is also linked to the concept of the meaning, which represents a significant interaction of human values with spatial characteristics.

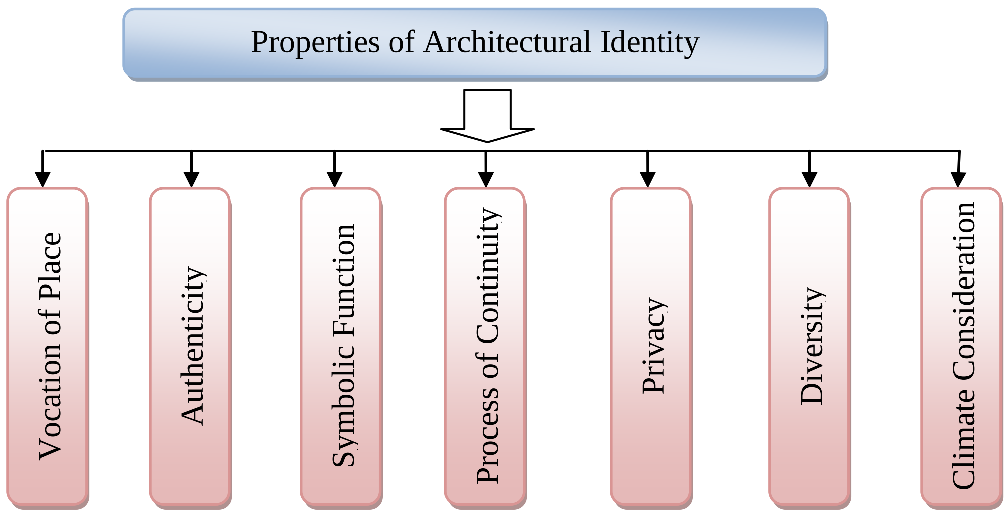


Figure 3.2: Summary of Architectural Identity Properties
Source: The Author

3.5 Elements of Cultural Identity

The cultural identity is a responsible attitude toward the local traditions. Also, it is essential to the extent that culture is not a gift from our ancestors. Salama (2007) explains that visual aspects include a number of physical characteristics that define objects and their relationships in three-dimensional settings. The visual language and visual cues dominate the issues of identity in architecture. Therefore, the interpretation of the visual environment is a complex process that involves the interaction of human physiology, development, experience, and cultural values.

In this sense, Hillier (2007) argues that duality in a building can be clarified into two directions: the first is related to the physical form and its relation with the spatial form, and the other spans bodily function and socio-cultural function. The relationship between the two is that the socio-cultural function occurs from the ways in which the forms and spaces are elaborated into patterns. By the elaboration of space, a social domain is established as a living environment and represented as significant identity. In the light of the above and based on Al-Badri (2003), the key elements of cultural identity are as follows:

a) Symbolic: The symbolic aspects refer to the direct or indirect meanings of architectural objects.
b) Public: Sharing behavior among community members and particular way of thinking and expressing their views in common.
c) Acquisition: Culture is a field of ideas, feelings and beliefs that the members of the society inherit, which means self-identity of the community.

d) Communication: The members of the society depend on culture in the process of reorganizing the changes taking place in the world; the proliferation of devices, equipment and technology and their use by persons of different cultures mean the impossibility of the survival of a culture.

3.6 Modes of Identity Transformations

Generally, transformation in architectural identity can be classified into two directions, preservation and destruction. The first refers to stabilization forces whereas the second is related to changing forces (Al-Badrani, 2008). The concept of transformation is defined as a link between the Form variation and Architectural meaning as a maximum response to external and internal forces (Abel, 1997). Internal changes occur within the structure of identity through the development of physical infrastructure, whereas the external forces affect the structure of identity through the influence of architecture intellectual trends and new technologies (Baker, 1996).

The dynamics of identity refer to the phenomenon of change in society. Social change is a crucial factor of identity change because power relations are the fundamental elements of society structures. Thus, any change in these relations will have an effect on the oppositional elements of the identity and their interrelations with other elements. In this regards, Todd (2005) classifies six modes in transformation of identity (Table 3.1) which are:

a) Reaffirmation: It is a resistance option that reaffirms the existing core by introducing new elements into the identity structure. These elements contain the previous experience of successful social interaction.

b) Conversion: It is a combination between old and new when the symbolic grammar embedded in the new order in a form of conversion.

c) Privatization: This option rearranges the elements of identity, decreasing the core of identity into the private subject.

d) Adaptation: It is the acclimatization of the practices in the new social order without changing the core elements of the original identity.

e) Assimilation: It is the regulation of the identity elements, passing over the old social order to place another in the center of identity.

f) Ritual appropriation: It is a partial change in practices that are integrated within old forms and ritual structures. It endeavors to insure the continuity of meaning despite changes in practice.

Table 3.1: Summary of Direction of Change in Collective Identity Categories
Source: Todd (2005)

S	Items	No Change	Partial Change	Total Change
1	Transparence and coherence between practice and category	Reaffirmation	Assimilation	Conversion
2	Ambiguity and tension between practice and category	Adaptation	Ritual appropriation	Privatization

3.7 Identity Adaptation in Erbil City

Architecture in the ancient city of Erbil passed through rapid adaptations during its evaluation periods. These adaptations occurred due to the influence of political, economical and cultural factors. The interplay between these factors creates continues modifications in the visual appearance of its house façades. Based on literature review, modernity is the primary force that affects the issue of identity in architecture. It affects the privacy of local communities and thus promotes the ideas of the liberation of the formal construction and adopts a method of intellectual image. Following sections clarify the historical background of the city and classification of identity adaptations periods in Erbil City.

3.7.1 The Historical Background of Erbil City

Throughout its 6,000 years of urban civilization, the Erbil city architectural tradition has been categorized by architectural principles that highlighted the building with nature (Pavelka et al., 2007; HCECR, 2009). The Citadel Town of Erbil (Figure 3.3 and Figure 3.4) is a remarkable elevated settlement that has been inhabited continuously for millennia. It is one of the oldest continuously inhabited cities in the world. The Citadel played a very great role in the history of the Erbil city, for many centuries it was the city (McDermid, 2010).The historical documents proved that the Citadel passed through three spatial changes, namely:

1- The citadel was the city.

2- The citadel was the largest section of the city.

3- The citadel is a part of the city.

Figure 3.3: Erbil City Satellite Image -2010 with Circular Ring-roads
Source: Ministry of Municipalities and Tourism -KRG

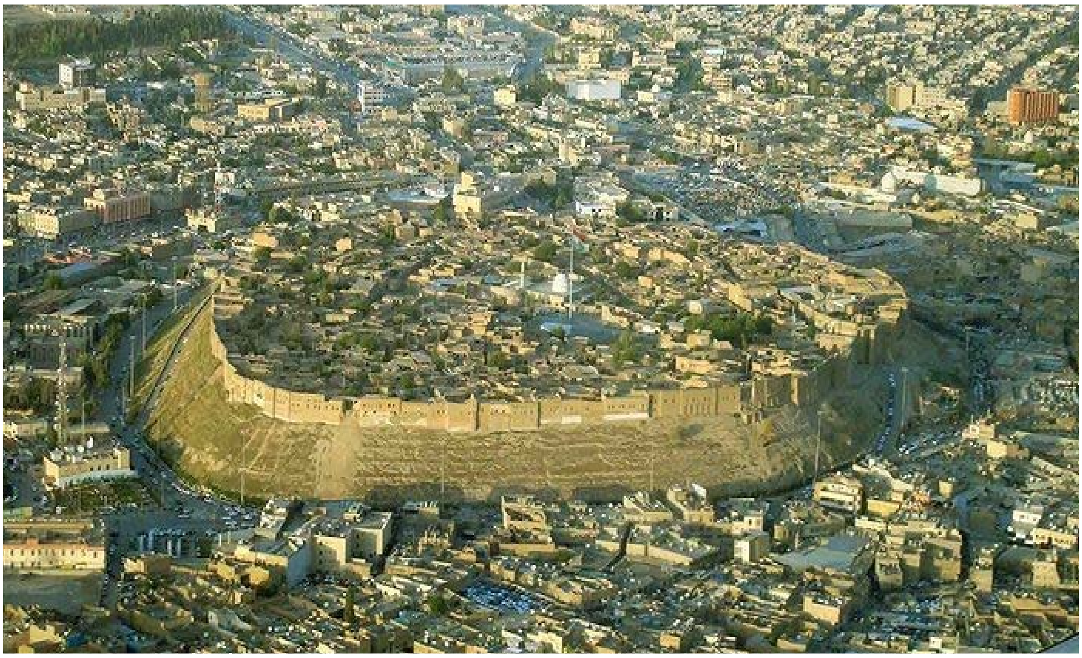


Figure 3.4: Erbil City Citadel Aerial View
Source: HCECR, 2009

Despite the lack of reliable historical sources refer to the period of time that the citadel was the city, but it is possible to imagine that it returns to Ottomans authority from 1638 (Al-haidary, 1983). The citadel was the fundamental core of the city. It shapes the city structure especially the ring road networks. It can be considered as a crucial reason for the continued survival of the Erbil City. Based on UNESCO's shortlist of possible new world heritage sites, the Erbil Citadel is described as "one of the most dramatic and visually exciting cultural sites not only in the Middle East but also in the world."

According to Pavelka *et al.* (2007) the archaeological finds proved layers of Assyrian, Akkadian, Babylonian, Persian and Greek Pre-Arabic settlements in the Citadel City.

Some archaeologists believe that the site has been settled in since the Neolithic to Mid Bronze age period 6000-1500 BC (HCECR, 2009). Correspondingly, assumptions indicate that Erbil was inhabited nearly 6000 years B.C. and it is still inhabited. Moreover, the historical documents from Sumerian times (2500-2300BC) furnish the earliest facts on the site, but the occasion began much earlier. The ancient city dominations a great mound, surmounted by a fortress. The people or Erbil could withstand attacks by remained in the region (Grant, 2004). In conclusion, the mainstay of Erbil city evolution relates to the citadel city as a core of its structure. It is interesting to note that Erbil (Figure 3.5) is a commercial, cultural and administrative centre of the Kurdistan region, Iraq (Pavelka *et al.*, 2007).

Figure3.5: Maps of Erbil City, Iraq
Source (www.media.economist.com/images - 2008)

3.7.2 The Classification of Identity Adaptations Periods in Erbil City

The Adaptation of house façades characteristic features in Erbil city is one of the remarkable changes in its visual scene. The city passed through different changes due to the influence of political, economical and cultural alterations. On the other hand, the internal trends toward modernization and the contribution of foreign architects' in Erbil city reconstruction programs are additional factors in its architectural identity adaptation.

In general, several factors affect the process of architectural identity classification. These factors are contributed directly or indirectly in shaping the morphology of house facades. For the purpose of the classification and in order to crystallize the architectural identity adaptation periods in Erbil city, the study relies on following factors as pillars in the process of categorization. These factors are as follows:

1) The political power situation and its effects on the city evolution
2) The economic developments
3) The social distribution and population demographics
4) Gradual development of the city sectors in terms of horizontal proliferation
5) The regularity of Erbil city master plan in terms of circular extension of ring-roads (e.g., Citadel ring-road, 30th m ring-road, 60th m ring-road)

In light of the above factors, the periods of architectural identity adaptations in Erbil City is formulated as follows:

3.7.2.1 Traditional Period before 1930 (Pre-Modern Period)

Traditional ancient city of Erbil is one of the oldest continuously inhabited urban settlements in the world (Grant, 2004; Yildiz, 2004). The distinctive architectural features of the ancient city (Figure 3.6) can be recognized as a vast complex of buildings and narrow streets enclosed by town walls. In this regards, HCECR (2009) explains that the citadel town of Erbil is largely occupied by traditional courtyard houses reached through a maze of narrow alleyways.

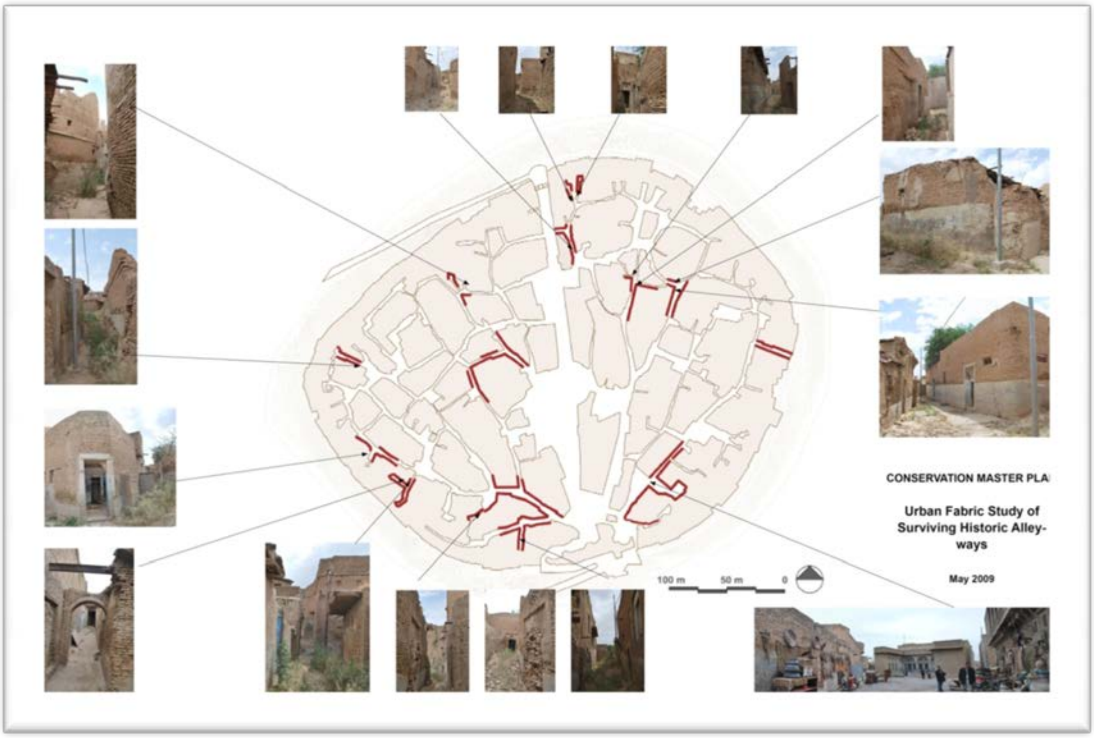


Figure 3.6: Documentation of House Façades in Urban Fabric Alleyways
Source: Conservation Master Plan-Erbil City, 2009

Most of the houses are courtyard houses built of mud walls, short span timber roofs and mud roofing. The Citadel courtyard which is usually enclosed formulates the most affectionate and secure of outdoor spaces, for its most related space between outside environment and the house (HCECR, 2009). The characteristic feature of house façades can be defined as hardness solidity. Most of the houses are one storey units which characterized by thick walls and small openings in its façades (Al-haidary, 1983; Aljanabi, 1987). The majority of units built of mud bricks with clay mortar. Flat roof shape is the distinctive feature of house façade in this period (Al-Sanjary, 2008; Al-Naqishbandy, 2009). In spite of its limited width, the house façade (Figure 3.7) give the feeling of warmth, shelter, and comfort. They provide the most homogeneous environment within the street scene.

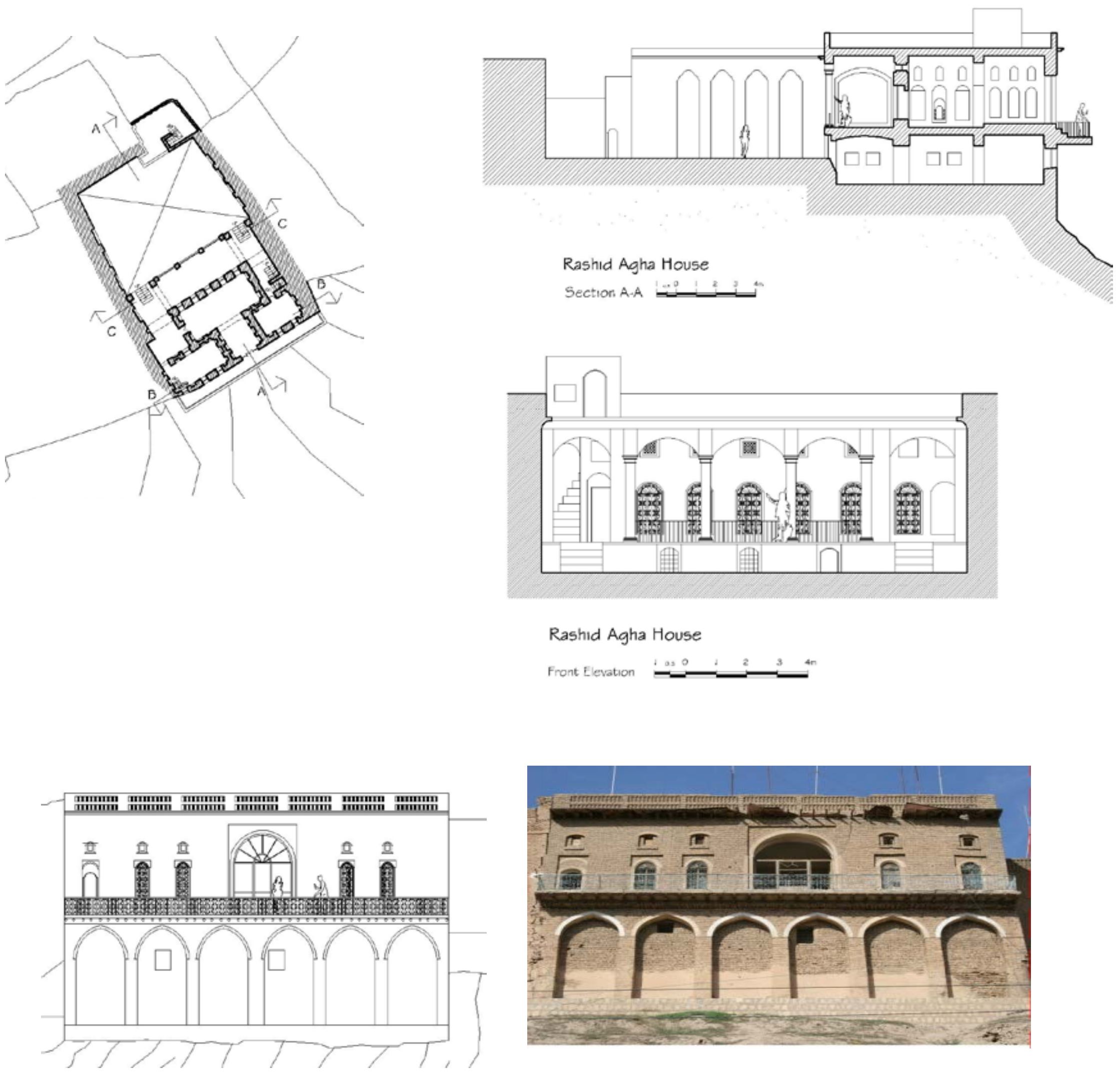


Figure 3.7: Documentation of Rashid Agha House inside Erbil Citadel
Source: Conservation Master Plan-Erbil City, 2009

3.7.2.2 Modification Period (Colonial Period) (1930-1980)

In the early twentieth century, especially after Britain occupations during World War I, a modern city was introduced as an instrument of colonial control. The industrial capitalism and its social and cultural effects provide the basis for notions of the modern (Gunter, 2004). New houses became visible within the lower town, in a new and distinctive style indicating a major departure from the tradition.

During this period, the population growth (Table 3.2) and changes in political, social, cultural, and economical conditions guide the City to be expanded spatially. The expansions take its course in a circular shape focusing on the citadel as a centre of the city. It is interesting to note, that new style of roofing techniques is adapted as an important structural change. The modern systems plan for innovative options for much larger spans, strength, and cause the abandonment of pure brick vaults and arches in buildings.

Table 3.2: Population Growth in Erbil City from 1947-1980
Source: Aljanabi, 1987

Census year	Rate of population growth	populations numbers according to census	Immigrations – or +
1947	2%	27036	-17517
1957	3.9%	39913	+5375
1965	10%	90956	+40132
1970	2.4%	101779	-3947
1977	9.6%	193588	+65839
1980	3.5%	209000	+1102

Furthermore, these modern systems provide the opportunity for using the large external windows, new paving tiles, doors, and plaster decorations. However, the internal courtyard continued to be used until it was totally disappeared in the 1950s (HCECR, 2009). New building material such as concrete block, reinforced concrete slabs, transparence windows, and paintings colors transformed the characteristic feature of traditional house façades (Figure 3.8). The new style of house façades creates the dichotomy between modernity and traditions (Al-Sanjary, 2008).

Generally, the characteristic feature of house façades in this period can be considered as simple forms with large openings, raised on a defined pedestal. These features are corresponded with the stylistic characteristics of modern movement in architecture.

Figure 3.8: The Style of House Façades in Modification Period (1930-1980)
Source: The Author

3.7.2.3 Transitional Period (1980-2003)

During this period Iraq has been subjected to years of sanctions, war and destruction. Ultimately, Iraq at the end of the last century was a poor country which suffers from devastating succession of wars and invasions (Stansfield, 2003). Erbil city was influenced by political conflicts in the region. Huge rural migrations towards large cities have been noticed. These rural migrations into urban centers eventually required some kind of urbanized built environment to accommodate them (Chadirji, 1986). As a result, rural builders who were migrants themselves took the situation into their own hands and filled the cities with their own concept of urbanization especially in term of visual appearance. Accordingly house façades (Figure 3.9) filled with different hybrid elements and affected the visual appearance of the city streetscapes. In contrast, the aesthetic value of house facades in poor districts is neglected and façades in most cases just covered the front side of houses without any visual considerations.

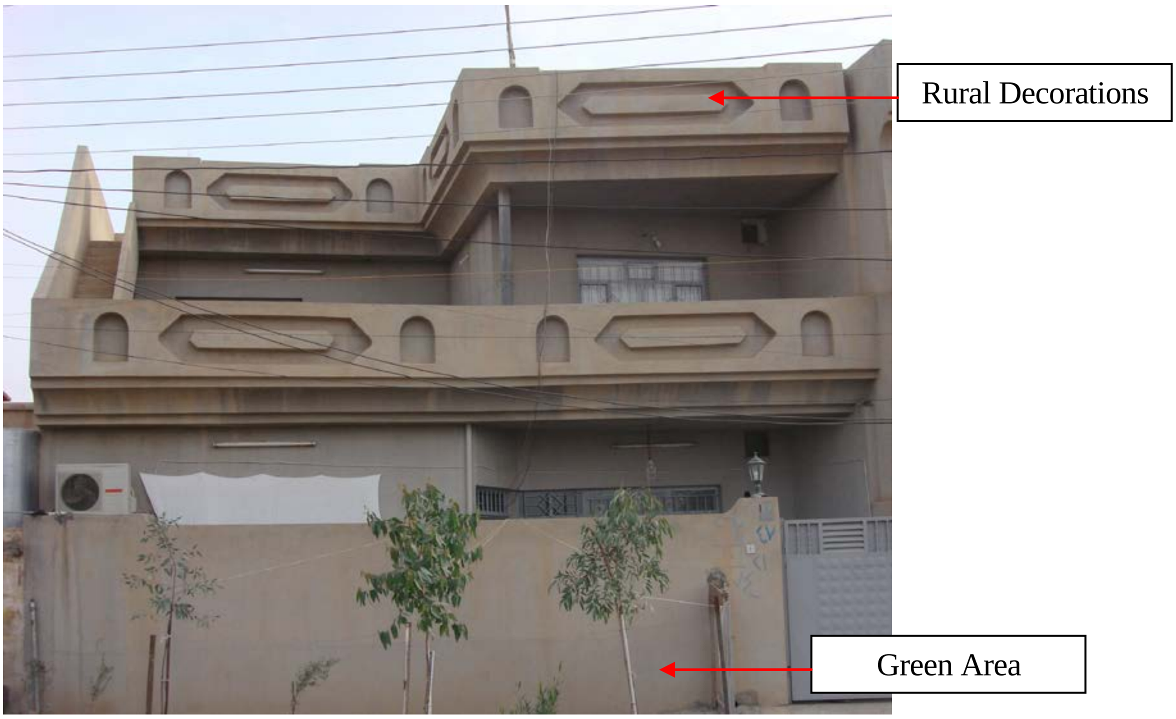


Figure 3.9: A house Façades with Different Hybrid Elements in Transitional Period (1980-2003)
Source: The Author

Since 1996, Erbil city was influenced by rapid economic developments as a result of revenues generated from the production and sale of oil under the implementation of UN SCR 986. Furthermore, the advanced payments for housing projects from governmental banks and provision of construction materials at low costs from governmental agencies urge inhabitants to build their own houses. This condition led to an extreme polarization in the visual appearance of house façades in Erbil city. On one hand it reflected the need to construct thousand of housing units for low income inhabitants. On the other hand it affected by the historical background of Erbil city and applies to produce nostalgia to a particular place.

3.7.2.4 Advanced Modernity Period (after 2003)

After liberation of Iraq in 2003, architecture in Erbil City has gone through major changes and passed through rapid transformations due to economic developments. Consequently, peace, relative prosperity, and democracy began to grow in the region (Gunter, 2004). This period can be described as golden era of the city evolution. Many of development projects have been constructed and the urbanization process reached its climax. The rapid growth of the construction and housing sector led to a state of contradiction in the architectural forms. Strange ideological orientations penetrated into the body of traditions. Most of the housing development projects reflected western concepts and passed over the local traditions. These approaches generate a state of confusion in architectural identity especially in term of visual appearance of house façades. The rapid economic developments create new lifestyle which affected the house built area as a result of new functional requirements.

Figure 3.10: Western Style House Façade in Advanced Modernity Period (after 2003)
Source: The Author

The increasing of real estate prices influences the houses built up area. Hence the concept of subdivision comes into view as a solution for low income people. This situation affected the visual appearance of house façade in term of proportions and produced new stylistic feature of multi layered units. As a reaction to what happened, local architects tend to search for the lost architectural identity in Erbil city and produce the architecture of admirable quality.

Figure 3.8: The Concept of Subdivision in Advanced Modernity Period (after 2003)
Source: The Author

3.8 Review

The literature on architectural identity is filled with the variety of definitions according to the diversity of the subject in the field of research and its different theoretical approaches. In spite of differences between the definitions, the study formulates a comprehensive framework including the most effective properties of architectural identity which are; Vocation of place, Authenticity, Symbolic Function, Process of Continuity, Privacy, Diversity, and Climate Considerations. The collection of these properties in one framework was the first contribution of the research.

The second part of this chapter presented modes of identity transformation and classified periods of identity transformations in Erbil city into four categories namely: Pre-modern period (before1930), Modification Period (1930-1980), Transitional Period (1981-2003) and Advanced Modernity Period (after 2003).

CHAPTER FOUR

HOUSE FAÇADE CHECKLIST FACTORS

4.1 Introduction

The objectives of this chapter intend to formulate house façade checklist factors. It aims to establish an appropriate model for visual survey and analysis. For the purpose of the study, this chapter is divided into three main sections. The first section reviews on house façades and factors affecting the design of house façades. The second section examines and evaluates the proposed architectural models in measuring and analyzing building's visual elements. The last section discusses the main parameters and key indicators for the study by combining the theoretical propositions in the current models with design guidelines for building façades. Furthermore, the study formulates a comprehensive framework by determining the most effective parameters and assigning each parameter a range of relevant values.

4.2 What Is a House Façade?

Façades are the exterior faces of a building (Knaack *et al.*, 2007). They are the most significant part of building's exterior image that shapes its cultural identity (Schulz, 1971; Rapoport, 1969). In other words, façades are the physical evidences for aesthetic evolution of the city as well as the effective aspects of architectural transformation (Elshahed, 2007). Generally, a house façade consists of three main zones: a base that connects the building with the ground, a middle zone with its openings, and the roof zone that connects the building to the sky through its silhouette (Moughtin *et al*., 1999).

Based on the findings of Gromlich (1989), the house façade incorporates various features produced from the arrangement of roof, openings, materials, and finishes. This study demonstrates that the main factors affecting the design of a façade are related to the composition, shape, texture, and color of its components. Consequently, the analysis of the formal structure of a house façade provides information relevant to understanding a house's identity because the socio-cultural performance of the façade is the indicator of a building's architectural value (Pellitteri, 1997).

4.3 Factors Affecting the Visual Aspects of a House Façade

Scholars in the field of visual analysis studies view the factors affecting the design of a house façade in different ways because of the variation in appearance and the arrangement of façade elements in urban environments. This section will review the relevant literature to identify fundamental factors of house façades in terms of aspects of architectural visual identity. Generally, a house is a cultural phenomenon; its form is influenced by climatic forces, site features, materials, and construction techniques. Therefore, the formation of the house is affected by the socio-cultural and socio-economic structure of a society, which contains many cultural traces of the past (Rapoport, 1969). The effect of culture on the formation of house design appears to be an important factor in shaping its façade (Sari *et al*., 2011).

From a different perspective, the powerful factor influencing building façades is the sensory value of ornaments as architectural details (Salingaros, 2003; Akalin *et al.*, 2009). Scholars conclude that ornament and decoration subdivide building façades on many different scales and directly influence the visual appearance of façades (Stamps III, 1999; Salingaros, 2003; Akalin *et al.*, 2009). The contrast between elements and the number of elements in the building façade are the fundamental factors for measuring the visual richness of a building façade (Moughtin *et al.*, 1999). In this regard, (Rapoport, 1990) notes that the measurable tool for visual complexity depends on the perceived number of elements in the façade and the degree of change in its components. The study concludes that visual complexity relates to the rate of changes in the noticeable differences.

Other authors clarify that the orderliness of building elements in house façades is an effective factor for determining the complexity of architectural form (Krampen, 2007; Nasar, 1983; Meiss, 2004; Niezabitowski, 2009). They note that the repetition, similarity, common enclosure, symmetry, and orientation of the building elements participate in formulating building façades. From a different perspective, the characteristic proportions of the windows, their positions in the wall, and their relationships to the solid areas tend to give a sense of coherence in architecture. Therefore, common scales, materials, textures, and openings are considered to be effective parameters for shaping architectural façades (Whang, 1998). Askari and Dola (2009) explain that architectural style, shape, decoration, and material are respectively the most important visual elements in presenting building façades whereas the effects of color and texture are secondary.

4.4 Models of Façade Analysis

The literature on architectural façades is described with models for measuring the degree of similarity and analyzing the visual elements of buildings. Despite the differences in theoretical approaches, the basis for analysis in most cases concentrates on the decomposition of larger wholes into smaller parts. Biederman's theory "Recognition by Component" provides the essential support for these approaches (Biederman, 1987). The theory describes the process of decomposition of overall mass into segments, as is usually performed in the field of architectural analysis. In this sense, Niezabitowski (2009) notes that decomposition of larger wholes into smaller parts is integrated with recent theories of visual perception.

Scholars in the field of architectural visual analysis show that the variety of façade elements and the diversity of their arrangement in urban environments have resulted in the multiplicity of attitudes (Marr, 1978; Niezabitowski, 2004; Martens, 2005; Wells, 2009). To formulate the checklist factors for this study, the most significant relative models in the architectural literature will be discussed briefly as described below.

a) Pellitteri (1997) suggests a tool for analyzing the figurative structure of architectural façades. The method starts by identifying the elementary shapes as area objects, followed by the analysis of the inner structure of the categories. The tool is designed to distinguish the equidistant, arithmetical and geometrical sequences of building façades. It aims to discover the symmetries that structure the façade image by clarifying the implied hierarchy through a thickness differentiation. As indicated in Figure 4.1, the analysis is done by testing the possible intrinsic symmetry. The procedure involves the comparison among number of elements, type of distance, and the direction of distance variations. The expected result is the verification of façade symmetry.

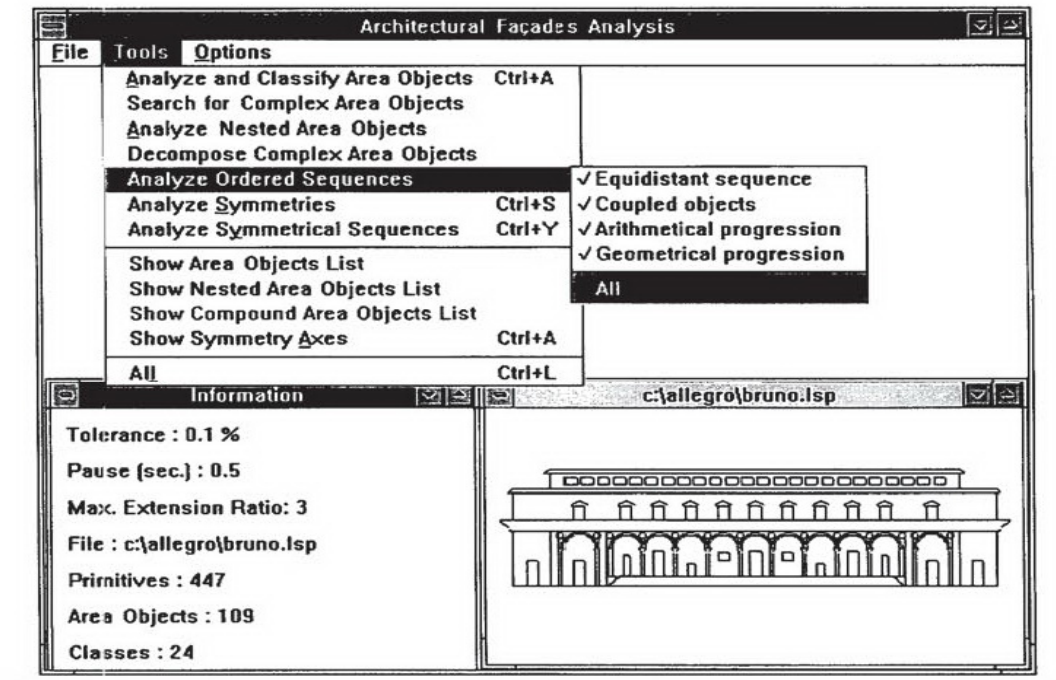


Figure 4.1: A Tool for Analyzing the Figurative Structure of Architectural Façades
Source: Pellitteri (1997)

b) Elsheshtawy (1997) proposes a model of analysis that includes three scales of decomposition: overall massing, secondary massing, and separation of elements such as openings (doors and windows). The model is formulated to analyze the streetscape components by breaking down the building façade in terms of massing and ornament. The most notable finding of this study is the functionality of the formal analysis to intensify the knowledge of the inner structure of building façades.

c) Malhis (2004) developed a mixed matrix method to describe the levels of variety between façades. The method consists of two main dimensions: i) formal basis, which addresses the proportion expressed in the main façade and its massing, and ii) stylistic features, which are related to elements expressed on the main façade. The combination of the formal basis with stylistic features produces a method of recording stylistic diversity in house façades. It is interesting to note that the study divides the house façade into remarkable elements to measure its visual characteristics. The measurements rely on various factors, namely: the basic structure, the articulation of basic mass, basic attributes, contextual relationships of piercings, decorative details, and stylistic features such as windows and doors.

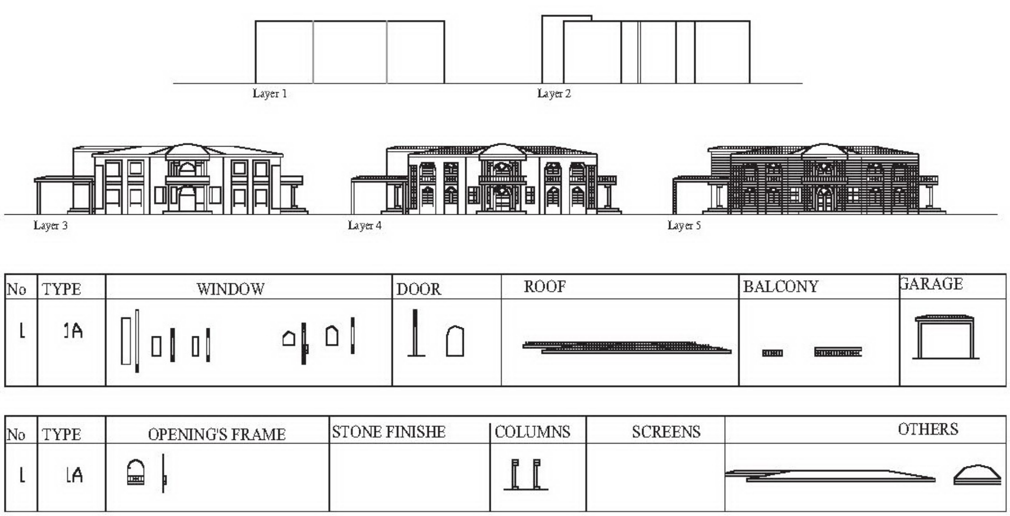


Figure 4.2: A Model of Decomposition Façade Layers
Source: Malhis (2004)

d) Hillier (2007) suggests a model of façade configurations as a part of space syntax theory to provide an integration analysis of shapes. The theory aims to retrieve some useful descriptions of shape properties in a consistent way. Façades as configurations are measured on two levels: first, as a structure within the shape and, second, as the organization of elements imposed on that shape. Thus, the form of a building includes the pattern of integration at more than one level. The study shows that the building connection with the ground line is considered a major factor in measuring the degree of façade regularity and integration.

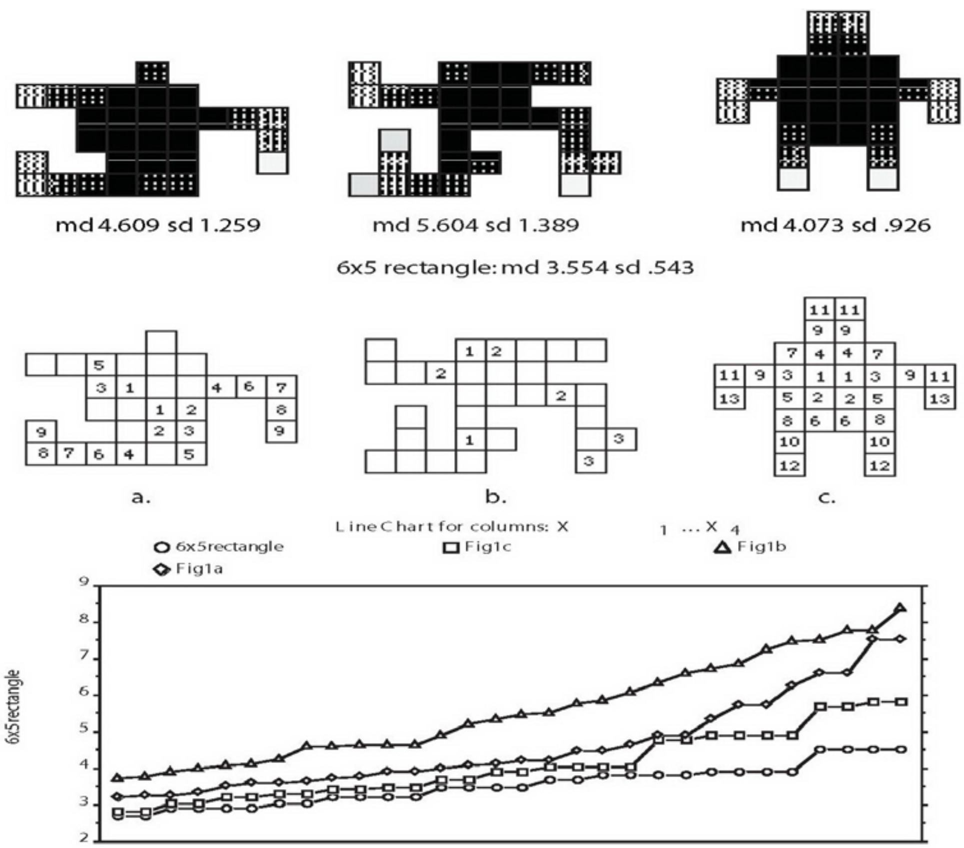


Figure 4.3: A Model of Façade Configurations as a Part of Space Syntax
Source: Hillier (2007)

e) Tucker and Ostwald (2007) use algorithms to study the visual properties of the built environment. The study builds on computer visualization to evaluate the visual character of house façades (only detached types). The method outlined in this study provides a fundamental basis for façade comparisons. It involves a two-step process. The first is a visual reading of the elements, and the second considers the patterns of elements in relation to others. The software, called *SCAPE*, uses the algorithm HT (Hough Transform) to establish the visual boundaries of an image. It aims to show the angle and distance of all pixels within a detected boundary from a prearranged source. Then the HT translates lines in the image into points, creating an array in the form of a diagram that can be compared with others. It is interesting to note that the method relies on the visual analysis of house façades. But the method needs to be developed to encompass other characteristics of building façades such as color, materials, and object recognition.

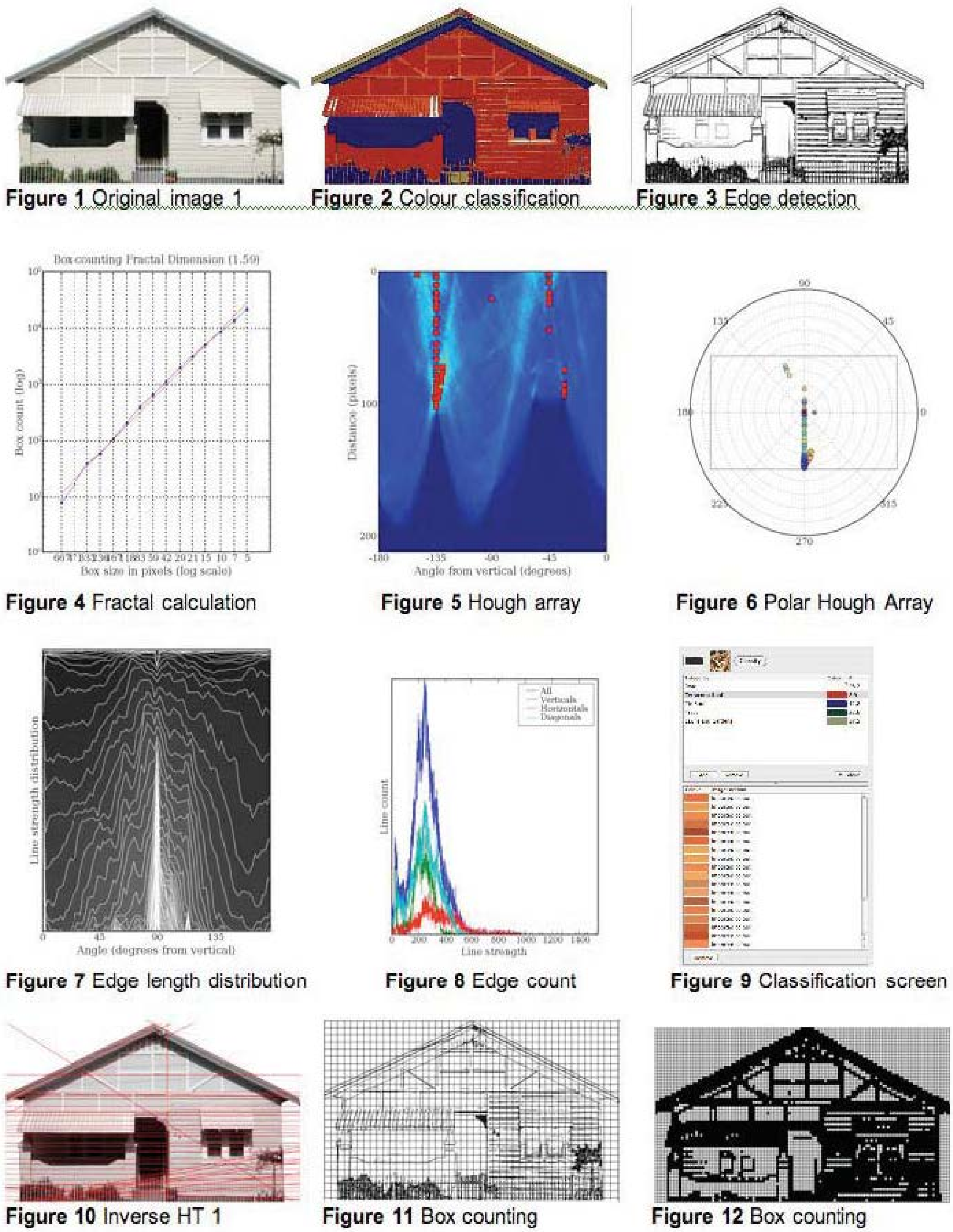
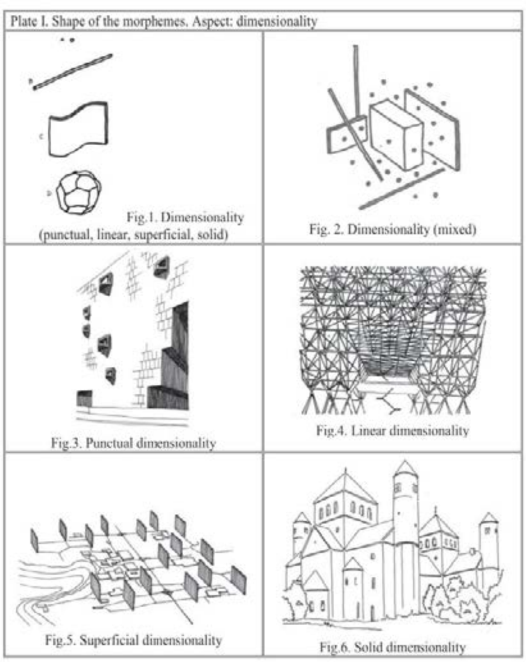


Figure 4.4: House Façade Analysis by *SCAPE* Software Using (Hough Transform)
Source: Tucker and Ostwald (2007)

f) Niezabitowski (2009), propose a system of exploring the architectural form (Figure 4.5). The model is subjected to visual analyses and comparisons in order to reveal fundamental elements, their characterizing features and relationships. The analysis based on the principle of hierarchical structure from elementary ones, to the whole architectural object. The study emphases on two types of analyses, the first is related to the morphology analysis considering spatial elements of the system and its features, while the second is syntax analyses investigating spatial relations between elements in one hand and between elements and the whole in the other hand. The main parameter of morphology analyses are shape, dimensionality and directivity while the main parameter of syntax analysis are constitutive features Complexity, differentiation and topographical features (orderliness, inclusiveness, substantiality, configuration, and zoning).



CARDINAL FEATURE	DESCRIPTIVE ASPECT / MODALITY	
Shape	Proportions of the main dimensions	1 : 1 : 1
		Other than above
	Dimensionality (perceptional reduction of some dimensions)	Linear
		Punctual
		Solid
		Mixed
	Geometrical quality	Geometrical
		Not geometrical
		Mixed
	Curvature	Curved
		Not curved
		Mixed
	Flexure	Oval
		Bent
		Mixed
	Articulation	See exp. in Table 1.1.
Absolute dimensions	Vertical dimension (height)	Small
		Medium
		Large
	Horizontal dimension 1 (width)	Small
		Medium
		Large
	Horizontal dimension 2 (length)	Small
		Medium
		Large
	Volume	Small
		Medium
		Large
	Area	Small
		Medium
		Large

Figure 4.5: A System of Exploring Architectural Form
Source: Niezabitowski (2009)

Considering the above, note that all methods tend to measure the degree of similarity between façades as well as provide an analysis of the visual elements of a building through the segmentation process. In term of design methods, the models are divided into two groups. The first group relies on computer programs to analyze the visual properties, and the second group uses an analytical decomposition approach to measure the visual aspects of building façades.

Most of the software programs for façade analysis are designed either for a very specific set of façades or to simply detect a particular feature of building façades. These software programs are in preliminary stages and need further development to be practical, sufficient, and applicable to the visual analysis of different cases. The vast variety of façade elements, features, styles, and patterns of arrangements motivated the study to develop new models to formulate the study checklist factors. The checklist factors will serve as a basis for qualitative and quantitative analysis in the following chapters.

4.5 House Façade Checklist Factors

To strengthen the theoretical propositions in the current models and to formulate the most effective parameters for visual analyses, the study relies on the architectural literature and on design guidelines for house façades. Most studies that address the issue of design guidelines for building façades focus on a set of parameters that directly influence the visual appearance. For the purpose of the study and to develop the theoretical proposed models, the following sections will investigate the most important parameters (dimensions). First, a general discussion of each parameter is presented, and then, each parameter is assigned a range of relevant values. Finally, all parameters are compiled into a comprehensive framework for visual analysis. The framework intends to be a model for evaluation and works as a basis for both qualitative and quantitative analyses. The most notable parameters of house façades are described below.

4.5.1 Mass and Articulation

Building mass is an essential parameter that plays a part in identifying a building's identity because it comprises all decisions affecting external architectural form (Akin & Mustapha, 2004). Several guidelines recommend that building mass reflect the functions of the building and respond to the scale of the surroundings by including major façade elements (Hudsonville, 2006; Missouri, 2008; Palo Alto, 2002).

Building mass is enveloped in its surface, which is produced according to the directing and generating lines of its surfaces (Corbusier, 1960). Accordingly, Chimacoff (1982) notes that regulating elements of massing is one of the rare design tools for representing the typology of a given geometric composition. Therefore, the composition of three-dimensional forms into a unified architectural configuration is the act of architectural massing (Akin & Mustapha, 2004).

Thus, for the purpose of the study and based on the architectural literature, the parameter of massing and articulation consists of several factors (Baker, 1996;

Burden, 2000; Palo Alto, 2002; Bell, 2004; Ching, 2007; Niezabitowski, 2009). These factors (Table 4.1) can be classified as described below.

a) Geometry of mass: Based on the literature review, geometry of mass is a crucial factor for measuring the regularity of building form. For Hillier (2007), the geometry of building mass is an indicator of its regularity, whereas Bell (2004) argues that geometry is a description of the shape comprising properties of simple, regular, straight lines. Fundamentally, there is a basic structure in each massing configuration that intends to express the essential elements through regulating lines (Akin & Mustapha, 2004). The measurement of geometrical quality is the ratio of geometrical elements to the total number of system components (Niezabitowski, 2009). Thus, the relevant values for this factor are pure, regular geometrical form; non-regular geometrical form; non-geometric (curvature) form; non-geometric (flexure) form; and a mixture of geometrical and non-geometrical forms.

b) Building envelope: The building envelope is the physical separator between the interior and the exterior environments of a building (Chew & Ping, 2003; Malone, 2004). The Oxford dictionary of architecture describes the building envelope as the external part of a building enclosing the interior spaces (Curl, 1999). Accordingly, Straube and Burnett (2005) argue that a primary function of the building envelope is to meet human desires. It should be articulated to reflect human scale, both horizontally and vertically. Depending on the extent of the subtractive and additive process, the envelope of a building can retain its initial identity or be transformed into another family of forms (Ching, 2007). The significant values for this factor are: a pure simple envelope, subtraction parts within the main frame, addition parts within the main frame, a hybrid envelope with subtraction and addition parts, and a multi-layered envelope.

c) Type of articulated façade (base, body, and roof): Based on design guidelines, building façades should be articulated with clearly expressed façade elements. The articulation of building façades plays an important role in determining the appearance of a building (Palo Alto, 2002; Nelson, 2004). According to Niezabitowski (2009), the articulation of a façade is accomplished by dividing it into segments, namely, base, body, and roof. The type of articulation and the common relationship between house façade components have a direct influence on the identity of the house. Hence, the articulation of the building façade should positively respond to the area's general features (Missouri, 2008). For Ching (1995), articulation is a pattern of designing the points where the visual aspects of the architecture join. Through levels of articulation, each part is incorporated into the whole by a joint. The collection of these joints creates a specific pattern of arrangement when each part is defined precisely and stands out clearly. Thus, the relevant values for this factor are: pure mass (non-defined parts), pitched roof with defined base, flat roof with defined base, pitched roof without base, flat roof without base, and other articulations.

d) Orientation of mass: Building mass is clearly related to the orientation of its surfaces (Uniwn, 2003). The orientation of mass is used to manipulate natural forces and to filter the external environment (Bell, 2004). It regulates the influences of solar radiation and controls the direction of prevailing winds (Givoni, 1994). There are several considerations in selecting the orientation of mass, consisting of the view, the location of the building, the topography of the site, the location of the source of any noise, and the nature of the climate (Al-Hosany, 2002). Accordingly, the relevant values for this factor are: parallel with the street line, perpendicular to the street line, oblique to the street line, abutting the street line, or no relationship to the street line.

e) Base relationship to the ground line (pedestal): Based on the design guidelines and according to Hillier’s (2007) suggestions, the relationship of the building base to the ground line describes how the building is connected with the earth. In this regard, Ching (2007) explains three types of ground connections to define a zone of spaces: base plane, elevated base plane, and depressed base plane. Therefore, the relevant values for this factor can be formulated as follows: at the same level with the ground line (base plane), rising over the ground line (elevated base plane), stepped down from the ground line (depressed base plane), or no obvious relationship.

f) Mass location within the plot of land: Based on the Housing Standards for Iraq Report (Polservice, 1980), the types of housing units are classified in four categories: traditional courtyard houses, detached single-unit houses, semi-detached houses, and continuous row houses. Each type has specific setback properties that normally affect the mass location within the plot of land. Therefore, the relevant values for this factor are: fitting within land boundaries (no setbacks), located at the setback from the front only, located at the setback from two sides, located at the setback from the front and two sides, or free-standing shape (setback from all sides).

Table 4.1: Summary of Mass & Articulation Parameter Factors and Values

Parameter	Factors	Possible Values
Mass & Articulation	Geometry of mass	Pure regular geometrical form
		Non-regular geometrical form
		Non-geometric (curvature)
		Non-geometric (flexure)
		Mixed form (geometric and non-geometric)
	Building envelope	Pure simple envelope
		Subtracted parts within main frame
		Added parts within main frame
		Hybrid with (subtraction and addition) parts
		Multi-layered envelope
	Type of articulated Façade (base, body, and roof)	Pure mass (non-defined parts)
		Pitched roof, with defined base
		Flat roof, with defined base
		Pitched roof without base
		Flat roof without base
		Others
	Orientation of mass	Parallel to street line
		Perpendicular to street line
		Oblique to street line
		Abutting street line
		No relationship to street line
	Base relationship to the ground line (pedestal)	At the same level with ground line
		Rising above the ground line
		Stepped down from ground line
		No obvious relationship
	Mass location within the plot of land	Fitting within land boundaries (no setbacks)
		At the setback from front only
		At the setback from two sides
		At the setback from front and two sides
		Free-standing shape (setback from all sides)

4.5.2 House Façade Openings

Based on the design guidelines (Palo Alto, 2002; Hudsonville, 2006; Missouri, 2008**)**, doors, windows, and other openings can be considered as important features of the architectural façade. The design and materials of openings are the most significant factors in the manifestation of the architectural form (Unwin, 2003; Ojeda & Pasnik, 2003). Openings can contribute to the understanding of periods of architectural history (Malhis, 2004). They are not only the determining features in a building's appearance, but also the mediators that allow the inhabitants of a building to sense the place of which they are part. For Meiss (2004), the window is a sign of human life, the eye of the building, a breach in the wall of the structural continuity, and a basic element in architecture. In other words, a window can do many things architecturally at the same time. The window encompasses three design functions: It lets light into a room, it provides a view out, and it articulates between interior and exterior. According to Elkadi (2005), openings and windows give a façade its distinctiveness, and their arrangements provide identity to the place. Design elements of openings, and, in particular, glass windows that admit light to the interior of a dark space, give a clear visual character to a building's face; this, in turn, helps the building to influence the characteristics of a place.

The parameters of openings, according to several authors (Baker 1996; Leupen *et al.*, 1997; Burden, 2000; Bell, 2004; Elkadi, 2005; Ching, 2007; Niezabitowski, 2009), can be classified into two principal factors: windows and entrances. The first factor (windows) includes several sub-factors related to the size, dimensionality, shape, and directivity of windows. The second factor (entrances) comprises the relationship of the entrance to the street line, its location within the mass, and its accessibility. In the light of the above information, Table 4.2 lists the possible values for these factors as follows:

4.5.2.1 House Façade Windows

a) Window size: Size concerns the dimensions of elements and depends on a system of measurement to define the property of an object (Bell, 2004). According to Ching (2007), the physical dimensions of length, width, and depth of a form define its proportions, and the scale of a building is determined by the size of its elements. As a result, the relevant values for window size can be categorized as small, medium, and large.

b) Window dimensionality: Based on the work of Niezabitowski (2002), the dimensionality of windows is the aspect of shape that relates to the perceptional reduction of its dimensions. This factor is related the proportions of the object's basic dimensions. Thus, the relevant value for the factor of window dimensionality can be categorized as punctual, linear, superficial, and solid.

c) Window shape: Shape is among the most important visual properties of a façade. Window shape is the characteristic outline or surface configuration of a particular form (Ching, 2007). It is the primary means for identifying building elements (Bell, 2004) and is a powerful means for recognizing, identifying, and categorizing façade elements. The most significant window shapes are the primary forms of circle, triangle, and square (Ching, 2007).

d) Window directivity: According to Niezabitowski (2009), directivity is the basic feature that explains the dominating directions of the façade elements. The shape of the element directly reinforces the sense of direction (Bell, 2004). Hence, the directivity of openings is an effective factor in shaping the architectural form (Whang, 1998). Based on the site, the relevant values for window directivity can be categorized as vertical, horizontal, inclined, mixed, and non-obvious.

4.5.2.2 House Façade Entrances

a) Entrance relationship to the street line: Based on design guidelines, the entrance relationship to the street line is another factor that determines the continuity of architectural identity in terms of façade elements (Unwin, 2003). The design guidelines suggest that each building have at least one functional entrance directly visible and accessible from the street (Palo Alto, 2002). Accordingly, Ching (2007) suggests several approaches consisting of frontal, oblique, and spiral to connect the building entrance to the street line. Any of these entrances may be perpendicular to the primary façade of a building or oblique to it. Thus, the relevant values for this factor are: parallel to the street line, perpendicular to the street line, set back from the street line, and oblique to the street line.

b) Entrance location within the mass: According to Meiss (2004), the location of the entrance within the building mass should respect the local features of nearby buildings. Accordingly, Ching (2007) suggests two alternatives because the configuration of the path and the pattern of activities within the space are determined by the entrance location. Thus, the entrance location can either be centered within the frontal plane of a building or be placed off-center to echo the entrance symmetry in local buildings. The relevant values for this factor are centered within the frontal plane, concentrated on the sides, or randomly distributed.

c) Entrance accessibility: Based on design guidelines, building entries should be directly accessible and visible from the street (Palo Alto, 2002; Hudsonville, 2006; Missouri, 2008). In the case of this study, accessibility can be viewed as the ability to approach the house entrance. The relevant values for this factor are direct access to street, indirect access to street, and access through an outer fence.

Table 4.2: Summary of Openings Parameter Factors and Values

Parameters	Factors		Possible Values
Openings	Windows	Window size	Small ($X \leq 0.5$) m^2
			Medium ($0.5< X < 2.0$) m^2
			Large ($X \geq 2.0$) m^2
		Window dimensionality	Liner
			Punctual
			Solid
			Superficial
		Window shape	Rectangular
			Square
			Triangular
			Circular
			Other
		Window directivity	Vertical
			Horizontal
			Inclined
			Mixed
			No obvious direction
	Entrance	Entrance relationship with street line	Parallel to street line
			perpendicular on street line
			Set back from street line
			Aligned on street line
		Entrance location within the Mass	Concentrated in center
			Concentrated on sides
			Random distribution
		Entrance accessibility	Direct access to street
			Indirect access to street
			Access through outer fence

4.5.3 House Façade Architectural Details

Architectural detail (the physical elements of house facade) is another effective parameter in shaping a building's visual identity. The architectural details such as arches, columns, ornamentation, and porches are not only important in providing richness, diversity, and complexity to a building's form, but also can provide simplicity and coherence to unify the context (Emmitt *et al.,* 2004). The concept of architectural details can be defined as an integral and fundamental consideration throughout the development of façades, and many authors indicate that architectural value often relies on its details (Bently *et al.,* 1985; Neumann, 1986; Tugnutt & Roberston, 1989; Dee, 2001; Emmitt *et al.,* 2004). Hence, architectural detail is not an element attached to a building structure, but an essential reflection of its identity (Dee, 2001). In this regard, Tugnutt and Robertson (1989) note that a lack of detailing will create remarkable weakness in a building's form because of its importance in consolidating the building's overall articulation. Consequently, architectural details are considered an essential factor in enhancing the visual efficiency of buildings (Neumann, 1986). The parameters of architectural details, according to several authors (Bently *et al.*, 1985; Neumann, 1986; Tugnutt & Roberston, 1989; Dee, 2001; Emmitt *et al.*, 2004), can be categorized into two groups: attached details, such as arches and ornamentation, and unattached details, such as columns and porches.

a) Arches: For the purpose of the study, arches are sub-divided into arch type and arch depth. Based on (Aljanabi, 1987; Roth, 1993; HCECR, 2009) the most popular arch types can be classified as segmental, round (circular), pointed (2 centers), Islamic (4 centers), flat, and triangular. In the same context, the depth of arches can be categorized as surface-depth arches, arches that are set back into the wall thickness, and deep-depth arches.

b) Ornamentation: According to Elshahed (2007), ornamentation of the façades of its buildings is central in shaping a city's heritage. It is a form language that bridges cultures and is architecturally understood as intrinsic to a surface (Erlhoff & Marshall, 2008). Based on some studies (Lewis & Darley, 1986; Erlhoff & Marshall, 2008), the types of house ornamentation can be classified as classical or modern, taking the specialty of Islamic ornaments into consideration (Elshahed, 2007). Ornamentation materials include wood, brick, stone, gypsum, cement, and marble.

c) Columns: Based on Chitham (2005), the most popular historical column types can be classified as Tuscan, Ionic, Doric, Corinthian, Composite, and non-decorative. Note that functional use of columns can be categorized as arcade, structural enhancement, and decorative elements.

d) Porches: Based on Design Guidelines for Historic Resources, different types of porches are manifested according to the height, scale, location, materials, and articulation of house façades. Some porches are simple one-story structures, whereas others may be complex with elaborate details and finishes. The relevant values for this factor are the front stoop porch, the side porch, the wrap-around porch, the continuous porch, the monumental porch, and the enclosed porch.

Table 4.3: Summary of Architectural Details Parameter Factors and Values

Parameter	Factors		Possible Values
Architectural details	Arches	Types	Segmental arch
			Round (circular) arch
			Pointed arch (2 centers)
			Islamic arch (4 centers)
			Flat arch
			Triangular arch
			Other
		Depths	Surface depth
			Set back into wall thickness
			Deep depth
			Other
	Ornaments	Types	Islamic ornamentation (muqarnass)
			Classical
			Modern
			Not available
		Materials	Wood
			Brick
			Stone
			Gypsum
			Cement
			Marble
	Columns	Type of Metaphoric columns	Tuscan
			Ionic
			Doric
			Corinthian
			Composite
			Non-decorative
			Other
		Functional use	Arcade
			Structural enhancement
			Decorative elements
	Porches		Front-stoop porch
			Side porch
			Wrap-around porch
			Continuous portico
			Monumental portico
			Enclosed porch
			Not available

4.5.4 House Façade Architectural Materials

Architectural materials are the key visual parameters for perceiving architectural façades (Meerwein *et al.*, 2007). They play an important role in determining a building's appearance as an effective indicator of its identity (Unwin, 2003; Bell, 2004). Accordingly, Schulze (1980) explains that architecture deals with the building material in the same way that human beings use linguistic signs to interpret the world around them. Each material has its own visual and semiotic effects, and in interacting with other materials, provides the characteristic features for a house façade (Kress & Leeuwen, 2006).

Based on the work of several authors (Dee, 2001; Elkadi, 2005; Ching2007; Meerwein *et al.*, 2007; Niezabitowski, 2009), the parameters of architectural materials (Table 4.4) can be classified as described below.

a) Material sustainability: The use of sustainable materials on building façades plays an important role in determining the appearance of a house façade (Carl, 2004). Guidelines recommend that sustainability of materials aims to protect the environment and manage the use of natural resources by connecting the building with nature. Accordingly, the relevant values for this factor can be categorized as local sustainable material, artificial materials, and a mixture of sustainable and artificial materials.

b) Roofing materials: According to Gromlich (1989), roof shape and material are important elements in determining the visual continuity of a house façade. Guidelines recommend that the character of the roof is an important feature for most building façades. Accordingly, the relevant values for this factor can be divided into two categories: roofing construction system and roofing shape. The first category considers the most distinguished roofing systems in the area, as indicated by Aljanabi (1987), which are traditional (jack arch–brick arched roof), timber structure covered with clay tile, steel structure covered with clay tile, timber joists covered with clay tile, and reinforced concrete slab. The second category consists of the most notable roofing shapes, namely: flat roof, pitched gable roof, vault roof, dome roof, conical roof, saw tooth roof, and pyramidal roof.

c) Material colors: Color is a key visual parameter for perceiving and experiencing space (Meerwein *et al.*, 2007). Color is the fundamental element of visual perception that results in place recognition (Unwin, 2003; Bell, 2004). Therefore, material color is an important variable related to the façade design in identifying places. Thus, the relevant values for this factor can be classified as natural colors, artificial paint colors, and a mixture of artificial and natural colors.

Table 4.4: Summary of Architectural Material Parameter Factors and Values

Parameter	Factors		Possible Values
Architectural Materials	Material Sustainability		Local sustainable material
			Artificial materials
			Mixed (sustainable and artificial materials)
			Others
	Roofing Materials	Roofing Construction Systems	Traditional (jack arch–brick arched roof)
			Reinforced concrete slab
			Timber structure covered with clay tiles
			Steel structure covered with clay tiles
			Timber joists covered with clay
			Others
		Roofing Shape	Flat roof
			Pitched gable roof
			Vault roof
			Dome roof
			Conical roof
			Saw tooth roof
			Pyramidal roof
	Material Colors		Natural material colors
			Artificial paint colors
			Mixture of artificial and natural colors

4.5.5 House Façade Arrangement Principles

The last parameter of the study is related to the design principles of façade arrangements. It aims to measure, discuss, and evaluate the relationship between elements and examines the rules that arrange the façade components into a comprehensive whole (Ingels, 2004; Niezabitowski, 2009). The study of the principles of façade arrangements is related to house façade visual syntax because the façade orderliness is strongly correlated with the rules of element arrangements (Niezabitowski, 2009). A wide range of researches have tried to understand how façades are generated. Based on studies of the architectural literature for building façade design principles (Baker, 1996; Leupen *et al.*, 1997; Stamper, 2000; Burden, 2000; Ingels, 2004; Meiss, 2004; Ching, 2007), the related factors (Table 4.5) for this parameter can be categorized as described below.

a) Solidity: A façade's solidity is related to the degree of its permeability in determining the relationship between the exterior and interior space (Sen *et al.*, 2011). This factor plays an important role in measuring the visual syntaxes of the façade's arrangement. Hence, solidity is one principle of façade arrangement that forms the basis for visual perception. Based on Niezabitowski's (2009) model, the significant values for this factor can be summarized briefly as follows: solid mass with punctual transparence openings, solid mass with large transparent openings, a combination of solidity and transparency, transparent mass with solid screen boxes, and transparent mass with small solid elements.

b) Complexity: Based on a study by Rapoport (1990), the degree of complexity of element arrangements of house façades can be measured according to the number of elements in the façade as well as the level of differences between the elements. In parallel, Whang (1998) argues that the complexity of architectural form is related more to the orderliness of the building elements than to the number of different elements on the façade. Thus, the relevant values of this factor can be categorized as: pure form with simple elements, simple form with complex elements, complex form with simple elements, complex form with complex elements, hybrid elements within a simple form, and hybrid elements within a complex form.

c) Rhythm and Scale: The rhythm and scale of any building façade can be measured according to the proportion and recurrence of its elements. The combined effect of rhythm and scale will affect the arrangement of elements within the building façade. As suggested by Ching (2007), rhythm refers to the characterized movement of the façade elements, and scale refers to the size of an element in comparison with others. Accordingly, the relevant values for this factor are summarized: unified rhythm at the human scale, unified rhythm at the non-human scale, more than one rhythm, non-unified rhythm, and no rhythm.

d) Regularity: Regularity is the measurable scale for the pattern arrangements within building façades (Hillier, 2007). The interrelation of elements in a consistent and orderly manner is the act of façade regularity that creates a sense of stability (Meiss, 2004; Ching, 2007; Hillier, 2007). Hence, the relevant values for regularity measurements can be summarized as: regular elements within the building façade, homogeneous hybrid elements, and non-regular elements within the building façade.

e) Integration: The interplay of elements within the building façade in terms of repetition, hierarchy, and balance is another principle of composition that tends to provide a sense of coherence in architecture (Meiss, 2004; Niezabitowski, 2009). The principle of integration is reinforced by repetition, hierarchy, balance, common enclosure, symmetry, and orientation of the building elements (Meiss, 2004). Thus, the relevant values for this factor are categorized into three subitems: i) repetition with structured and non-structured values; ii) hierarchy with values of hierarchy by size, hierarchy by shape, hierarchy by placement, and non-hierarchical; and iii) balance with values of dynamic balance, stable balance, and unbalanced form.

Table 4.5: Summary of House Façade Arrangement Principles Parameter Factors and Values

Parameters	Factors		Possible Values
House Façade Arrangement Principles	Solidity		Solid mass with punctual transparent openings
			Solid mass with large transparent openings
			Combination of solidity and transparency
			Transparent mass with solid screen boxes
			Transparent mass with small solid elements
	Complexity		Pure form with simple elements
			Simple form with complex elements
			Complex form with simple elements
			Complex form with complex elements
			Hybrid elements within simple form
			Hybrid elements within complex form
	Rhythm and Scale		One unified rhythm in human scale
			Unified rhythm in non-human scale
			More than one rhythm
			Non-unified rhythm
			No rhythm
	Regularity		Regular elements within building façade
			Homogeneous hybrid elements
			Non-regular elements within building façade
	Integration	Repetition	Structured
			Non-structured
		Hierarchy	Hierarchy by size
			Hierarchy by shape
			Hierarchy by placement
			No hierarchy
		Balance	Dynamic balance
			Stable balance
			Unbalanced form

4.6 Review

This chapter addressed the theoretical framework of house façade checklist factors. It clarified the concept of house façade and discusses factors affecting its manifestation in terms of visual aspects of architectural identity. The focus was on the models of visual analysis in architectural literature. The study clarified the content of each model and identified the main parameters for measuring the degree of similarity and analyzing the visual elements of a building. The study showed that the deconstruction of larger wholes into smaller parts is the basis for most model analysis approaches. Accordingly, the study's main parameters were derived from these models and reinforced by relevant factors mentioned in house façade design guidelines and in the architectural literature. Finally, the chapter proposed a comprehensive theoretical framework including the most effective parameters for visual analysis of house façades, namely, mass and articulation, openings, architectural details, materials, and arrangement principles. Each parameter was assigned a range of relevant values. The findings of this chapter will act as a base for qualitative and quantitative survey and analysis in the following chapters.

CHAPTER FIVE

METHODOLOGY

5.1 Introduction

This chapter presents a research methodology and describes its patterns. It describes how the research method is designed, how criteria for selecting the cases are set, and how the case study and survey instrument as two different approaches are applied. This chapter explains a three-step methodology used to fulfill the research objectives and answer the research questions. It presents an acceptable explanation for the adaptation of these tools and clarifies the statistical methods and statistical procedures.

5.2 Research Methods

A mixed-methodologies approach that combines quantitative and qualitative methodologies is adapted in a manner that will be likely to enhance the precision of the results. This process takes two approaches to measurement. The first approach relates to the case study as the preferred research strategy for testing deterministic propositions case by case (qualitative approach), and the second approach uses the survey as the preferred research strategy for testing probabilistic propositions in a population (quantitative approach). For the purpose of the study and to fulfill research objectives, a three-step research method will be conducted using the following steps:

i) Checklist factors to determine the research parameters for qualitative and quantitative analysis.
ii) A qualitative case study method to provide an in-depth analysis of a specific problem and to answer research questions to support its assumption.

iii) A quantitative survey to test research hypotheses and to help understand the relationships among parameters in the study.

The rationale behind conducting mixed methods is to increase the validity of the research and enhance the reliability of the analysis. Mixed methods intend to reduce bias and compensate for the weakness of one method through the strength of another. Hence, the use of more than one method will enhance the findings of the research, providing a complete picture of the phenomena and enabling the study to access various issues (Perlesz & Lindsay, 2003; Gorard & Taylor, 2004; Denscombe, 2007). Several studies in the field of building façade visual analysis are adopted combined research methods to enhance the complementary of produced data from different methods, providing alternative perspectives and thereby, getting a more complete overview of the subject (Malhis, 2004; Akalin *et al.,*2009; Wells, 2009; Chan, 2009).

In parallel with the perspective of many authors (Creswell *et al*., 2003; Chatterji, 2005; Ercikan & Roth, 2006; Bryman, 2006; Denscombe, 2007; Chan, 2009; Gay *et al.,*2009), the underlying rationales of using mixed methods in this study are as described below.

a) Validation of findings in terms of their accuracy to provide greater clarity or coherence of the results
b) Compensation for the strengths and weaknesses of particular methods
c) A comprehensive description and explanation of the phenomena by providing more than one perspective
d) The integration of data between the qualitative and quantitative results, to extend the nature of the research and increase its depth

e) The correlation, consolidation, and comparison of data between the qualitative and quantitative results to enhance the research inferences
f) The use of qualitative and quantitative data collection and their analyses to address different inquiry components in parallel phases of the study
g) Checking for bias in research methods

5.2.1 Checklist Factors

The checklist factors are a set of variables in the theoretical model as proposed in (Chapter Four). The theoretical model includes five main parameters that were derived from the architectural literature and that are reinforced by relevant factors mentioned in house façade design guidelines. These parameters are collected in one coherent framework for visual analysis to achieve the study’s main objectives and to create a base for qualitative and quantitative survey and analysis. Accordingly, the study's main parameters are as follows:

i) House Façade Mass and Articulation
ii) House Façade Openings
iii) House Façade Architectural Details
iv) House Façade Materials
v) House Façade Arrangement Principles

Each parameter includes several factors, which are assigned through a range of relevant values. The checklist factors are the first step in the research methodology. The aim is to develop a multi-dimensional framework (model) that will embody an integrated assessment of all of the main parameters to measure the influence of modernity versus continuity of architectural identity on house façades.

5.2.2 Qualitative Case Study Method

The qualitative case study method is conducted to obtain information about the house façade transformation over time. It attempts to explain the physical features of the house façade in different periods of the evolution of Erbil City. Moreover, this method provides in depth's understanding about the influence of modernity versus continuity of architectural identity by studying multiple cases to make comparisons and propose generalizations. According to Strauss and Corbin (1990), Anderson (1993), Yin (2003), Schram (2003), Denzin and Lincoln (2005), Marguerite *et al.* (2006), Lodico (2006), Hancoch and Algozzine (2006), Noor (2008), Dual and Hak (2008) and Gay *et al.* (2009), the case study approach, which is among the most common qualitative approaches, is applied by selecting a number of cases in different sectors of Erbil City. Data collected from these cases is analyzed in a qualitative manner

In other words, the nature of the research questions requires that multiple cases be studied to ensure that an adequate range of city sectors is examined. This is to illustrate how house façades within the context of Erbil City are formulated as physical aspects of architectural identity. The idea behind using a qualitative case study method is:

i) To indicate the degree of change for each parameter in the theoretical model
ii) To identify the characteristic feature for house façades in each periods
iii) To describe house façade arrangement patterns in local traditions
iv) To reveal the house façade stylistic differences between periods in terms of architectural identity

5.2.3 Quantitative Survey

Based on Aliaga and Gunderson (2002) definition, quantitative research is "Explaining phenomena by collecting numerical data that are analyzed using mathematically based methods (in particular statistics)". The idea behind conducting quantitative research is to develop and employ research assumption pertaining to architectural identity phenomena. In this study, quantitative research is conducted to test the study assumption regarding the influence of house façade modernity on the continuity of architectural identity. The approach attempts to measure the degree of continuity in the physical elements of house façades. Therefore, the measurements will provide the essential connection between the practical observation and the statistical expression of quantitative relationships. The principles behind quantitative research are:

i) To test research hypotheses regarding the relationship between house façade modernizations (IV) and continuity of architectural identity (DV)
ii) To collect the perceptions of the respondents in a natural, non-contrived setting
iii) To determine the association of the independent variables and dependent variables, as well as to understand the dimensionality of variables
iv) To trace the mutual influence of variables on one another
v) To explore the significant factors that could influence the continuity of architectural identity

For the purpose of the study, a structured questionnaire survey is conducted to generate statistics and separate variables to be counted and modeled statistically.

5.3 Sampling Method

Because the study adapted a mixed-methodologies approach, which combines a quantitative case study method and a quantitative survey method, the process of sample selection differs between methods, according to the nature of the research. For the purpose of the study, the sampling method for each part will be clarified separately as described below.

5.3.1 Qualitative Sampling Method

Based on categories of identity transformations in Erbil City, which divided the periods of Erbil City evolution into four categories in (Chapter Three), a stratified method of sampling process is selected for the qualitative part of the study. This method is used when representatives from each subgroup in the population need to be represented in the sample (Hulburt & Heavy, 2006; Sekaran & Bougie, 2009). Based on the suggestions of Sekaran (2003),Cohen *et al.* (2007), and Dul and Hak (2008) that stratified sampling requires splitting the categories into homogenous groups, random samples are then taken within each category. The selected samples (as indicated in Table 5.1) are distributed into four zones. In each zone, a total of 108 samples is selected to be the representative cross-section of the whole population and paves the way to make generalizations (Sekaran, 2003; Denscombe 2007; Cohen *et al.*, 2007). The rationale behind probability sampling (stratified method) is to reduce the risk of bias as mentioned by Cohen *et al.* (2007) that a probability sample will have less risk of bias. Furthermore, it is desirable to avoid the transformed housing units in old districts and the new constructed units in the selected zone. The process of sample selection in each category is based on the following information:

i) Master plan of the city to insure that the selected zone is related to the specified period

ii) Historical documents to identify the zone's history and its growth within the city

iii) Short interviews with households to confirm the date of construction and get the necessary approvals for photographic documentation

iv) Checking of municipality building licenses to identify the construction materials, type of roofing, number of floors, façade articulations, and construction techniques

v) Considering the social and economical factors in selecting the samples in order to insure similarity in terms of the structure and quality

Accordingly, the city is distributed into four zones as indicated in (Table 5.1 and Figure 5.1). In each zone, samples of 108 cases are selected as follows:

a) First Zone: includes the area within 30 meter width ring road in Erbil City. As a result of the compact planning patterns, the test sample of residential façades was selected in a social context of homogenous environment. Therefore, most of the house façades of the citadel city are selected as a representative sample for this category (60 cases). This number is in addition to 48 cases in the lower town, which are distributed in the Tahjeel and Arab districts.

b) Second Zone: includes the area between 30 meter width ring road and the 60 meter width ring road. The urban context of these districts is mostly a gridiron pattern, which reflects the ideas of modernity in architecture. Most of the housing units in these districts are affected by colonization, which is a creation of the West and reflects a direct intervention of western powers. Consequently, the samples in this category were selected in the districts of Mnarah, Tairawa, Setakan, Saidawa, and Zaniary.

c) Third zone: includes the area between the 60 meter width ring road and the Pesha-Qazi ring road. The samples in this category are selected in the districts of Kurdistan, Nawroz, Rapareen, Mufti, Shorsh, Kuistan, Azady, Romany, and Rasti. The urban context of these districts contains typical housing blocks, which are normally in a gridiron pattern and constructed after 1980, according to the Erbil master plan report (2003).

d) Fourth zone: includes the areas constructed outside the Pesha-Qazi ring road. The samples in this category are selected in new districts that were erected after the process of Iraqi liberation in 2003. Accordingly, the samples in this category are selected in the districts of Dream City, Mamostayan (Zanko 2), Bakhtyary, and Havalan.

Table 5.1: Numbers and locations of the Selected Samples in Erbil City

Zone Name	Zone No.	Zone Code	No of Samples	Total
Citadel zone -30 meter width ring	1	A B C	60 cases 24 cases 24 cases	108
The area between 30 meter width ring 60 meter width ring	2	D E F	36 cases 36 cases 36 cases	108
The area between 60 meter width ring road and Pesha-Qazi ring-road.	3	G H I	36 cases 36 cases 36 cases	108
The areas constructed outside the Pesha-Qazi ring road	4	J K L	36 cases 36 cases 36 cases	108
Total Selected Samples				432

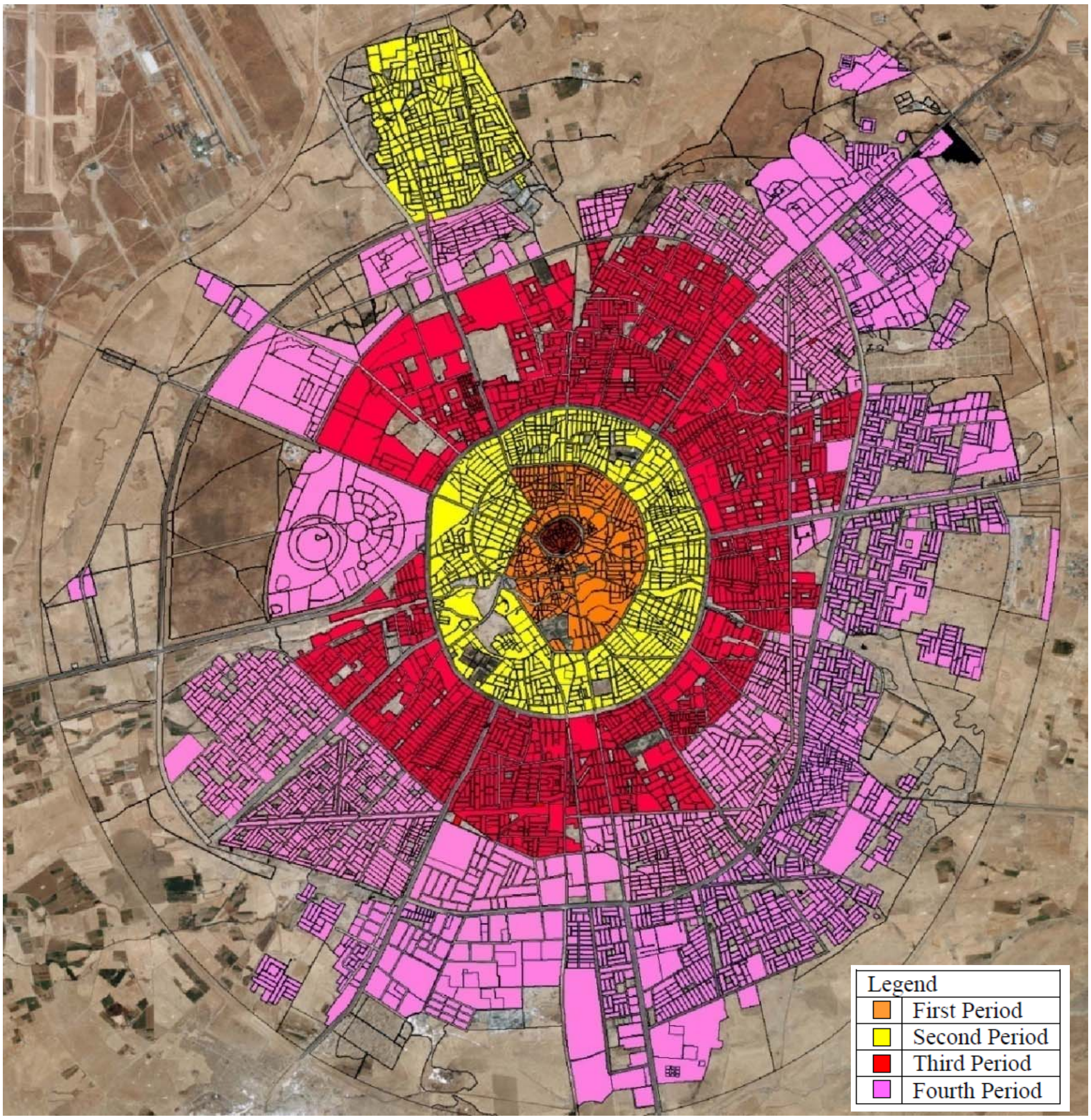


Figure 5.1: Zones of Stratified Sample Selection in Erbil City based on Periods of the City Evolution
Source: Erbil City Master Plan Report.2007

5.3.2 Quantitative Sampling Method

The second part of the sampling method relates to the quantitative survey. The survey is in the form of a questionnaire that is distributed among respondents. To fulfill the requirement of this part of the survey, this study chose the probability sampling design using a simple random sampling process because it seeks representation in the wider population, has less risk of bias, and affords generalization (Sekaran, 2003; Cohen *et al.*, 2007). The population for this survey is distributed into two groups consisting of architectural students and architects. Surveying both groups offers the chance to reach a wider range of spesific attitudes. This survey comprises two categories. The first group consists of higher-level studio students (3^{rd}-, 4^{th}-, and 5^{th}-year students) as well as post-graduate students in the architectural department at Salahaddin University, and the second group consists of architects who are registered in the Kurdistan Engineers Union (KEU) and who are currently working in Erbil City. The registered architects were selected from a survey on architects conducted by KEU (KEU Annual report, 2009). Therefore, a total of 184 survey forms was distributed to the higher-level studio students (3^{rd}-, 4^{th}-, and 5^{th}-year students) in the architectural department at Salahaddin. A total of 300 surveys were also sent to KEU architects (number of architects = 443). Distribution of a large number of questionnaires is needed to collect data on a sample large enough to be treated statistically.

For the first group, the researcher with assistance of four colleagues conducted the entire survey on May, 16, 2010. The questionnaires were distributed and collected by hand from the selected studio students. During the process, the researcher was available for any inquiries may request. A total of 163 filled questionnaires was returned. However, because of incomplete answers (partially filled questionnaire or missing answers for more than three questions), 42 questionnaires were discarded. Therefore, a total of 121 completed questionnaires was available for analysis. For the second group, the researcher contacted with the Kurdistan Engineers Union (KEU) to obtain the names and contact numbers of architects in Erbil City. Then, a series of phone calls to respondents was conducted. Finally, the surveys were sent on June 8, 2010, followed two weeks later by a reminder call. As a result, a total of 173 surveys was returned, with 21 surveys discarded due to the incomplete filling the answers. A total of 152 completed questionnaires was prepared for analysis. The percentage of returned questionnaires was calculated as:

$$\text{The percentage of return samples} = \frac{\text{Number of returned (completed) samples}}{\text{Total Number of Respondents}} \text{ X } 100\%$$

The percentage of return samples= 273 / 484 * 100 = 56.4%. Thus, the overall response rate was 56.4% percent of the 484 respondents.

Based on recommendations by Cohen *et al.* (2000), Dattalo (2008), and Chow *et al*. (2008) for sample size, the study chose a 95% confidence level and 5% margin of error for leading sub-segments to determine the appropriate sample size. Then, depending on the *Raosoft* Sample Size Calculator software, the recommended sample size to represent the correspondents was found to be about 239 (Table 5.2). Accordingly, using a sample size of 273 respondents is an appropriate sample size that fulfills the requirements statistically.

Table 5.2: Population and Recommended Sample Size

Classification of Correspondents	**Population (N)**	**Recommended Sample (n)**
Students(3rd 4th and 5th year) and KEU Architects	624	239

5.4 Data Collection

Based on house façade checklist factors and to fulfill the research objectives, this study used two methods of data collection, qualitative and quantitative. The purpose of data collection is to obtain information regarding the influence of modernity versus continuity of architectural identity of house façades in Erbil City. The process of data collection is divided into two main directions. The following sub-sections provide details on the procedure of both approaches to data collection.

5.4.1 Qualitative Data Collection

The methods used for qualitative data collection included direct observation and visual characteristics documentation. The observations were enhanced by a photographic study to record and document each house façade. The documentation procedure included house façade features such as mass and articulation, openings, details, materials, and principles of house façade arrangement.

Observation and documentation as different qualitative research designs provides a solid context for data interpretations. Therefore, a site visit instrument (the house façade checklist factors survey form) was used to provide a structured means of data collection in addition to observations of visual characteristics during site visits. This approach aims to illustrate the different levels of similarity and diversity between façades and to determine the significance of elements, whether viewed separately or collectively.

For the purpose of data collection, the research study follows Yin's (2003) suggestions for data collection in a case study method. First is to use multiple sources of evidence, which is considered to be the primary strength of case study research. Second, a comprehensive data base is constructed to organize relevant data efficiently. The database will include case study notes, tabular materials, and documentation photographs from site visits. Finally, the reliability of the information collected on site is increased by a chain of evidence. The study translated these suggestions into practical actions. Therefore, the process of qualitative data includes following procedures:

i) Identify cases of the study in each zone and check the accessibility for each site

ii) Record the necessary data for each case using the house façade checklist factors survey form and arrange these records in a specified database to systematize relevant data efficiently. Table 5.3 shows the procedure for recording house façade factors

iii) Make photographic documentation for each case and tabulate these documents into organized lists for each zone. Table 5.4 clarifies the photographic documentation

iv) Conduct direct interviews with households to enhance the documentation process and to insure the reliability of data

Table 5.3: House Façade Checklist Factors Survey Form
(Mass & Articulation Parameter)

Case No.	Case Location	Photographic documentation.
13 G	Kurdistan District	

Parameter	Factors	Possible Values
Mass & Articulation	Geometry of mass	Pure regular geometrical form
		Non-regular geometrical form
		Non geometric(Curvature)
		Non geometric(Flexure)
		Mixed form(geometry and non-geometry)
	Building envelope	Pure simple envelope
		Subtracted parts within main frame
		Added parts within main frame
		Hybrid with(subtraction and addition) parts
		Multi layered envelope
	Type of articulated Façades (base, body & roof)	Pure mass (non defied parts)
		Pitched roof , with defined base
		Flat roof ,with defined base
		Pitched roof without base
		Flat roof without base
		Others
	Orientation of mass	Parallel to street line
		Perpendicular on street Line
		Oblique on street line
		Abutting street line
		No relationship to street line
	Base relationship to the ground line (pedestal)	At the same level with ground line
		Rising over ground line
		Stepped down from ground line
		No obvious relationship
	Mass location within the plot of land	Fitting with land boundaries(no setbacks)
		At the setback from front only
		At the setback from two sides
		At the setback from front and two sides
		Free standing shape(setback from all sides)

Table 5.4: The Photographic Documentation for Cases in Erbil City

<table>
<tr><td>Period</td><td colspan="5">Transitional Period (1980-2003)</td></tr>
<tr><td>Location</td><td colspan="5">The Areas between 60 meter width ring-road and Pesha-Qazi Ring-road</td></tr>
<tr><td>Zone Number</td><td colspan="2">Third</td><td>Case Number</td><td colspan="2">13 G- 24G</td></tr>
<tr><td colspan="2">Case 13G</td><td colspan="2">Case 14G</td><td colspan="2">Case 15G</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Case 16G</td><td colspan="2">Case 17G</td><td colspan="2">Case 18G</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Case 19G</td><td colspan="2">Case 20G</td><td colspan="2">Case 21G</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
<tr><td colspan="2">Case 22G</td><td colspan="2">Case 23G</td><td colspan="2">Case 24G</td></tr>
<tr><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td></tr>
</table>

Figure 5.2: A Map of Erbil City Districts
Source: Erbil City Master Plan Report.2007

5.4.2 Quantitative Data Collection

In the quantitative portion of this study, a survey and interviews (during the pilot study only) are the two principal methods used for data collection. The justification for conducting the survey (questionnaire) is to get comparable data in which can be tested statistically. However, the interviews were conducted to add the richness of individual interpretations from professionals as well as to reinforce the questionnaire by making revisions according to responses and reactions from the (semi-structured) survey used in the interviews. For the purpose of the research, the data collection procedure was planned to take place in three steps, as follows:

a) A draft of the survey was prepared, followed by a pilot study on 12/11/2009, to validate the use of a questionnaire and to revise any confusing questions.

b) Personal interviews were conducted during the pilot study with professionals in the field of architecture. The justification for interviews is based on the value of contact with key players in the field who can offer privileged information (Denscombe, 2007). Hence, the minister of municipalities–KRG and five professional academics were interviewed to collect supplementary information about the respondents' personal characteristics and environment, which is often of great value in interpreting results (Kothari, 2004).

c) A self-administered questionnaire with multiple choices of questions was organized. Questions were developed to explore the influence of house façade modernization on the continuity of architectural identity. Based on the pilot survey, the advanced format of this questionnaire was designed to reduce measurement error and improve the response rate. Thus, the simplicity of use, clarity of statements, and expanding motivation were the essential features of the final format of the study questionnaire.

5.5 Survey Instrument

The questionnaire was designed to collect information to be used subsequently as data for analysis. Different types of questions are used for different purposes and different types of data are used for analyses. Hence, the instrument is a self-administered questionnaire with multiple-choice questions. The information obtained from questionnaires tends to fall into two broad categories of facts and opinions (Brace, 2004; Denscombe, 2007). Questions were developed to explore the continuity of architectural identity, determine the level of architectural identity through comparison with references in the literature review, and to identify the relationships among the factors of house façade transformations. The questionnaire comprises six primary areas of measure: the properties of architectural identity of mass and articulation, openings, architectural details, architectural materials, house façade arrangement principles, and the continuity of architectural identity. Therefore, the questionnaire covers the following items:

1- Cover letter: Description of the purpose of the study and its aims
2- Section A: Respondent background information
3- Section B: Statements that reflect the characteristics of architectural identity
4- Section C: Questions that measure the impact of mass and articulation parameters
5- Section D: Measures the impact of opening parameters
6- Section E: Measures factors relating to the architectural detail parameters.
7- Section F: To measure the influence of architectural material alterations
8- Section G: Measures house façade arrangement principles
9- Section H: Measures factors that affect the continuity of architectural identity

5.6 Research Variables

The research parameters as they are developed from the literature contain five independent variables and one dependent variable. The independent variables are house façade (a) mass and articulation, (b) openings, (c) architectural details, (d) architectural materials, and (e) arrangement principles; the dependent variable is continuity of architectural identity.

Table 5.5: The Research Independent (IV) and Dependent (DV) Variables

Independent Variables (IV)	(a) Mass and Articulation (b) Openings (c) Architectural Details (d) Architectural Materials (e) House Façade Arrangement Principles
Dependent Variable (DV)	Continuity of Architectural Identity.

Prior to the final data collection, a pilot study should be undertaken to pre-test the questionnaire. The questionnaire may be edited based on the results of the pilot study. It is strongly recommended to pilot the questionnaire before the survey goes live (Brace, 2004; Sampson, 2004; Kothari, 2004; Dawson, 2007; Black, 2010). In general, questionnaires need to be revised to improve the survey's content, to reveal the weaknesses, to refine research instruments, to develop relevant lines of questions, to measure the degree of observer bias, to frame questions, to collect background information, and to adapt research procedures (Kothari, 2004; Sampson, 2004). Accordingly, all of the variables are subjected to the validity and reliability test before the main survey was carried out. The questionnaires were pre-tested by collecting information from 34 respondents. The pre-testing of these questionnaires was done on 12/11/2009.

5.7 Measurable Factors in the Research Questionnaire

This section focuses on the measurement of factors in the proposed theoretical model. It is recommended to insure that the measurements are stable and consistent (Dawson, 2007). Thus, the validity and reliability of the questionnaire are an important issue in quantitative data analysis. The proposed theoretical model includes several independent variables and one dependent variable structured to develop the questionnaire. The measurements of factors were based on the adaptation of available literature. The details of factors measurements are discussed in the following sub-sections as illustrated in Figure 5.3.

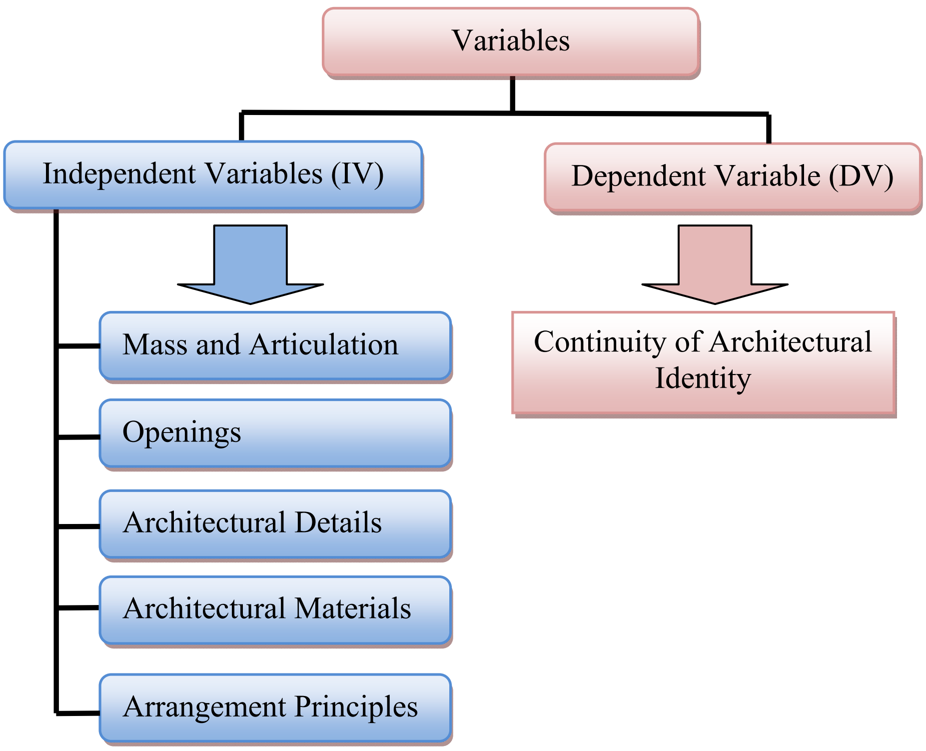


Figure 5.3: Theoretical Model of House Façade Modernity (IV) Versus Continuity of Architectural Identity (DV)

5.7.1 Mass and Articulation

The following part of the study shed the light on (Mass and Articulations) parameter. This parameter has six factors; these are 1) Geometry of mass, 2) Building envelope, 3) Type of articulated façades-base, body and roof-, 4) House façade orientation, 5) Base relation with the ground line, and 6) Mass location within the plot of land. For the purpose of the study, seventeen questions are prepared to measure the impact of (Mass and Articulation) parameter on the continuity of architectural identity. These questions are subdivided into six groups (Figure 5.4) as follows:

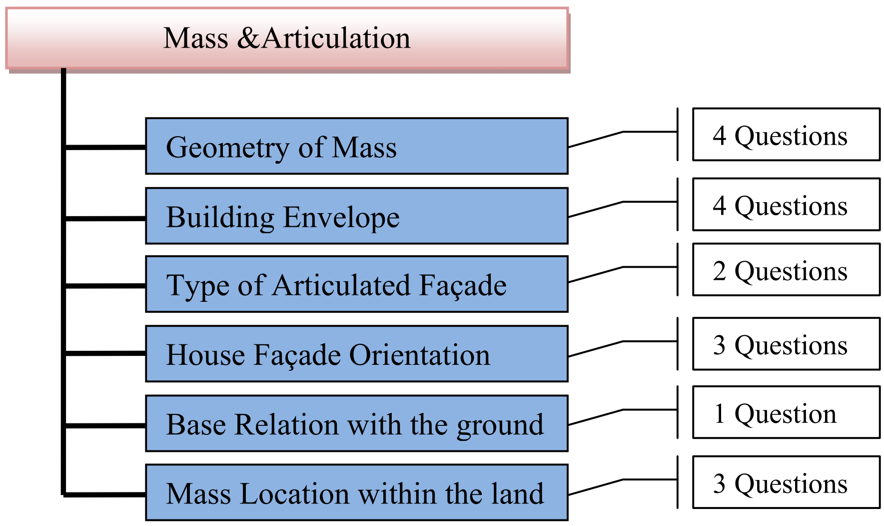


Figure 5.4: Number of Questions for Each Factor in Mass and Articulation Parameter

a) Geometry of mass: It has four questions as follows:

1. Changing façade geometry have a negative impact on place belonging
2. Altering façade geometry will decrease the continuity of architectural identity

3. Variation of façade geometry toward non-regular geometry will reduce the symbolic expression of architectural identity
4. Altering the geometry of mass will increase the diversity of architectural identity

b) Building envelope: It includes four questions as follows:

1. Building envelope transformations from locality to modernization will increase the visual privacy
2. Building envelope alterations has a negative impact on architectural identity continuity
3. Building envelope transformation has direct relationship with meaning dimensions
4. Building envelope modernization will lead to reduce the authenticity of architectural identity

c) Type of articulated façade: It has two questions as follows:

1. Altering the façade articulations will reduce the clarity of meaning understanding
2. House base, body and roof rearrangement in a new pattern have a negative impact on the continuity of architectural identity

d) House façade orientation: It has three questions as follows:

1. House façade orientation has a direct relationship with climate consideration of architectural identity
2. House façade orientation and its relationship with street line have a positive impact on visual sign and cues of architectural message
3. House façade orientation improves energy efficiency that lead to authenticity of architectural identity

e) Base relationship with the ground: It has only one question as follows:

1. Rising façade base line on a defined pedestal is considered as a mode of capitalism.

f) Mass location within the plot of land: It has four questions as follows:

1. The locations of architectural form within the plot of land have a positive impact on identity belonging to the place.
2. Form location within the plot of land will support the climate consideration of architectural identity.
3. Setting back the form from all sides of land is a translation of Western modernization toward local architectural identity.

Table 5.6: Summary of Factors and Measurement Scale
(Mass and Articulation)

S	Mass and Articulation Impact	Scale	Number of Questions
1	Geometry of mass	5 degrees	4
2	Building envelope	5 degrees	4
3	Façade articulation	5 degrees	2
4	House façade orientation	5 degrees	3
5	Base relationship to the ground line	5 degrees	1
6	Mass location within the plot of land	5 degrees	3

5.7.2 House Façade Openings

The second parameter of the study is relates to the impact of opening transformations on the continuity of architectural identity. House façade windows and House façade entrance are the main two dimensions of opening parameter. House façade windows consists of four items, which are: Window size, Window dimensionality, Window shape, and Window directivity whereas House façade entrance has three items namely: Entrance relation with street, Entrance location within the mass, and Entrance accessibility.

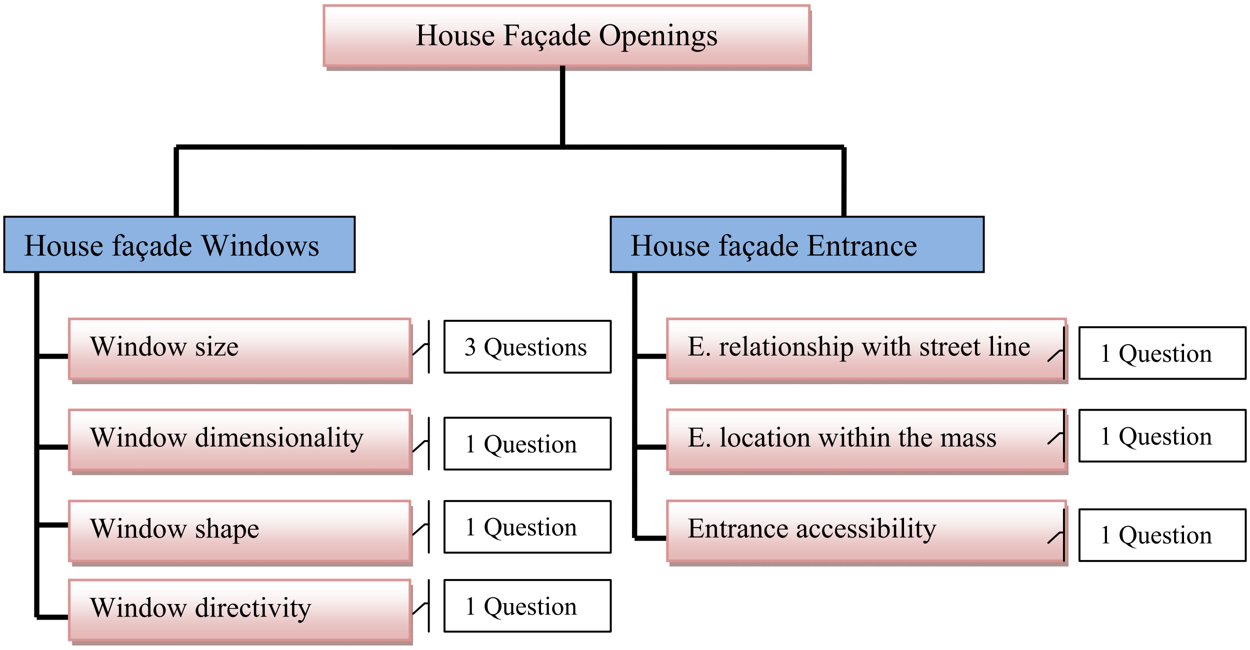


Figure 5.5: Number of Questions for Each Factor in House Façade Opening Parameter

In this part of the study, nine questions are adapted to measure the impact of house façade opening parameter on architectural identity. These questions are sub-divided into two groups as follows:

a) House façade windows: It has six questions as follows:

1. Changing the size of windows to large screen glazing panels is a reflection of Western modernity
2. Maximizing window size will affect the climate consideration of architectural identity
3. Transparency large size windows will create new identity for house façades in the specified places.

4. Changing the dimensionality of openings has a crucial impact on identity symbolic functions
5. Altering the directivity of openings will decrease the continuity of architectural identity
6. Openings shape transformations toward Western modernization have a negative impact on authenticity of architectural identity

b) House façade entrance: It has three questions as follows:

1. Hiding the entrance opening location within the mass has a negative impact on identity symbolic function
2. Enlarging the scale of entrance will enhance the modernity mode of power
3. Altering the entrance indirect accessibility will increase the continuity of architectural identity

Table 5.7: Summary of Factors and Measurement Scale (House Façade Openings)

S	Opening Impact	Scale	Number of Questions
1	Window size	5 degrees	3
2	Window dimensionality	5 degrees	1
3	Window shape	5 degrees	1
4	Window directivity	5 degrees	1
5	Entrance relationship with Street line	5 degrees	1
6	Entrance location within the Mass	5 degrees	1
7	Entrance accessibility	5 degrees	1

5.7.3 House Façade Architectural Details

The impact of house façade architectural details modifications on the continuity of architectural identity is the third parameter of the study. Therefore, seven questions are structured to measure the influence of modernizations process regarding the house façade architectural details on architectural identity continuity. The measurements are in a five point scale outward appearance. Accordingly, the questions are formatted as follows:

1. Transformation architectural details from local traditions to modern elements will reduce the belonging to place
2. Using effective ways to keep architectural details support the authenticity of architectural identity
3. Copy and paste procedure for architectural details leads to lose diversity of architectural identity
4. Imitation of architectural details as a channel of creativity will enhance the moral aspects of architectural identity
5. Improving the architectural details of house façade will increase the diversity
6. Modernization of architectural details will affect the privacy of architectural identity
7. Technology as a mode of modernity has a negative impact on authenticity of architectural details

5.7.4 House Façade Materials

The impact of house façade materials on the continuity of architectural identity is the forth parameter of the study. Material impact is formulated into three dimensions. These are: Material sustainability, Roofing materials, and Material colors.

Consequently, fifteen questions are structured to measure the influence of house façade material alterations on architectural identity. The measurements are in a five point scale category (Strongly Disagree, Disagree, Neutral Neither agree or disagree, Agree, and Strongly Agree). These questions are subdivided into three groups as follow:

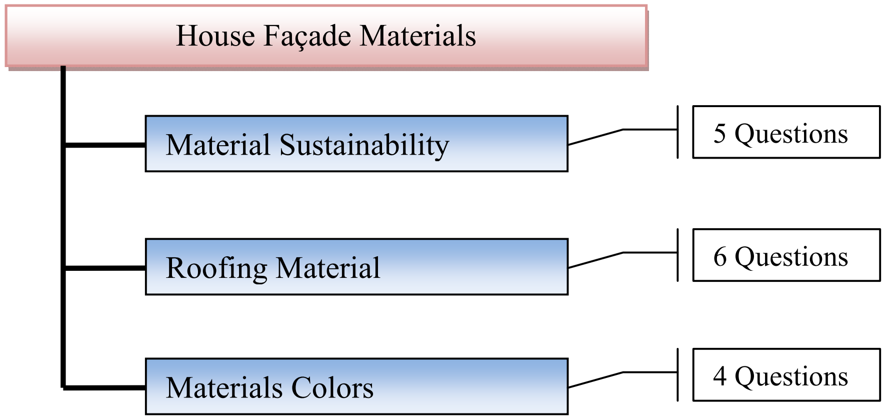


Figure 5.6: Number of Questions for Each Factor in House Façade Materials Parameter

a) Material Sustainability: It has five questions as follows:

1. Using sustain materials in house façades will improve the climate consideration of architectural identity
2. Durability of façade local materials has a positive impact on the physical of architectural identity
3. Efficient use of local materials in house façade will enhance the authenticity of architectural identity
4. Maximizing local material in house façades will increase the soul of belonging to the place
5. Mixing local materials with alien material in house façades design have a negative impact on moral properties of architectural identity

b) Roofing Material: It has six questions as follows:

1. Changing traditional roofing system will improve the way towards new innovations and leads to construct new identities
2. Constructing new identities in local tradition is a translation of new technologies and construction methods
3. House roof shape is a translation of socio-cultural factors
4. Using flat roof shape in house design has a positive impact on the household social activities
5. Using sustainable materials in a house roof is one of the actions to reduce the environmental impact
6. Parapet line relations with adjacent buildings will reflect the continuity of architectural identity

c) Material Colors: It has four questions as follows:

1. Façade color is considered as a reflection of physical and moral aspects of architectural identity
2. Material natural colors in house façade will enhance the physical and moral aspects of architectural identity
3. Maximizing colors in house façade lead to confusion which affects the meaning dimension of architectural message
4. House façade colors are a reflection of household socio cultural values

Table 5.8: Summary of Factors and Measurement Scale
(House Façade Materials)

S	Material Impact	Scale	Number of Questions
1	Material sustainability	5 degrees	5
2	Roofing materials	5 degrees	6
3	Materials colors	5 degrees	4

5.7.5 House Façade Arrangement Principles

The house façade arrangement principle is the fifth parameter of the study. This parameter investigates the relationship between elements and reveals the principles of house façade arrangements. This parameter has five factors, namely: 1) Solidity, 2) Complexity, 3) Rhythm and Scale, 4) Regularity, and 5) Integration. For the purpose of the study, seventeen questions are prepared to measure the impact of house façade arrangement principles parameter on the continuity of architectural identity. The measurements are in a five point scale sort .These questions are subdivided into five segments as follows:

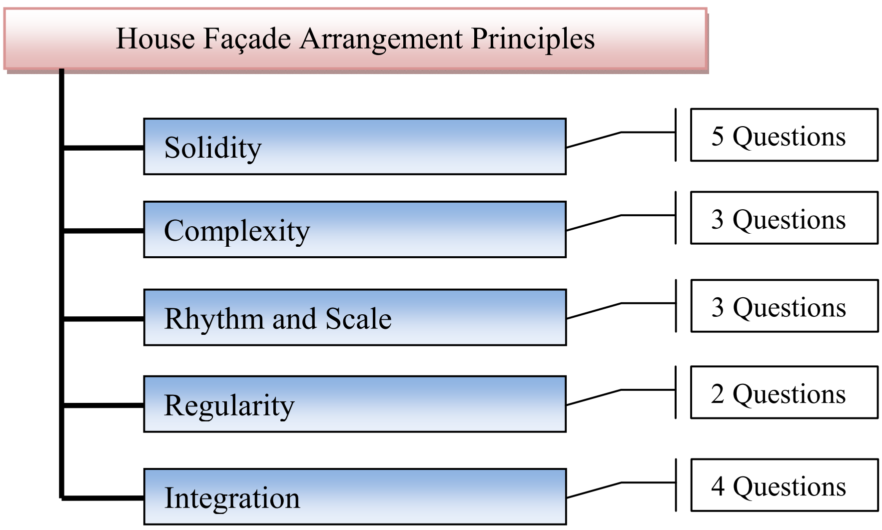


Figure 5.7: Number of Questions for Each Factor in House Façade Arrangement Principles

a) Solidity: It has five questions as follows:

1. Maximizing house façade form solidity reflects historic privacy of Erbil city
2. Using large transparent elements in house façade will reduce the privacy of architectural identity
3. Minimizing house façade form solidity has a negative impact on climate consideration in hot dusty environments
4. Altering the solidity of form will affect the symbolic expression of architectural identity
5. Increasing transparency in house façade form will lead to Western outdoor looking approach

b) Complexity: It has three questions as follows:

1. Maximizing house façade form complexity will decrease the clarity of architectural symbols
2. Complexities of elements in house façade have a negative impact on cultural identity authenticity
3. Complexity of elements in house façade will increase the complication of architectural meanings

c) Rhythm and Scale: It has three questions as follows:

1. House façade rhythm of elements will create symbolic representation
2. Altering rhythm of elements has a negative impact on the symbolic expression of architectural identity

3. Changing rhythm of house façade elements lead to decreasing the familiarity of meanings

d) Regularity: It has two questions as follows:

1. Decreasing house façade regularity of elements will reduce the degree of visual privacy and visual isolation
2. Changing house façade elements regularity has a negative impact on intelligibility of meaning understanding

e) Integration: It has four questions as follows:

1. House façade element integration will intensify the symbolic expression of architectural identity
2. House façade element integration will lead to rhetoric and originality of the architectural message
3. Integration between house façade elements has a positive effect on the multiplicity of meaning
4. House façade elements integration will increase the familiarity of architectural message

Table 5.9: Summary of Factors and Measurement Scale
(House Façade Arrangement Principles)

S	House Façade Arrangement Principles	Scale	Number of Questions
1	Solidity	5 degrees	5
2	Complexity	5 degrees	3
3	Rhythm and Scale	5 degrees	3
5	Regularity	5 degrees	2
6	Integration.	5 degrees	4

5.7.6 The Continuity of Architectural Identity (Dependent Variable)

Continuity of architectural identity is the main dependent variable of the study. This study employed the perceptual evaluation among respondents in the field of architecture. It assigned a five-point scale to measure the perception of respondents regarding the issue of identity in architecture. Accordingly, the study formulated seven questions for measurement as described below:

1- Variety of façade elements affects the continuity of architectural identity

2- Changing the articulation of a façade results in minimizing the continuity of architectural identity

3- Altering the architectural form within the plot of land has a great impact on continuity of architectural identity

4- Efficient use of local architectural details leads to continuity of architectural identity

5- The shape of the house roof has a direct impact on physical and moral aspects of architectural identity

6- Using a flat roof shape in house design will enhance the continuity of architectural identity

7- Regularity of a house façade plays a powerful role in cultural continuity

5.8 Scale of Measurements in Research Questionnaire

Measuring features numerically in terms of scales of measurement is useful in quantifying various aspects related to the issues of identity in architecture. Thus, this study assigned a five-point Likert scale instrument to measure the perception of respondents in the field of architecture. The scale is designed to extract respondents' opinions on a range of issues with reference to the thesis title, “The influence of Modernity versus Continuity of Architectural Identity on House Façade in Erbil City”. Rating scales allow the respondent to choose one of five options indicating level of agreement on an item. Based on the Likert scale, the format of a typical five-level ranking is 1) Strongly disagree, 2) Disagree, 3) Neutral (neither agree nor disagree), 4) Agree, and 5) Strongly agree. This type of rating scale also covers qualitative description in limited number of measurable aspects as indicated in Figure 5.8.

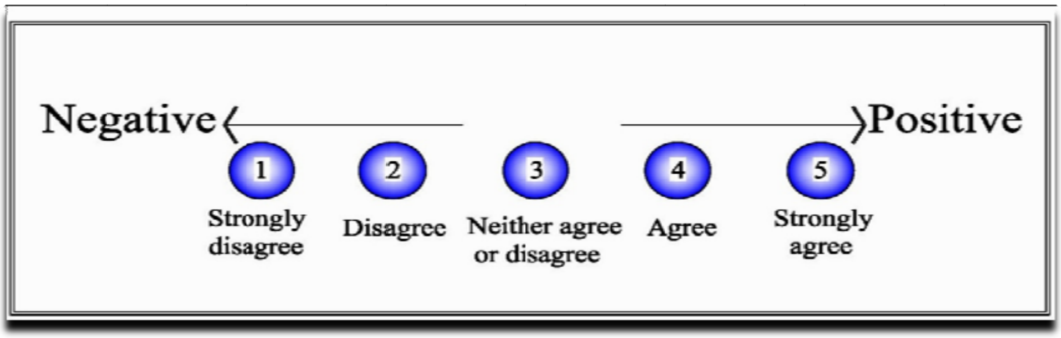


Figure 5.8: Five-level Scale of Measurements in Questionnaire Survey

5.9 Validity of the Questionnaire

Developing the correct measurement instrument with the correct obvious measures of the latent concept is the essential plan of this study. Validity is the most important aspect of the measurement instrument design (Muijs, 2004). It is the touchstone of research instruments and has three distinct aspects: content validity, criterion validity, and construct validity (Brown, 2000; Muijs, 2004; Cohen *et al*., 2007). Therefore, the study conducts the validity of instruments through a process of three steps as follows:

a) The first step is content validity (the degree of correctness of latent concepts measurements), which aims to insure that the measurements are stable and consistent in measuring what the study purports to measure (Denscombe, 2007). Conducting a literature review regarding the influence of modernity on architectural identity is the main source for content validation. Accordingly, qualitative themes are employed through literature review to improve the validity of a subsequent survey questionnaire. Then, the primary form of the questionnaire was distributed to a group of academic professionals in the field of architecture to revise the content of the instrument, the language, the transparency of the questions, and the suitability of the options. Some modifications were subsequently made to enrich the content and restructure the questions to measure what they are supposed to measure.

b) The second step in the process of instrument validation is criterion validity, which means insuring that a high correlation coefficient exists between the scores on the test in the pilot survey and the scores on other accepted tests of the same performance (Cohen *et al*., 2007). In this regard, the preliminary data from the pilot study are compared with the data obtained from checklist factors analysis for the architectural façade features through analyzing and investigating various attitudes related to the issues of identity in architecture.

c) The third step is checking construct validity to ensure that performance on the test is clearly illustrated by specific relevant concepts (Brown, 2000; Cohen *et al.,* 2007). The degree of confidence is the main subject of construct validity to ensure that the collected data from the questionnaire reflects the measured activities (Ridley, 2005). Hence, construct validity is related to the theoretical knowledge of the concept that the study aims to measure. This validation is done through theoretical frameworks for both concepts of identity and modernity. The pilot study instrument validates the relationship that should logically or theoretically occur between the concepts.

5.10 The Reliability of the Questionnaire

As defined by Muijs (2004), reliability of the quantitative research has two principal forms: repeated measurement and internal consistency. The first is predicated on the ability to measure the same object at different times and the second refers to items homogeneously and their capability to measure a single construct. The reliability of the instrument refers to its effect neutrality and consistency across multiple occasions of its use (Dawson, 2007). In other words, a high level of reliability means that the research instrument produces the same data when used by different researchers. It is a measure of consistency over time and over similar samples (Cohen *et al*., 2007).

According to Muijs (2004), there are two main ways to calculate internal consistency reliability: split-half reliability and coefficient alpha. This study employed the internal consistency reliability method, which is done using the Cronbach alpha (∞), which determines the homogeneity of the items of the instrument (Denscombe, 2007; Sekaran, 2003). Muijs (2004) explains that an alpha score greater than 0.7 indicates the internal consistency and sufficiency of the reliability of the construct. The result of the pilot study (with a sample size of 34 respondents) is summarized in the Table 5.10 which indicates that the result fulfill the reliability and validity of the sampling instrument.

Table 5.10: Reliability level of the Instrument

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.811	.808	72

5.11 Methods of Data Analysis

Data analysis refers to the separation of data into its component parts. It is a process of inspecting, classifying, and organizing raw data to extract useful information (Denscombe, 2007; Sekaran, 2003; Ader *et al.,* 2008). In this study, quantitative and qualitative data are analyzed in different ways. The following sections describe the process of data analysis for both approaches.

5.11.1 Qualitative Data Analysis Method

Basically, the method of analysis in the qualitative case study approach is a visual inspection process to determine similarities and differences among cases. It aims to understand the character of a building by analyzing its physical structures at different scales; therefore, the analysis will focus on how the physical form of a housing unit changes over time. Implementation of this idea requires descriptions of the building in purely physical terms. Based on recommendations by Creswell (2007) and Yin (2003), the method of qualitative analysis was conducted through the following steps:

a) Prepare and organize image data (photographs) of house façades by sorting visual images into classified categories.
b) Arrange the data into comparative framework tables to discover the component elements for each case.
c) Describe the physical feature for each category by analyzing and documenting the visual characteristic for each case within a specific category.

d) Make comparisons among cases to investigate the stylistic differences between categories.

e) Finally, the data will be represented in figures, tables, and descriptive discussions.

In conclusion, case study analysis aims to expose some general principles that can be used to explain the nature of architectural identity phenomena. Hence, the study will concern the surface appearance of house façades to discover the component elements that have come together to produce its identity.

5.11.2 Quantitative Data Analysis Method

For the purpose of quantitative data analysis, the SPSS (Statistical Package for the Social Sciences) software will be used to provide statistical analysis of data and give details for in-depth data access and preparation, analytical reporting, graphics, and modeling. The quantitative data will be analyzed in five ways to fulfill the research objectives and answer research questions:

a) Descriptive analysis: This type of analysis is used to answer the objectives of the study. It aims to provide an overview of the respondents and an insight into their perceptions regarding the properties of architectural identity. The development of particular records from the raw data is the main purpose of descriptive statistics (Kather, 2004). The idea is to reduce a large volume of raw data into suitable statistics that can be read easily and be used for further analysis. Accordingly, frequencies, means, and standard deviations will be used to examine the properties of architectural identity and its relation with architectural modernity.

b) One-way ANOVA: To meet the requirements of the second objective, the one-way analysis of variance (ANOVA) technique will be used to examine the relationship between respondents' demographic characteristics and their perceptions toward the continuity of architectural identity as well as their opinions about factors of house façade modernization.

c) Factor analysis: For the purpose of the third objective of this study, factor analysis using varimax rotation is conducted to obtain a clear pattern of loadings. The loading purpose indicates the depth of the relationships between items. Each factor will tend to have either large or small loadings of any particular variable. Hence, factor loading is used to assess the validity of an item and to summarize the sort of correlation among variables. The rationale behind conducting factor analysis in this study is (1) to reduce a set of variables into a limited number of essential factors and (2) to categorize variables that refer to the same fundamental concept. Therefore, understanding the variable dimensionality is an influential action in the proposed model (Sekaran, 2003; Cohen *et al*., 2007).

d) Correlation analysis: To fulfill the fourth objective of the study, correlation analysis will be used to explore the relationships among the variables (that is, each independent variable will be correlated to a dependent variable). The role of correlation is to capture the similarities or differences between the variables. It measures the degree of association between the values of related variables given in the data set. Then, the mutual influence of variables on one another will be traced.

e) Regression analysis: The general purpose of multiple regressions in this study is to test the relationship between independent or predictor variables (house façade modernity factors) and a dependent or criterion variable (continuity of architectural identity). The objective of this analysis is to make a prediction about the dependent variable based on its covariance with all the concerned independent variables. Accordingly, an equation will represent the best prediction of the continuity of architectural identity from several independent variables. Accordingly, Kothari (2004) explains that multiple regression analysis is adopted when the study has one dependent variable that is presumed to be a function of two or more independent variables. In other words, multiple regression analysis explains the variance in the level of one variable on the basis of the level of other variables.

5.12 Review

This chapter describes the research design and methodologies used to fulfill the objectives of the study. A mixed-methodologies approach combines quantitative and qualitative methodologies employed to enhance the accuracy of the results. The particular methodologies used in this study include the case study as the qualitative method and survey questionnaires as the quantitative method. Furthermore, this chapter describes the sampling method for each part, clarifies the data collection strategies, and finally the importance is that it is able to give acceptable explanation for methods of analyses that will be used in the next Chapter (Analysis and Discussion).

CHAPTER SIX

ANALYSIS AND DISCUSSION

6.1 Introduction

This chapter presents the analyses of data that collected by the case study survey method and the questionnaire survey. It separates the results into two main sections to simplify the large quantity of data into manageable themes. The first part of this chapter is the results of the qualitative analyses and draws interpretations in the discussion whereas the second part is the results from the questionnaire survey with discussions on quantitative analyses.

6.2 Qualitative Analysis

The first part of the analysis chapter deals with qualitative analyses. Therefore, visual analysis is conducted to understand the characteristic features of house façade in each period and clarify how the physical form of a house façade changes over time. Physical observation and visual investigation of the house façade parameters are the main aspects of qualitative analysis. These analyses are conducted to evaluate the degree of change for each parameter in the checklist factors, followed by comparative analyses between periods. Hence, the qualitative analysis produced the following results:

6.2.1 Mass and Articulation

As indicated in the theoretical proposed model (Chapter Four), this parameter comprises six factors. For the purpose of the study and in order to clarify the transformation process of house façade, the morphology of house façade according to the impact of each factor will be explained independently as follows:

a) Geometry of mass: The observation and visual characteristics documentation results show that most (72.2%) of the cases in the traditional period before 1930 have pure geometrical form whereas 27.8% of cases have a non-regular geometrical form (Figure 6.1), this concept transformed to be pure geometrical forms in second period as a rate of 92.6% of the cases, as well as in the third period as an average of 87.03%. Finally, in spite of the appearance of new cases of curvature & flexure forms as a mode of modernization process in the fourth period (after 2003), the geometrical form still dominate the overall cases as a rate of 69.4%. In light of the above results, the degree of change for this factor (as indicated in Table 6.10) is adaptation.

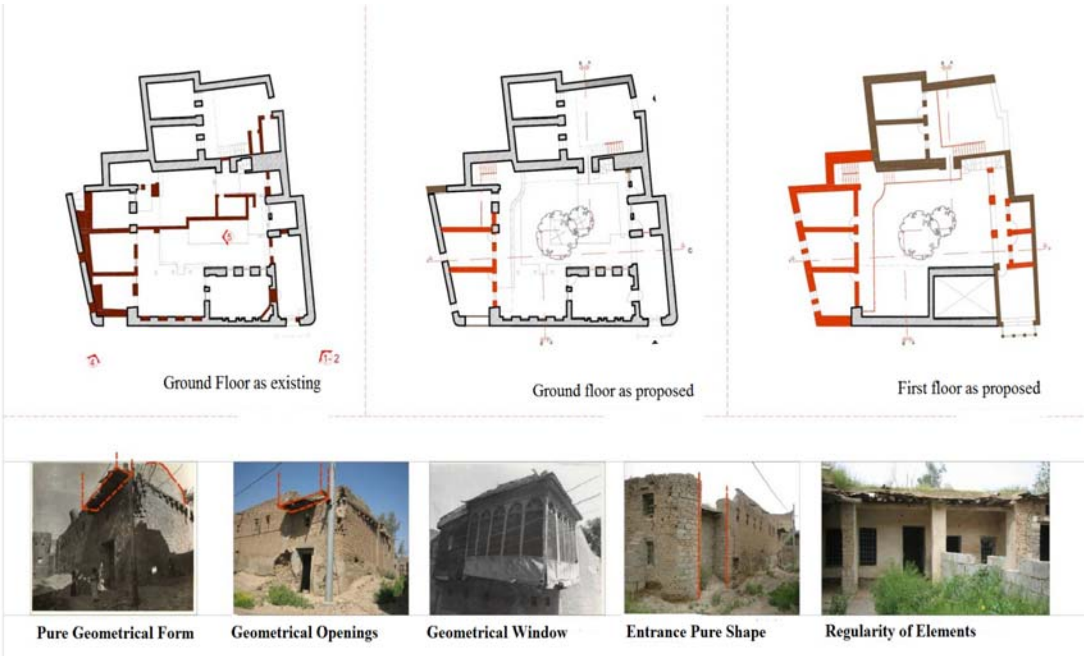


Figure 6.1: Geometry of Mass Analysis for Cases Inside Erbil Citadel City
Source: HCECR, 2007

b) Building envelope: Qualitative documentation and observation results show that the building envelope of the traditional period before (1930) is decidedly pure simple envelope in nature. Most (82.4%) of the built features are fashioned from simplicity frames without any additions or subtractions. In the second period once more the simplicity pure envelope is the dominant feature of the house façade as a rate of 90.7% of the cases. The hybrid envelope with subtraction and addition parts is the primary features of the third period as a rate of 87.9%. The recently constructed structures (after 2003) blend in with the multi layered envelope, which reflects the idea of outside looking in most cases. It is interesting to note that most of building envelops (except of the final stage) within the city sectors shared the concept of simplicity as a mode of Islamic society. Accordingly, the degree of change for this factor (as indicated in Table 6.10) is minor changes in most cases.

c) Type of articulated façade (base, body, and roof): Qualitative results show that most of cases (as an average of 81.4%) in traditional period before 1930 have pure mass with non defined parts (base body, and roof). Its traditional aesthetic is also reflected in its simple mass structure, with a flat roof, where residents and guests can sleep on. In parallel, the modification period (1930-1980) continued to duplicate flat roof, simple mass but this time with a defined base as a rate of 92.6% of the cases. These features can be interpreted as an instrument of colonial effects on local architecture. However, in spite of the visual features of the third period (1980-2003), the aesthetic character is still decidedly returned to the flat roof with a simple mass as a rate of 90.7% of the cases. Finally in the advanced modernity period (after 2003) the concept of base, body, and roof relationships are totally changed (Figure 6.2). Hence, the ratio of 44.5% of house façade articulation transformed to a new type of relations as base becomes a service floor ,body have multiple layers, and slab still flat but in different levels.

Figure 6.2: Documentation of Type of Articulated Façade in the Advanced Modernity Period after 2003-Erbil City
Source: The Author

d) Orientation of mass: Site visits, observations, and photographic documentation indicate that most (98.1%) of the house units in traditional period (before 1930) are manifested according to walkway and streets directions. In this regard, the orientation of mass in most house units is parallel with street line. This feature formulated from the compact planning patterns in traditional sectors of the city. In the modification period (1930-1980) as planning pattern became grid iron pattern. In 97.2% of the cases, the orientation of mass still pursues the street direction but the mass sets back from street line due to open spaces in the front of house units. Whereas in the transitional modernity period 95.3% of the cases is parallel with street line. In advanced modernity period (after 2003), most of house façade orientations imitated to follow the directivity of street line as an average of 87.1% (Figure 6.3) and few case exceptions are observed as a rate of 12.9% .

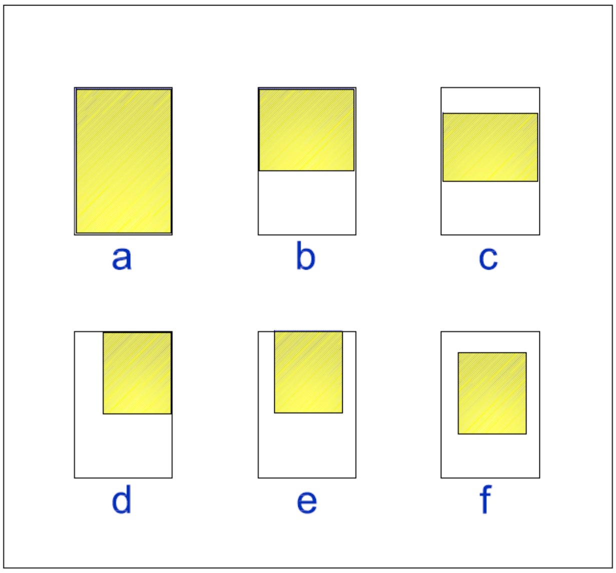
Figure 6.3: The Orientation of Mass in Advanced Modernity Period (after2003)
Source: The Author

e) Façade base relationship to the ground line: The results show that house façade base lines in 92.6% of the cases in the traditional period (befor1930) are at the same level with the ground line. It is an indication that most of the house units in this period are connected directly with outdoor facilities. In other words, it is a reflection of social and traditional values within the community. The base relationship to the ground line in the modification period (1930-1980) changed to a new style when a defined pedestal appeared as a mode of colonization. Accordingly, most (90.7%) of the house façade are laid on a platform that rising the building over a defined pedestal. In contrast, the relationship in the transitional modernity period (1980-2003) are confused between direct accessibility (34.25%) and rising over a pedestal (65.7%). These situations lead to a state of confusion about the relationship between house façade base and ground line. Finally, in the advanced modernity period (after 2003) the base relationship to the ground line produced a new style of multiple layer accessibility (as a rate of 44.5%) by raising the ground floor on a service floor (Figure 6.4- a & b). Consequently, two directions of accessibility are appeared one to the service floor in the lower levels and the other to the main entrances on the upper levels.

(a) (b)

Figure 6.4 (a & b): The Multiple Layer Accessibility in Advanced Modernity Period (After 2003)
Source: The Author

f) Mass location within the plot of land: The observation and visual characteristics documentation results show that the mass location within the plot of land in the traditional period before (1930) are mostly (98.1%) fitted with land lines (Figure 6.3- a) because the plot area was small and the house layouts are mostly court yard indoor looking. In parallel, the modification period (1930-1980) witnessed the manifestation of front garden as the essence of modernization (Figure 6.3- b). Hence, the building mass is located at the setback from one, two or three sides (Figure 6.3- b, c, d &f). Then, the concept of front garden came into view and demonstrated most (96.3%) of cases in the transitional modernity period (1980-2003). Accordingly, building mass is located at the setback line from front elevation (Figure 6.3- b, d & e).



a) Building mass fitted with land lines
b) Open space in front of building mass
c) Open space in front & back of building mass
d) Building mass fitted with two land lines.
e) Three Side open spaces
f) Free standing mass

Figure 6.5: The Relation between Building Mass and the Plot Area
Source: The Author

In the advanced modernity period (after 2003), building mass are demonstrated to fit the land line with a limited front open space. Cases in this period, mostly (92.6%) covered the majority of plot areas due to new functional requirements.

Table 6.1: Documentation of Sample Number (2C) in Arab district

Case No.	Case Location	Photographic documentation
2 C	Arab District	
Parameter	**Factors**	**Possible Values**
Mass & Articulation	Geometry of mass	■ Pure regular geometrical form
		□ Non-regular geometrical form
		□ Non geometric(Curvature)
		□ Non geometric(Flexure)
		□ Mixed form(geometry and non-geometry)
	Building Envelope	■ Pure simple envelope
		□ Subtracted parts within main frame
		□ Added parts within main frame
		□ Hybrid with(subtraction and addition) parts
		□ Multi-layered envelope
	Type of articulated Façade (base, body, and roof)	■ Pure mass (non defied parts)
		□ Pitched roof , with defined base
		□ Flat roof ,with defined base
		□ Pitched roof without base
		□ Flat roof without base
		□ Others
	Orientation of mass	■ Parallel with street line
		□ Perpendicular on street Line
		□ Oblique on street line
		□ Abutting street line
		□ No relationship to street line
	Base relation with the ground line(pedestal)	■ At the same level with ground line
		□ Rising over ground line
		□ Stepped down from ground line
		□ No obvious relationship
	Mass location within the plot of land	■ Fitting with land boundaries(no setbacks)
		□ At the setback from front only
		□ At the setback from two sides
		□ At the setback from front and two sides
		□ Free standing shape(setback from all sides)

6.2.2 House Façade Openings

The opening parameter includes two main parts namely, windows and entrances. The qualitative analysis of Windows concentrates on window size, dimensionality, shape, and directivity. Whereas the analysis of Entrance focuses on the entrance relationship with the street line, its location within the mass and entrance accessibility as follows:

6.2.2.1 House Façade Windows

The observation and visual characteristics documentation results show that:

a) The window sizes in traditional period (Figure 6.6) are considered as small in 62% of cases as the size is affected by the environment factors and the construction techniques. However, the effectiveness of window size in fulfilling the principles of local architectural identity was clear. The size of windows (Table 6.2) in the modification period (1930-1980) as well as in transitional modernity period (1980-2003) changed from small sizes to larger one (the degree of change is considered as major changes). These changes occurred as a result of industrial capitalism which provides the basis of modernity and finally in the advanced modernity period (after 2003) the window size continued to be large as mode of globalization and huge screen glasses are noticed in front façade in 29.6% of the cases.

Figure 6.6: Window Size in Traditional Period before 1930
Source: The Author

Table 6.2: Window Size in Different Periods of Erbil City Evolution
Source: The Author

Traditional Period (Before 1930)	Modernity Period (1930-1980)	Transitional M. Period (1980-2003)	Advanced Modernity Period (after2003)
			

b) In term of explanatory power, the dimensionality of windows in the traditional period before (1930) is punctual within solid surfaces. This idea gradually transformed to linear windows in the modification period (92.6%) as well as in transitional modernity period as a rate of (90.7%) of the cases. Finally the dimensionality of window within façade design in advanced modernity period (after 2003) totally changed to a kind of superficial dimensionality (the degree of change is considered as total changes).

c) Window shape in the traditional period (before1930) as indicated in Figure 6.7 is rectangular with square vent hole in the upper level of façade as a rate of (78.7%). The rectangular shape continued to be the most noticeable shape in second and third periods respectively but in different directivity. Moreover, in the final stage (after 2003) the rectangular window shapes dominate the house façade but in different scales and mostly (75.9%) in a complicated architectural form. As a result, and in spite of the fact that rectangular windows are the distinctive element in overall periods, The visual analysis noted the appearance of a circular window in many cases as a decorative element, which are normally placed at the mid of the front façade .

Figure 6.7: Different Types of Window in Erbil Citadel
Source: (HCECR, 2009)

d) Window directivity: Qualitative results show that the window directivity in the traditional period (before1930) is vertical generally as a range of (96.3%). This idea displaced to horizontal directivity in second period because the span of windows enlarged as a result of industrial capitalism and materialization of new construction techniques. In the third period (1980-2003) the horizontal directivity continued to control the overall cases .Then the final stage witness a mixed directivity of window because of the complicated façade designs.

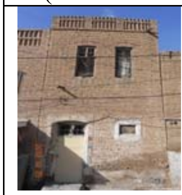
6.2.2.2 House Façade Entrances

The observation and visual characteristics documentation results for house façade entrances indicate following outcomes:

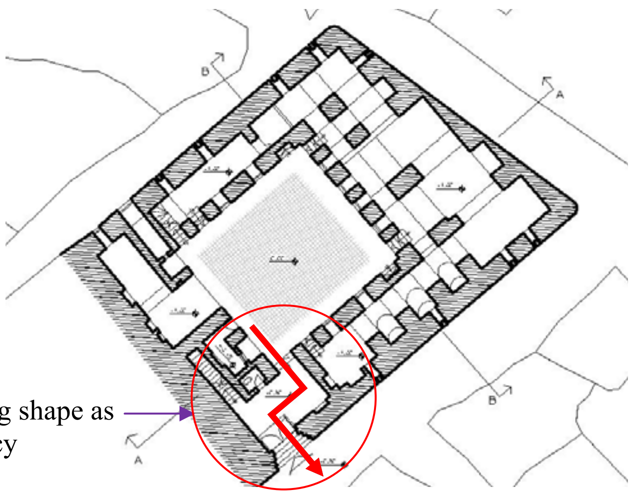
a) Entrance relationship with street line: The results show that house façade entrances in the traditional period (before 1930) are simple, solid, and within human scale in size, and directly connected with street line (as a rate of 89.9%). Whereas in second period (1930-1980) a new concept of entrance appeared to be on a defined platform, semi solid, bigger in size, raise on a deck, and sets back from the street line by a transition zone of green areas. Hence, the concept of outer fence appeared as a privacy solution for indoor facilities when the design typology transformed from courtyard types to outward looking style. In the third period (1980-2003) the relationship of main entrances with street line stayed as the previous period with few modifications on its material when most (77.8%) of timber wooden entrances modified to steel doors. Finally in fourth period (after 2003) a new approach appeared to add transparency to house entrances using glass panels on the top of main entrance. Accordingly most (73.1%) of house entrances are out of human scale (large in size), semi transparence, raised on a defined pedestal and surrounded by decorative attachments. Therefore, the huge size of entrances translated the modernity globalization mode of power.

b) Entrance location within the mass: The results show that the location of main entrances in the traditional period (before 1930) is located at one side of the front façade (92.6%) and rarely (7.4%) in the middle. The spatial arrangement of interior spaces and entrances indirect associability are main reasons behind broken arrangement of main entrance. This meant that the entrance door provide privacy by separating inside activities from the outside as indicated in Table 6.3. Whereas in the second (1930-1980) and third period (1980-2003) this idea is totally changed when the main entrance is located in the mid of the front façade (64.8%) and consolidated by decorative attachments. Lastly in the fourth period (after 2003) entrance become a focal point in front façade and guiding the observer to the house spaces. It is normally defined by a decorative mass.

Table 6.3: Entrance Location within the Mass in Periods of Erbil City Evolution
Source: The Author

Traditional Period (Before 1930)	Modernity Period (1930-1980)	Transitional M. Period (1980-2003)	Advanced Modernity Period (after2003)
			

c) Entrance accessibility: The results show that house entrance accessibility with street in pre-modern period is indirect (as a rate of 75%) because the entrance is tilted on the main access to provide privacy (Figure 6.8). Whereas in the second period (1930-1980) this idea is totally transformed to another type of indirect accessibility. Therefore, the outer fence appeared as mode of privacy that sets back the building mass from street line. Accordingly, the accessibility to the main entrance is through transitional space (front garden). This idea is enhanced in third period. Finally, a new type of indirect accessibility (37.9%) comes into view in the advanced modernity period (after2003) by locating the main entrance in the first floor.



Entrance Zigzag shape as mode of privacy

Figure 6.8: Entrance Indirect Accessibility in a Traditional House (Shihab Calabi House) Inside Erbil Citadel City
Source: (HCECR, 2009)

6.2.3 Architectural Details

As indicated in checklist factors, the architectural detail parameter is categorized into two main groups, the first named attached details which include arches and ornaments whereas the second called unattached details such as columns and porches. The observation and visual characteristics documentation results are as follow:

a) Arches: The results indicate the availability of different types of arches in the traditional period (before1930). Round, Pointed, Segmental, and Composite Arches are the main types which are normally constructed in Brick. Furthermore, the qualitative results indicate many variations and combinations of arches that return to Assyrian, Acadian, Islamic, Ottomans, and modern civilization in Iraq. However, the round arch within wall thickness in 17 cases (15.7%) and the pointed Islamic arch in 14 cases (12.9%) are the two applied types used in this period. Successively, in the second period, arches disappeared in house façade whereas in the third period the surface depth round arch is the popular type used in the house façade (as a rate of 32.4%) and finally, the concept of deep depth as in Figure 6.9 applied to segmental arches (13.2%) as aesthetic value of advanced modernity period (after 2003).

Figure 6.9: The Depth Segmental Arches in Advanced Modernity Period (After 2003)
Source: The Author

b) Ornaments: Most façade ornaments as a rate of 90.7% of cases in the traditional period, constructed of brick as the basic building material. The façade ornament contains many different combinations of brick patterns as well as wooden adornments. The external façade walls are built in alternate vertical and horizontal courses of bricks. In conjunction with the aesthetic nature of the brick and wooden ornaments, the styles, materials, and finishes of the house façade make a fabulous image that reflected in the design character of the city. In the second period (1930-1980) the brick ornaments remain the obvious stylistic decorative 37% which enhanced by layers of colored cement plastering but, at the end of this period the brick ornament design totally altered to simple decorative masse of concrete materials (55.5%). Moreover, the concept of decorative concrete masse become the notable feature (87.9%) of the third period (1980-2003) with appearance of stone ornament decoration in some cases (8.33%). Finally the ornament design of the advanced modernity period (after 2003) concentrates on stone details as house façade remarkable features as a rate of 75% of the cases in this period.

c) Columns: The results show that there are no indications of columns in front facades in the first period. It is interesting to note that two types of columns are observed inside the court yard houses in this period, namely: stone column and wooden column. The first is used to support arcades which are normally crowned with simple capitals. Whereas the second type is used as decorative and support members for colonnades which is usually crowned by very detailed capitals. In the modification period (1930-1980) steel columns are used in front façade to support cantilever concrete slabs as an average of 38.8% of cases. In parallel, the third period (1980-2003) witnessed a new type of concrete columns (28.7%) which is usually used for supporting large cantilevers and working as decorative elements in front elevation. Lastly, in the advanced modernity period (after 2003) the idea of column totally transformed to decorative elements covered by stone in front façade as a rate of 25.9%.

d) Porches: The qualitative results show that the mass of buildings in the traditional period before (1930) are so simple .Thus, there are no indications of any kind of porches in houses façade with exception of small roof cantilever in 14.8% of cases. Gradually, the front porch starts to come into view in the second period as a rate of 69.4% which is normally covering the main entrance .This idea continued in third period (1980-2003) and finally transformed to monumental portico in the advanced modernity period as an average of 44.4%.

Table 6.4: The Degrees of Change for Architectural Details in Erbil City Evolution Periods

Visual Element Factors	Degrees of change in Erbil City evolution periods														
	Modernity Period (1930-1980)					Transitional Modernity Period (1980-2003)					Advanced Modernity Period (After 2003)				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Architectural Details															
Arches				X		X							X		
Ornaments			X					X						X	
Columns			X					X						X	
Porches			X			X							X		
Total	0 No Changes	0 Minor Changes	3 Adaptations	1 Major Changes	0 Total Changes	2 No Changes	2 Minor Changes	0 Adaptations	0 Major Changes	0 Total Changes	0 No Changes	0 Minor Changes	2 Adaptations	2 Major Changes	5 Total Changes

6.2.4 Architectural Materials

The checklist factors listed three items for architectural materials. Accordingly, the qualitative analysis for each item explains individually as follows:

6.2.4.1 Material Sustainability

The results show that the basic building material of the traditional period is brick (sustainable local material). Normally, brick is used (100%) for construction of walls, vaults, arches, columns, floors, and decoration ornaments (Figure 6.10). Despite the emergence of new construction materials in the second period (1930-1980), the use of local material such as brick and hammered dressed stones are preferred in most construction cases. Due to huge construction activities in the third period (1980-2003) the use of concrete blocks controlled most (69.47%) of cases. Consequently, a state of combination between local and new construction materials become visible as a ratio of (29.6%). In the last period (after 2003),and in spite of appearance of new alien material (e.g. aluminum composite panels, prefabricated screen walls, timber roofing systems), the local stone as a practical finishing material in house façade controlled the overall cases as a rate of (88.8%).

Figure 6.10: Using Brick as Basic Building Material in the Traditional Period (before1930)
Source: The Author

6.2.4.2 Roofing Material

The results show that the traditional roofing materials are based on timber joists covered by matting (Figure 6.11). Then, it replaced by traditional (jack arch -brick arched roof) roofing system which is covering most cases in the early stages of second period (1930-1980). Subsequently, the emergence of reinforced concrete slab during colonial period and the availability of raw material push the house holders to use new techniques in roofing system. Accordingly most (87.9%) cases in the late staged of second period transformed to use concrete as fundamental roofing material .In other words, the socio-cultural factors affected the house roof shape to be simple, flat, and straight. Hence, the idea of using flat concrete slab in third and fourth period remains the most common and controlled the overall cases (100%).

Figure 6.11: Traditional Roofing Materials Based on Timber Joists Covered by Matting
Source: The Author

6.2.4.3 Material Colors

The distinctive feature of façade color in the traditional period (before1930) refers to its natural material (97.2%). The use of colors in house façade starts in the second period (1930-1980) when the white colors used in housing projects. The use of concert blocks with cement plastering in the third period (1980-2003) required the use of colors in the promotion of aesthetic values of the house façade (84.25%). Lately, in the advanced modernity period (after 2003) the characteristic features of house façade are a mixture between artificial colors and building material original colors as a rate of 70.3% of cases.

6.2.5 House Façade Arrangement Principles

The last parameter of this study is related to the arrangement of elements within overall house façade. The checklist factor indicates five factors as principles of house façade arrangement in a comprehensive whole. The analysis produced following results:

a) Solidity: The results show that the house façade solidity features in the traditional period (before1930) are mostly (91.6%) solid mass with punctual transparency openings as in Table 6.5. These features are changed to solid mass with large transparency openings (81.5%) in the second period (1930-1980) and third period (69.4%) respectively. Finally the idea of solidity transformed to sub-transparency by adding huge screen glass windows in house façade therefore, the last period is characterized by a new mode of combination between solidity and transparency (60.1%) with exception of few cases (29.6%) that rely on full transparence house façade.

Table 6.5: House Façade Solidity in Different Periods of Erbil City Evolution
Source: The Author

Traditional Period (Before 1930)	Modernity Period (1930-1980)	Transitional M. Period (1980-2003)	Advanced Modernity Period (after2003)
			

b) Complexity: The results show that the majority (94.4%) of cases in the traditional period (before1930) are considered as a simple form with simple elements, Hybrid elements within a simple form is the distinctive feature of second (as a rate of 78.7%) and third periods(72.2%) respectively. Finally the Hybrid elements within a complex form are the significant feature (62%) of the advanced modernity period.

c) Rhythm and Scale: According to the results (84.25%) house façades in the traditional period are classified as a unified rhythm within the human scale, whereas in the second and third periods human scale transformed to a new style with complicated rhythms in its arrangements. Finally, the concept of human scale totally changed and a new arrangement of house façade comes into view (76.85%) in the last period (after 2003), which is normally out of rhythm.

d) Regularity: The observation and visual characteristics documentation Results show that the regularity of façade elements with a simple mass is the distinctive feature of the traditional period (84.25%). Successively, the regularity of mass with homogeneous elements is the common feature of the second (69.4%) and third (60.1%) periods correspondingly. Lately, in the advanced modernity period (after 2003) the characteristic feature of house façade is a mixture of hybrid elements within a complicated mass as a rate of (60.1%).

e) Integration: House façade element repetition, hierarchy and stable balance are the characteristic features of the traditional period (67.59%). The combination of these properties in one façade leads to the total integration. In other periods there are no indication for structured repetition and hierarchy due to the plurality of elements in house façade. The only notable feature is the stable balance in the second and third periods respectively. Finally, the dynamic balance is the common feature of advanced modernity period (after 2003).

6.3 Summary of Qualitative Results

In general, the qualitative analysis reveals that each period of Erbil City evolution faced a different type of modernity forces, which is normally affecting its house façade architectural identity. In view of that, various stylistic features of house façade became visible within city sectors which are extremely difficult to classify them into one coherent system.

The results of visual analyses and the degree of change for the study parameters in this chapter clarify the characteristic feature for each period. These results shed light on the obvious stylistic differences among cases in each period of Erbil City evolution. Tables 6.6, 6.7, 6.8, and 6.9 summarize the characteristic features for each period correspondingly.

On the other hand, the comparable results in Table 6.10 reveal that the degree of change for the study parameters is as follows; the second period (1930-1980) includes (5 minor changes, 9 adaptations, 7 major changes, and 4 total changes) whereas the third period (1980-2003) contains (6 no changes, 12 minor changes, and only 7 adaptations) and finally the fourth period (after 2003) comprises (4 minor changes, 7 adaptations, 10 major changes, and 4 total changes). These outcomes are an indication of the effect of modernity forces on the house façade architectural identity. In the light of the above results, the degree of change can be considered as moderate to high in the second period (1930-1980), moderate in the third period(1980-2003), and high in the last period(after 2003). It is interesting to note, that major changes are occurred during the second and fourth periods in terms of the characteristic features of house façade.

Table 6.6: Summary of House Façade Characteristics in Traditional Period (before1930)

Factors			Qualitative Themes	Remarks
Mass & Articulation				
	Geometry of mass		Pure geometrical form	
	Building envelope		Pure simple envelope without any additions	
	Façade articulation		House façade has flat roof within simple mass	
	Orientation		House façade is Parallel with street lines	
	Base relation		Connected directly with outdoor facilities	
	Mass location		House Mass is fitted with land lines	
Openings				
	Window	Size	Small size to fulfill the principles of locality	
		Dimensionality	Punctual dimensionality within solid mass	
		Shape	Rectangular shape with square vent holes	
		Directivity	Vertical directivity of windows	
	Entrance	Street relations	Directly connected with street line	
		Location	Located at one side of the front façade	
		Accessibility	Indirect accessibility to provide privacy (Tilted on the main access).	
Architectural Details				
	Arches		Availability of different type of arches	
	Ornaments		Combination of brick patterns and wooden adornments	
	Columns		Availability of structural and decorative types.	
	Porches		No indication for any type of porches.	
Architectural Materials				
	Sustainability		Using brick as sustainable local material	
	Roofing Materials		Traditional roofing based on timber and matt.	
	Material Colors		Local brick as natural material colors	
Principles & Rules				
	Solidity		Solid mass with punctual openings	
	Complexity		Simple form with simple elements	
	Rhythm and Scale		Unified rhythm within human scale	
	Regularity		Regularity of house façade elements	
	Integration		The combination of element repetition, hierarchy and stable balance	
Total				

Table 6.7: Summary of House Façade Characteristics in Modernity Period (1930-1980)

Factors			Qualitative Themes	Remarks: Comparing with previous period
Mass & Articulation				Degree of Change
	Geometry of mass		Pure geometrical forms	Adaptation
	Building envelope		Pure simple envelope with additive & subtractive parts	Minor change
	Façade articulation		Flat roof , Simple mass and defined base	Major change
	Orientation		Parallel with street lines, set back in the front	Minor change
	Base relation		Connected through defined pedestal	Total change
	Mass location		House Mass setback from different sides	Total change
Openings				
	Window	Size	Medium to large size as a result of industrial capitalism	Major Change
	Window	Dimensionality	linear dimensionality	Adaptation
	Window	Shape	Rectangular shape	Adaptation
	Window	Directivity	Horizontal directivity of windows	Major change
	Entrance	Street relations	Raise on a platform and sets back from street line	Total change
	Entrance	Location	Located in the mid of front façade	Major change
	Entrance	Accessibility	Indirect accessibility through transitional spaces (front Garden).	Total change
Architectural Details				
	Arches		Surface depth round and segment arches	Major change
	Ornaments		brick ornament enhanced by colored cement plastering	Adaptation
	Columns		Using Steel columns in house façade	Adaptation
	Porches		Front porch that covering main entrance	Adaptation
Architectural Materials				
	Sustainability		Using brick or stones	Minor change
	Roofing Materials		Traditional jack arch-and reinforced concrete slab	Major change
	Material Colors		Artificial colors in most cases.	Major change
Principles & Rules				
	Solidity		Solid mass with large transparence openings	Adaptation
	Complexity		Simple form with hybrid elements	Minor change
	Rhythm and Scale		Unified rhythm within non-human scale	Adaptation
	Regularity		Regular elements within building façade	Adaptation
	Integration		Plurality of elements with Stable balance	Minor change
Total				

Table 6.8: Summary of House Façade Characteristics in Transitional Period (1980-2003)

Factors			Qualitative Themes	Remarks Comparing with previous period
Mass & Articulation				Degree of Change
	Geometry of mass		Pure geometrical forms	Minor change
	Building envelope		Hybrid envelope	Minor change
	Façade articulation		Flat roof and Simple mass	No change
	Orientation		Parallel with street lines, set back in the front	Minor change
	Base relation		Mixed between direct accessibility and rising over a pedestal.	Minor change
	Mass location		House Mass fitted in three sides and sets back from the front	Adaptation
Openings				
	Window	Size	large size	Adaptation
	Window	Dimensionality	linear dimensionality	Minor Change
	Window	Shape	Rectangular shape	No Change
	Window	Directivity	Horizontal directivity of windows	Minor Change
	Entrance	Street relations	Raise on a platform and sets back from street line	Minor Change
	Entrance	Location	Located in the mid of front façade	No Change
	Entrance	Accessibility	Indirect accessibility through transitional spaces (front Garden).	No Change
Architectural Details				
	Arches		Surface depth round and segment arches	No Change
	Ornaments		Decorative concrete mass	Adaptation
	Columns		Concrete column as support and decorative element.	Adaptation
	Porches		front porch that covering main entrance	No Change
Architectural Materials				
	Sustainability		Using concrete blocks	Adaptation
	Roofing Materials		Reinforced concrete flat roof	Minor Change
	Material Colors		Concrete color in most cases.	Minor Change
Principles & Rules				
	Solidity		Solid mass with large transparence openings	Minor Change
	Complexity		Simple form with hybrid elements	Adaptation
	Rhythm and Scale		Non-unified rhythm within house façade	Adaptation
	Regularity		Regularity of mass with homogenous hybrid elements.	Minor Change
	Integration		Plurality of elements with Stable balance	Minor Change
Total				

Table 6.9: Summary of House Façade Characteristics in Advanced Modernity Period (after 2003)

<table>
<tr><th colspan="3" rowspan="2">Visual Element Variables</th><th rowspan="2">Qualitative Themes</th><th>Remarks</th></tr>
<tr><th>Comparing with previous period</th></tr>
<tr><td colspan="3">Mass & Articulation</td><td></td><td>Degree of Change</td></tr>
<tr><td rowspan="6"></td><td colspan="2">Geometry of mass</td><td>Geometrical forms with few exception of curvature & flexure forms</td><td>Adaptation</td></tr>
<tr><td colspan="2">Building envelope</td><td>Multi layered envelope</td><td>Major Change</td></tr>
<tr><td colspan="2">Façade articulation</td><td>Service floor base , multiple layer body and flat roof</td><td>Total Change</td></tr>
<tr><td colspan="2">Orientation</td><td>Parallel with street lines, set back in the front</td><td>Minor Change</td></tr>
<tr><td colspan="2">Base relation</td><td>Base is the service floor with direct accessibility.</td><td>Total Change</td></tr>
<tr><td colspan="2">Mass location</td><td>House mass fitted in three sides and sets back from the front side only.</td><td>Minor Change</td></tr>
<tr><td colspan="3">Openings</td><td></td><td></td></tr>
<tr><td rowspan="7"></td><td rowspan="4">Window</td><td>Size</td><td>large size with huge screen glass</td><td>Major Change</td></tr>
<tr><td>Dimensionality</td><td>superficial dimensionality</td><td>Total Change</td></tr>
<tr><td>Shape</td><td>Rectangular shape</td><td>Adaptation</td></tr>
<tr><td>Directivity</td><td>Mixed directivity of windows</td><td>Major Change</td></tr>
<tr><td rowspan="3">Entrance</td><td>Street relations</td><td>Semi transparence large in size, raise on a platform and surrounded by decorative attachments</td><td>Major Change</td></tr>
<tr><td>Location</td><td>Focal point in front façade.</td><td>Major Change</td></tr>
<tr><td>Accessibility</td><td>Indirect accessibility by locating the entrance in first floor</td><td>Total Change</td></tr>
<tr><td colspan="3">Architectural Details</td><td></td><td></td></tr>
<tr><td rowspan="4"></td><td colspan="2">Arches</td><td>Deep depth segment arches</td><td>Adaptation</td></tr>
<tr><td colspan="2">Ornaments</td><td>Decorative Stone details</td><td>Major Change</td></tr>
<tr><td colspan="2">Columns</td><td>Decorative element.</td><td>Major Change</td></tr>
<tr><td colspan="2">Porches</td><td>Monumental portio</td><td>Adaptation</td></tr>
<tr><td colspan="3">Architectural Materials</td><td></td><td></td></tr>
<tr><td rowspan="3"></td><td colspan="2">Sustainability</td><td>Using local stone for finishing.</td><td>Major Change</td></tr>
<tr><td colspan="2">Roofing Materials</td><td>Reinforced concrete flat roof</td><td>Adaptation</td></tr>
<tr><td colspan="2">Material Colors</td><td>Mixing artificial colors with material original colors</td><td>Major Change</td></tr>
<tr><td colspan="3">Principles & Rules</td><td></td><td></td></tr>
<tr><td rowspan="5"></td><td colspan="2">Solidity</td><td>Combination between solidity and transparency.</td><td>Adaptation</td></tr>
<tr><td colspan="2">Complexity</td><td>Hybrid elements within a complex form</td><td>Major Change</td></tr>
<tr><td colspan="2">Rhythm and Scale</td><td>Non-rhythm arrangement, out of human scale</td><td>Adaptation</td></tr>
<tr><td colspan="2">Regularity</td><td>Combination of homogenous hybrid elements</td><td>Minor Change</td></tr>
<tr><td colspan="2">Integration</td><td>Plurality of elements with stable balance</td><td>Minor Change</td></tr>
<tr><td colspan="3">Total</td><td></td><td></td></tr>
</table>

Table 6.10: The Comparative Results of House Façade Visual Elements in Different Evolution Periods of Erbil City

Visual Element Factors	Degrees of change in Erbil City evolution periods															Notes
	Modernity Period (1930-1980)					Transitional Period (1980-2003)					Advanced Modernity Period (After 2003)					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Mass & Articulation																
Geometry of mass			X				X						X			
Building envelope		X					X							X		
Façade articulation				X		X									X	
Orientation		X					X					X				
Base relation					X		X								X	
Mass location					X			X				X				
Openings																
Window: Size				X				X						X		
Window: Dimensionality			X				X								X	
Window: Shape			X			X							X			
Window: Directivity				X			X							X		
Entrance: Street relations					X		X							X		
Entrance: Location				X		X								X		
Entrance: Accessibility					X	X									X	
Architectural Details																
Arches				X		X							X			
Ornaments			X					X						X		
Columns			X					X						X		
Porches			X			X							X			
Architectural Materials																
Sustainability		X						X						X		
Roofing Materials				X			X						X			
Material Colors				X			X							X		
Principles & Rules																
Solidity			X				X						X			
Complexity		X						X						X		
Rhythm and Scale			X					X					X			
Regularity			X				X					X				
Integration		X					X					X				
Total	0 No Changes	5 Minor Changes	9 Adaptations	7 Major Changes	4 Total Changes	6 No Changes	12 Minor Changes	7 Adaptations	0 Major Changes	0 Total Changes	0 No Changes	4 Minor Changes	7 Adaptations	10 Major Changes	4 Total Changes	

6.4 Quantitative Analysis

The second part of this chapter presents quantitative results. The main purpose of quantitative analysis is to measure the influence of house façade modernization on the continuity of architectural identity. The collected data (from a survey of 273 respondents) is processed to statistical analysis using the statistical package for the social science 16.0 software SPSS. As mentioned in the methodology chapter- Data analysis is a process of simplifying quantitative data into numerical data for a better understanding.

The quantitative analysis formulated in six ways which are: a) the demographic characteristics of the respondents, b) a descriptive analysis to determine the properties of architectural identity, c) the perceptions of respondents toward the continuity of architectural identity and house façade modernization factors, d) factor analysis of the house façade modernity statements, e) correlation analysis to test hypothesis and Finally, f) Multiple regression analysis to make a prediction about the dependent variable from several independent variables. The following sections demonstrate the data, analysis, results, and discussions.

6.5 Demographic Characteristics of the Respondents

The demographic characteristic of the respondents is related to the respondent background information which includes two aspects academic qualification and current occupation. The total respondents of this study are 273 members whom relating to the field of architecture in Erbil city. Figure 6.12 shows the academic qualifications of respondents which distributed to six categories as follows: The first category relates to upper level architectural students with the average of (44.3%), 6 post graduate students for the second category as an average of

(2.2%), the third category includes 102 respondents that holding bachelor degree in architecture as average of 36.2%, in the fourth category 23 respondents (8.2%) are holding high school diploma, 16 respondents (5.7%) have master degree in architecture for the fifth category, and only 5 respondents (1.8%) are holding Ph.D. degree in architecture for the final category.

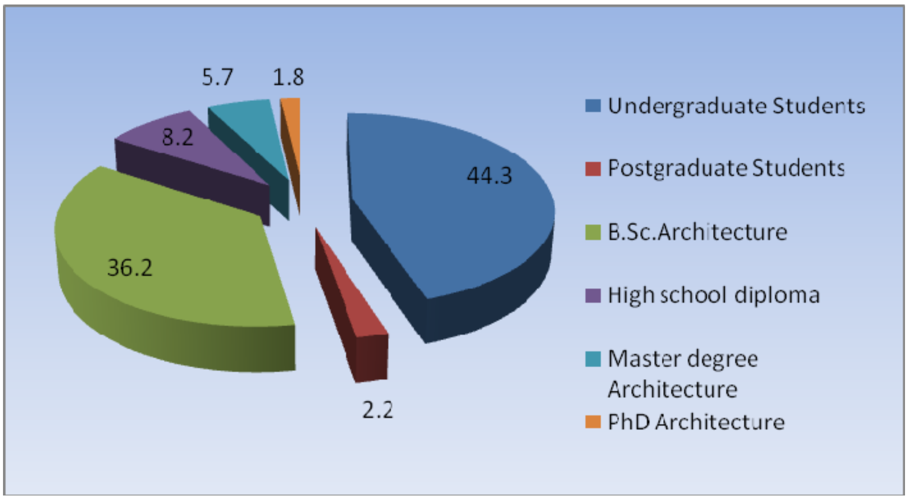


Figure 6.12: The Respondents' Academic Qualifications

The majorities of the respondents were architects and students in the architectural foundations. Inquiries regarding respondents' current occupations (Table 6.11) indicate that 122 respondents (43.6%) were students. More than one quarter (27.5%) of the respondents were government architects, (11.1%) of respondents were working at the private sector, and a small number of respondents were working as consultant architects and only 10% of respondents were academics. Based on the above indications, the data collected in this study relates to the group of people who have the architecture background. It has a high level of architectural contents and suitable for the study objectives.

Table 6.11: Background Information about Respondents' Current Occupations

		Frequency	Valid Percent	Cumulative Percent
Valid	Student	122	44.7	44.7
	Governmental Architect	77	28.2	72.9
	Private Sector Architect	31	11.4	84.2
	Consultant Architect	15	5.5	89.7
	University Teaching Staff	28	10.3	100.0
	Total	273	100.0	
Missing	System	7		
Total		280		

6.6 Descriptive Analysis (The Pillars of Architectural Identity)

The following subsections display the results of the second part of the questionnaire, correspondents were asked to consider various statements made about the main pillars of architectural identity. Descriptive analysis was used to categorize these inquiries into six listed areas that are, the root of building identity, the originality of architectural identity, the crucial factor that influences the construction of identity, the sources of architectural identity, the impact of modernity forces on the architectural identity and finally the continuity of architectural identity in Erbil City. The descriptive analysis produced the following results.

6.6.1 The Roots of Building Identity

Figure 6.13 shows that less than half (40.4%) of the respondents agreed that the identity of a building is related to its form, whereas 14.6% agreed that is related to the function, 13.6% to symbolic features, 12.5% to climate consideration, 6.1% to location (place), and only 3.2% of the respondents believed that the identity of a building is related to the building structure.

In the light of the above results, the study concentration on house façades (a visual part of the building's form) is fit with the correspondents' perspective regarding the issues of identity in architecture.

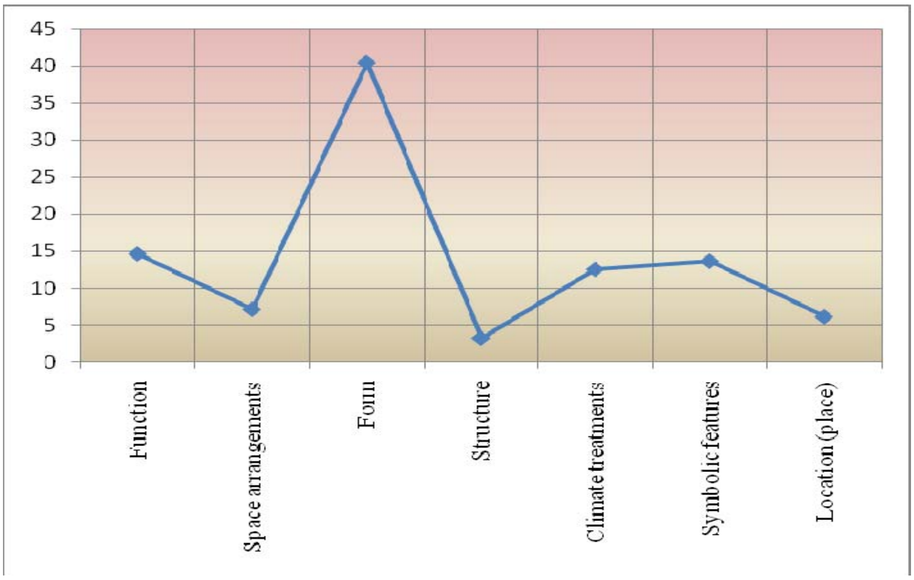


Figure 6.13: The Respondents' Conceptions about the Roots of Building Identity

6.6.2 The Originality of Architectural Identity in Erbil City

According to the results in Table 6.12 Erbil citadel traditional buildings were selected to be the origin of its architectural identity. As 69.2 % of respondents agreed that the originality of architectural identity is related to the citadel traditional buildings, whereas 17.9 % believed that it related to all building styles in different periods of city evolution, 9.9% believed that modern buildings (built after 2003) were representing its originality, 2.2% for buildings built (between 1930-1980), and only 0.7% for buildings built (between1980-2003) . These results shed the light on the issues of continuity and change as two contrast poles in the architectural identity phenomenon.

Table 6.12: Descriptive Analysis for the Originality of Architectural Identity in Erbil City

Building Type		Frequency	Valid Percent	Cumulative Percent
Valid	Erbil Citadel Traditional Buildings	189	69.2	69.2
	Buildings (Built between 1930-1980)	6	2.2	71.4
	Buildings (Built between 1981-2003)	2	.7	72.2
	Modern Buildings (Built after 2003)	27	9.9	82.1
	All of them	49	17.9	100.0
	Total	273	100.0	
Missing	System	7		
Total		280		

6.6.3 Factors Affecting the Construction of Identity

The results in Figure (6.14) show that building technique was the most effective factor in constructing the architectural identity as per the 32.1% of the respondent perspectives, followed by culture of the society as a rate of 26.1%, client requirements 17.9%, climatic conditions 6.8%, building heritage 6.8%, conventions and traditions 4.6%, and building regulation 2.9% respectively. These results clarify that all factors contribute positively in the process of identity construction. This means that the issue of identity in architecture is a complex phenomenon which relies on more than one factor.

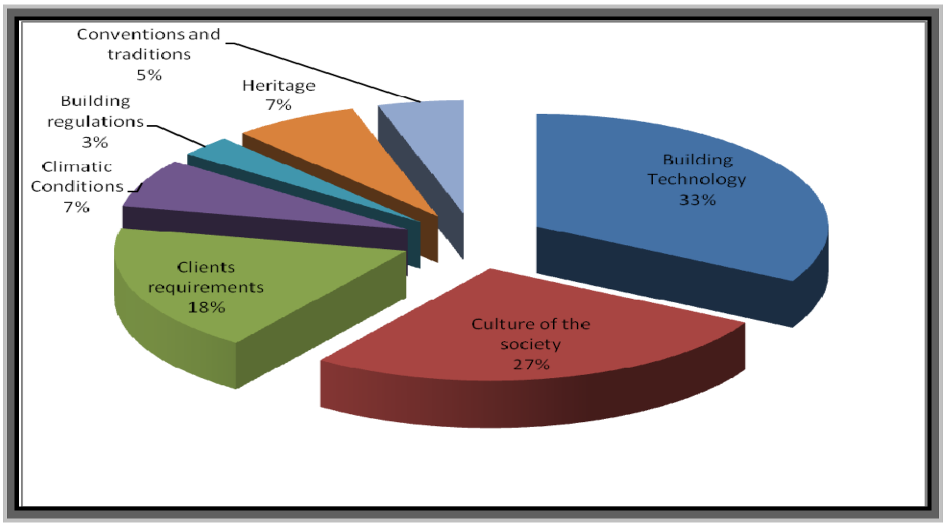


Figure 6.14: The Ratio of Respondents' Perspectives about Factors Affecting the Construction of Identity

6.6.4 The Source of Architectural Identity in Erbil City

As indicated in Table 6.13 more than half (57.1%) of the respondents believed that heritage is the important source of architectural identity, whereas 15.4% of them agreed that Islamic architecture was the source, 9.9% of respondents selected the Religion & beliefs, 9.2% of respondents chosen the architecture of defense cities, 5.9% selected hot and dry climate, and only 2.6% agreed that region privacy is a source of architecture identity. Based on the above results, the source of architectural identity is strongly related to previous experiences from the past. Hence, the concept of architectural identity continuity appeared to be the most effective parameter in this research. This finding supports the selection of this parameter among other identity parameters to be the dependant variable of this study.

Table 6.13: Descriptive Analysis for the Respondents' Point of View regarding The Source of Architectural Identity in Erbil City

The Source of Architectural identity		Frequency	Valid Percent	Cumulative Percent
	Religion& beliefs	27	9.9	9.9
	Heritage	156	57.1	67.0
	Islamic Architecture	42	15.4	82.4
	Architecture of Defense Cities	25	9.2	91.6
	Hot &Dry Climate	16	5.9	97.4
	Region privacy	7	2.6	100.0
	Total	273	100.0	

6.6.5 The Positive and Negative Impact of Modernity Forces

Figure 6.15 show that more than half (54.6%) of the respondents agreed that modernity forces had a negative impact on architectural identity. Whereas 31.8% of respondents believed that modernity force will construct new identity. 7.1% of respondents indicated the positive impact of modernity and only 0.7% believed that modernity ruin to local identity whereas 0.4% believed that there were no impact at all. The finding of this section enhances the two conflict direction that come out from the discussion of previous studies in Chapter One.

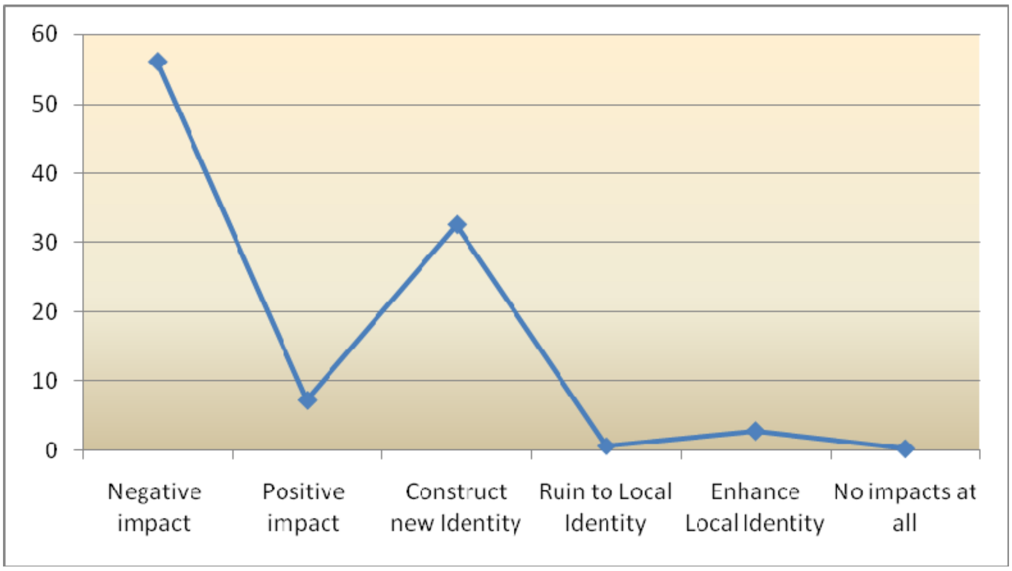


Figure 6.15: The Impact of Modernity Forces on Architectural Identity

6.6.6 The Continuity of Architectural Identity in Erbil City

Table 6.14 indicates that most of (89.7%) respondents disagreed about the continuity of architectural identity in Erbil City. This means that the architectural identity changed over time and fundamental changes occurred to its visual appearance which is in most cases related to modernization forces. Moreover, 94.1% of respondents believed that the architectural identity is a process. The finding of this question enhanced the opinion of

Correa (1983), Hall (1998), and Castells (2004) that identity is not an object, but it is a continuous process. In the other directions, only 27.8% of respondents agreed that architectural identity created by modernity forces and less than quarter (12.8%) accepted to replicate western theoretical style in local traditions. Again the finding of last two questions is match with previous literature regarding the question of modernity. As Froomkin (2003) explained it as the justification of social choices in a world of fundamental moral equal opportunity.

Table 6.14: The Respondents' Perspective about the Continuity of Architectural Identity in Erbil City

S	Questions	Answers(Yes)	Answers (No)
1	Erbil city has continuity of architectural identity.	10.3%	89.7%
2	Architecture identity is a process.	94.1%	5.9%
3	Architectural identity created by modernity forces.	27.8%	72.2%
4	Replicate the western theoretical styles in local culture.	12.8%	87.2%

6.7 The Perception of Respondents toward the Continuity of Architectural Identity and the House Façade Modernization Factors (Objective No.3).

The third objective of this study is to examine the relationship between respondents' demographic characteristics and their perceptions toward the continuity of architectural identity in one hand, and their opinions toward the house façade modernization in the other hand. To examine these relationships, one-way ANOVA were conducted. This test analyzed the variation within and between groups or categories of data using a comparison of means. Based on the descriptive statistics the score for the variables were presented which included sample size, mean, standard deviations, standard errors, 95% confidence interval for mean, minimum and maximum of the theoretical range.

6.7.1 Respondents Perceptions toward the Continuity of Architectural Identity

One way ANOVA technique was conducted to analyze the significance of variations in the opinions of respondents (in the field of architecture) regarding the continuity of architectural identity in Erbil city. Following statistical results were obtained: The mean score for the whole data set as perceived by the respondents was 3.60 with a standard deviation of 0.391 the minimum and maximum were 2.33 and 4.67 respectively. The five categories showed different opinions regarding the continuity of architectural identity. As indicated in Table 6.15, statistical tests clearly provide following data:

1- The students mean score regarding the continuity of architectural identity were 3.45 with a standard deviation of 0.329.The maximum and minimum score were 2.33 and 4.33 respectively.
2- The governmental architects mean score regarding the continuity of architectural identity were 3.71 with a standard deviation of 0.426.The maximum and minimum score were 2.83 and 4.67 respectively.
3- The private sector architects mean score regarding the continuity of architectural identity were 3.85with a standard deviation of 0.294.The maximum and minimum score were 3.33 and 4.50 respectively.

4- The consultant architects mean score regarding the continuity of architectural identity were 3.61 with a standard deviation of 0.376.The maximum and minimum score were 3.00 and 4.33 respectively.

5- The university teaching staffs mean score regarding the continuity of architectural identity were 3.69 with a standard deviation of 0.403.The maximum and minimum score were 2.83 and 4.33 respectively.

Table 6.15: Descriptive Details for the Respondents' Perceptions toward the Continuity of Architectural Identity

Respondents Occupations	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Min.	Max.
					Lower Bound	Upper Bound		
Student	122	3.4590	.32939	.02982	3.4000	3.5181	2.33	4.33
Governmental Architect	77	3.7165	.42669	.04863	3.6196	3.8133	2.83	4.67
Private Sector Architect	31	3.8548	.29421	.05284	3.7469	3.9628	3.33	4.50
Consultant Architect	15	3.6111	.37621	.09714	3.4028	3.8194	3.00	4.33
University Teaching S.	28	3.6964	.40331	.07622	3.5400	3.8528	2.83	4.33
Total	273	3.6093	.39134	.02369	3.5627	3.6559	2.33	4.67

The statistical results in Table 6.16, clearly provide evidence that there are a significant variations in respondents' perceptions toward the continuity of architectural identity in Erbil City, the ANOVA results for this factor was ($F=10.667$, $p< 0.05$).

In conclusion, there is a statistically significant difference, $\alpha < 0.05$, between respondents at different occupations, in their attitudes toward the continuity of architectural identity in Erbil City. This is because the knowledge and experience of respondents played an effective role in understanding the issues of identity in developing countries.

Table 6.16: One-way ANOVA for the Continuity of Architectural Identity

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.721	4	1.430	10.667	.000
Within Groups	35.935	268	.134		
Total	41.656	272			

6.7.2 Respondents Perceptions toward House Façade Modernization Factors

The next part of the third objective aims to examine the relationship between respondents' demographic characteristics and their opinions toward the house façade modernization factors. Accordingly following statistical tests were conducted.

6.7.2.1 Mass and Articulation

Regarding the first parameter which has six factors, these are 1) Geometry of mass, 2) Building envelope, 3) Type of articulated façades (base, body and roof), 4) House façade orientation, 5) Base relationship to the ground line, and 6) Mass location within the plot of land. Statistical descriptive results for this parameter indicated that the mean score for the whole data set as perceived by the respondents was 3.12 with a standard deviation of 0.571 the minimum and maximum were 1.20 and 5.00 respectively. Table 6.17 provides more details about statistical tests for mass and articulation factors.

Table 6.17: Descriptive Details for Mass and Articulation Factors

		N	Mean	Std. Deviation	Min.	Max.
Geometry	Student	122	3.0016	.44350	1.80	4.20
	Governmental Architect	77	3.2494	.38547	2.40	4.60
	Private Sector Architect	31	3.0968	.47009	1.60	4.00
	Consultant Architect	15	3.0933	.37696	2.40	3.80
	University Teaching Staff	28	3.2500	.61494	1.20	4.40
	Total	273	3.1128	.45940	1.20	4.60
Building Envelope	Student	122	2.6947	.57452	1.25	4.25
	Governmental Architect	77	3.0909	.55445	2.00	4.75
	Private Sector Architect	31	2.9113	.50228	1.50	4.25
	Consultant Architect	15	2.9333	.50415	2.00	3.50
	University Teaching Staff	28	2.9911	.50223	2.25	4.50
	Total	273	2.8745	.57287	1.25	4.75
Articulation of façade	Student	122	2.8224	.51815	1.67	4.33
	Governmental Architect	77	3.3853	.45262	2.00	4.67
	Private Sector Architect	31	3.3763	.48490	2.33	4.33
	Consultant Architect	15	3.3111	.55587	2.33	4.33
	University Teaching Staff	28	3.4524	.62994	2.00	5.00
	Total	273	3.1355	.58153	1.67	5.00
Orientation	Student	122	3.0301	.50707	2.00	4.33
	Governmental Architect	77	3.2944	.61171	2.00	4.67
	Private Sector Architect	31	3.2258	.69061	2.00	5.00
	Consultant Architect	15	3.4667	.48469	2.67	4.67
	University Teaching Staff	28	3.6429	.63459	2.33	5.00
	Total	273	3.2137	.60256	2.00	5.00
Base relationships	Student	122	2.6858	.44598	1.33	3.67
	Governmental Architect	77	3.2597	.57893	2.00	4.67
	Private Sector Architect	31	3.3871	.51709	2.33	4.33
	Consultant Architect	15	3.3556	.47920	2.67	4.33
	University Teaching Staff	28	3.4643	.53931	2.33	4.67
	Total	273	3.0440	.59999	1.33	4.67
Mass Location	Student	122	2.8648	.54937	1.50	4.50
	Governmental Architect	77	3.4675	.45406	2.50	5.00
	Private Sector Architect	31	3.5323	.65746	2.50	5.00
	Consultant Architect	15	3.4333	.45774	3.00	4.50
	University Teaching Staff	28	3.5000	.54433	2.50	5.00
	Total	273	3.2070	.61254	1.50	5.00
Total		273	3.1279	.57148	1.2	5.00

The statistical results in Table 6.18 provide evidence that there are significant variations in respondents' perceptions toward the mass and articulation, the ANOVA results for the factors were as follows: Geometry (F=4.329, p< 0.05), Building envelope (F=6.619, p< 0.05), Articulation of façade (F=20.856, p< 0.05), Orientation (F=8.173, p< 0.05), Base relationships (F=28.594, p< 0.05), and Mass location (F=22.867, p< 0.05).

Table 6.18: One-way ANOVA for Mass and Articulation Parameter

Mass & Articulation Factors		Sum of Squares	df	Mean Square	F	Sig.
Geometry	Between Groups	3.484	4	.871	4.329	.002
	Within Groups	53.921	268	.201		
	Total	57.405	272			
Building Envelope	Between Groups	8.026	4	2.006	6.619	.000
	Within Groups	81.240	268	.303		
	Total	89.266	272			
Articulation of façade	Between Groups	21.836	4	5.459	20.856	.000
	Within Groups	70.149	268	.262		
	Total	91.985	272			
Orientation	Between Groups	10.737	4	2.684	8.173	.000
	Within Groups	88.021	268	.328		
	Total	98.758	272			
Base relationships	Between Groups	29.289	4	7.322	28.594	.000
	Within Groups	68.628	268	.256		
	Total	97.917	272			
Mass Location	Between Groups	25.968	4	6.492	22.867	.000
	Within Groups	76.088	268	.284		
	Total	102.057	272			

6.7.2.2 House Façade Openings

The second parameter (House Façade Openings) has two dimensions, house façade windows and house façade entrances. The descriptive analysis for this parameter indicated that the mean score for the whole data set as perceived by the respondents was 3.11with a standard deviation of 0.360 the minimum and maximum were 1.89 and 4.22 respectively. Table 6.19 provides more details about statistical tests for the house façade openings.

Table 6.19: Descriptive Details for House Façade Openings

	N	Mean	Std. Deviation	Minimum	Maximum
Student	122	2.9226	.32665	1.89	3.78
Governmental Architect	77	3.2655	.29240	2.56	4.11
Private Sector Architect	31	3.2473	.23607	2.89	4.00
Consultant Architect	15	3.3926	.33032	2.78	3.89
University Teaching Staff	28	3.2421	.39666	2.56	4.22
Total	273	3.1148	.36009	1.89	4.22

The statistical results in Table 6.20, present facts that there is significant variations in respondents' perceptions toward the house façade opining variable , the ANOVA results for this factor was ($F=20.985$, $p< 0.05$), Consequently, there are statistically significant differences, $\alpha < 0.05$, between respondents at different occupations, in their attitudes toward house façade openings variable.

Table 6.20: One-way ANOVA for House Façade Openings

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.412	4	2.103	20.985	.000
Within Groups	26.856	268	.100		
Total	35.268	272			

6.7.2.3 House Façade Architectural Details

The descriptive analysis for this parameter indicate that the mean score for the whole data set as perceived by the respondents was 3.06with a standard deviation of 0.444 the minimum and maximum were 1.63 and 4.25 respectively. Table 6.21 provides more details about statistical tests for the house façade architectural details.

Table 6.21: Descriptive Details for House Façade Architectural Details

	N	Mean	Std. Deviation	Minimum	Maximum
Student	122	2.8637	.41474	1.63	3.88
Governmental Architect	77	3.2094	.43606	2.13	4.00
Private Sector Architect	31	3.3145	.37482	2.63	4.25
Consultant Architect	15	3.0583	.41152	2.13	3.75
University Teaching Staff	28	3.2679	.29407	2.75	4.00
Total	273	3.0646	.44480	1.63	4.25

The statistical results in Table 6.22, provide evidence that there are significant variations in respondents' perceptions toward the house façade architectural details, the ANOVA results was ($F=14.604$, $p< 0.05$), consequently, there are statistically significant differences, $\alpha < 0.05$, between respondents at different occupations, in their attitudes toward the house façade architectural details.

Table 6.22: One-way ANOVA for House Façade Architectural Details

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9.631	4	2.408	14.604	.000
Within Groups	44.184	268	.165		
Total	53.815	272			

6.7.2.4 House Façade Materials

The fourth parameter (House Façade Materials) has three dimensions. These dimensions are martial sustainability, roofing materials, and material colors. The descriptive analysis for this parameter indicate that the mean score for the whole data set as perceived by the respondents was 3.25 with a standard deviation of 0.319 the minimum and maximum were 2.29 and 4.53 respectively. Table 6.23 provides more details about statistical tests for the house façade materials.

Table 6.23: Descriptive Details for House Façade Materials

	N	Mean	Std. Deviation	Minimum	Maximum
Student	122	3.1128	.29904	2.29	3.88
Governmental Architect	77	3.3239	.29653	2.59	4.06
Private Sector Architect	31	3.4421	.23227	2.94	4.00
Consultant Architect	15	3.2627	.18848	2.94	3.59
University Teaching Staff	28	3.4811	.31821	3.00	4.53
Total	273	3.2558	.31913	2.29	4.53

The statistical results in Table 6.24, provide evidence that there are significant variations in respondents' perceptions toward the house façade materiel variable , the ANOVA results for house façade material was ($F=16.034$, $p< 0.05$), Consequently, there are statistically significant differences, $\alpha < 0.05$, between respondents at different occupations, in their attitudes toward the house façade material.

Table 6.24: One-way ANOVA for House Façade Materials

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.349	4	1.337	16.034	.000
Within Groups	22.353	268	.083		
Total	27.702	272			

6.7.2.5 House Façade Arrangement Principles

The last parameter (House Façade Arrangement Principles) has five factors namely, solidity, complexity, rhythm and scale, regularity, and integration. The descriptive analysis for this parameter indicate that the mean score for the whole data set as perceived by the respondents was 2.87 with a standard deviation of 0.237 the minimum and maximum were 2.28 and 4.22 respectively. Table 6.25 provides more details about statistical tests for house façade arrangement principles.

Table 6.25: Descriptive Details for House Façade Arrangement Principles

	N	Mean	Std. Deviation	Minimum	Maximum
Student	122	2.8429	.22196	2.33	3.39
Governmental Architect	77	2.8860	.23551	2.28	3.33
Private Sector Architect	31	2.8978	.22273	2.50	3.56
Consultant Architect	15	2.8778	.13960	2.67	3.17
University Teaching Staff	28	2.9762	.33038	2.56	4.22
Total	273	2.8769	.23734	2.28	4.22

The One way ANOVA statistical results in Table 6.26 and Table 6.27 provide evidence that there are no significant variations in respondents' perceptions toward house façade arrangement principles, as all significant levels (0.584 for solidity, 0.66 for complexity, 0.313for rhythm& scale, and 0.570 for regularity) are more than 0.05.

Table 6.26: One-way ANOVA for House Façade Arrangement Principles (Over All)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.437	4	.109	1.968	.100
Within Groups	14.885	268	.056		
Total	15.322	272			

Table 6.27: One-way ANOVA for House Façade Arrangement Principles Factors

		Sum of Squares	df	Mean Square	F	Sig.
Solidity	Between Groups	.570	4	.142	.712	.584
	Within Groups	53.615	268	.200		
	Total	54.185	272			
Complexity	Between Groups	2.673	4	.668	2.234	.066
	Within Groups	80.163	268	.299		
	Total	82.836	272			
Rhythm	Between Groups	1.287	4	.322	1.195	.313
	Within Groups	72.188	268	.269		
	Total	73.476	272			
Regularity	Between Groups	.713	4	.178	.733	.570
	Within Groups	65.172	268	.243		
	Total	65.885	272			
Integration	Between Groups	4.496	4	1.124	5.057	.001
	Within Groups	59.572	268	.222		
	Total	64.069	272			

6.7.3 Summary of the Perceptions toward House Façade Modernity Factors

In conclusion, there are statistically significant differences, $\alpha < 0.05$, between respondents at different occupation, in their attitudes toward following parameters (Mass and Articulation, Openings, Architectural Details, and Materials). These results reflect the multiplicity and diversity of trends in architectural practice for different occupations. Also it is clear to suggest that the main reason behind the significant differences between means is related to respondents believe that these parameters had a substantial influence on continuity of architectural identity. In contrast, the respondent attitude toward the house façade arrangement principles, are no statistically significant. This implies that all five occupation category respondents have a similar opinion concerning the house façade arrangement principles. The interpretation of the similarities in respondents' opinion clarifies the availability of common agreements on this parameter. In view of the fact, the house façade arrangement principles are the most fixed aspects in architectural practice.

6.8 The Refinement of the House Façade Factors Dimensionality in the Theoretical Model (Objective No 3.)

To achieve the third objective of this study, Factor analysis using varimax rotation was conducted to assess validity of items and summarize the sort of correlation among factors. Moreover, factor analyses are used for data reduction, development of the proposed theoretical model and finally identify significant house façade modernity factors that influencing the continuity of architectural identity within the proposed model.

6.8.1 Factor Analysis on Mass and Articulation

In order to identify mass and articulation dimensions, exploratory factor analysis was run on17 variables to group and rank factors with similar characteristics. Table 6.29 show the outcome of factor analysis on 17 items for mass and articulation parameter. After the first analysis, all factors had an Eigenvalues greater than one. One of initial scale items was eliminated from farther analysis due to loading below 0.33. As recommended by Pallant (2007) that the factorability of the correlation matrix should be greater than 0.33. Table 6.28 and Table 6.29 present the result of factor analysis with factor loading ranging from 0.351 to 0.782. The Bartlett's test of Sphericity is significant and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was 0.712 which indicating that there is sufficient number of significant inter-correlation for factor analysis. According to Tabachnick & Fidell (2007), the KMO index ranges from 0 to 1, with .6 suggested as the minimum value for a good factor analysis.

Table 6.28: KMO and Bartlett's Test-(Mass and Articulation)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.712
Bartlett's Test of Sphericity	Approx. Chi-Square	728.294
	df	136
	Sig.	.000

Table 6.29 summarized the outcome of rotated component matrix on the final three factors solution. After defining the factors (items highlighted in the table fall under the same factor). The factor loadings, Eigenvalues, and variance explained by each factor are recorded. Accordingly, the extraction process includes three factors with relative explanatory power Eigenvalues 3.14, 2.07 and 1.39 respectively. The first factor has seven items, the second factor has six items and the last factor has three items. Those three factors captured 38.9% of the variance. The items included in the extracted factors were originally derived from six theorized dimensions namely, 1) Geometry of mass, 2) Building envelope, 3) Type of articulated façades (base, body, and roof), 4) House façade orientation, 5) Base relation with the ground line, and 6) Mass location within the plot of land. On the bases of factor loading, the three factors from the extraction process are named accordingly.

The first factor was the combination of geometry of mass, building envelope, and façade articulation. It was dominating by items relating to building envelope transformation, modernization, façade geometry, form location, and form set back. This dimension would be named as house façade envelope geometry. The second factor contained three items related to a house façade orientation and therefore, enhanced by façade base line, location of mass within a plot of land and house base, body, and roof rearrangement. Thus, this dimension would be named house façade orientation. The last factor was the combination of building envelope and geometry of mass. It was dominating by items relating to façade locality, geometrical diversity, and building envelope alteration. This dimension would be named as façade elements familiarity.

Table 6.29: Rotated Component Matrix for-Mass and Articulation

Mass & Articulation	Factor 1	Factor 2	Factor 3
Building envelope modernization will lead to reduce the authenticity of architectural identity.	.712		
Building envelope transformation has direct relationship with meaning dimensions.	.705		
Altering façade geometry will decrease the continuity of architectural identity.	.590		
Altering the façade articulations will reduce the clarity of meaning understanding.	.567		
Variation of façade geometry toward non- regular geometry will reduce the symbolic expression of architectural identity.	.509		
Form location within the plot of land will support the climate consideration of architectural identity.	.497		
Setting back the form from all sides of land is a translation of western modernization toward local architectural identity.	.351		
House façade orientation has a direct relationship with climate consideration of architectural identity.		.660	
House façade orientation improves energy efficiency that lead to authenticity of architectural identity.		.634	
House base, body, and roof rearrangement in a new pattern have a negative impact on the continuity of architectural identity.		.595	
Rising façade base line on a defined pedestal is considered as a mode of capitalism.		.582	
House façade orientation and its relationship with street line have a positive impact on visual sign and cues of architectural message.		.562	
The locations of Architectural form within the plot of land have a positive impact on identity belonging to the place.		.503	
Building envelope transformations from locality to modernization will increase the visual privacy.			.782
Altering the geometry of mass will increase the diversity of architectural identity.			.721
Building envelope alterations has a negative impact on architectural identity continuity.			.636

6.8.2 Factor Analysis on House Façade Openings

Table 6.30 show the outcome of factor analysis on 9 questions for house façade openings variable, with factor loading ranging from 0.403 to 0.686. The Bartlett's test of Sphericity is significant and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was 0.602 which indicating that there is sufficient number of significant inter-correlation for factor analysis.

Table 6.30: KMO and Bartlett's Test-Openings

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.602
Bartlett's Test of Sphericity	Approx. Chi-Square	72.335
	df	15
	Sig.	.000

Table 6.31: Rotated Component Matrix for-Openings

House Façade Openings	Factor 1	Factor 2
Enlarging the scale of entrance will enhance the modernity mode of power.	.685	
Hiding the entrance opening location within the mass has a negative impact on identity symbolic function.	.591	
Changing the dimensionality of openings has a crucial impact on identity symbolic functions.	.449	
Changing the size of windows to large screen glazing panels is a reflection of western modernity.	.448	
Altering the entrance indirect accessibility will increase the continuity of architectural identity.	.403	
Transparence large size windows will create new identity for house façades in the specified places.		.686
Openings shape transformations toward western modernization have a negative impact on authenticity of architectural identity.		.642
Altering the directivity of openings will decrease the continuity of architectural identity.		.601

Table 6.31 summarized the outcome of rotated component matrix. The extraction process includes two factors. The first factor has five items whereas the second factor has three items. After evaluating the items the two factors were named in descending order of total variance explained :(1) Entrance and (2) Windows. One of initial scale items was eliminated from farther analysis due to loading below 0.33. As recommended by Pallant (2007) that the factorability of the correlation matrix should be greater than 0.33.

6.8.3 Factor Analysis on House Façade Architectural Details

The result of factor analysis for house façade architectural details using seven questions showed two factors, with factor loading ranging from 0.406 to 0.783 (Table 6.33). The Bartlett's test of Sphericity is significant and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was 0.621 (Table 6.32) which indicating that there is sufficient number of significant inter-correlation for factor analysis.

Table 6.32: KMO and Bartlett's Test- Architectural Details

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.621
Bartlett's Test of Sphericity	Approx. Chi-Square	79.958
	df	21
	Sig.	.000

Table 6.33 outlined the results of the rotated component matrix. The extraction process includes two factors. The first factor had three items and the second factor has four items. After evaluating the items the two factors were named in descending order of total variance explained: 1) Architectural details mechanism and (2) Architectural details enhancements.

Table 6.33: Rotated Component Matrix for-Architectural Details

House Façade Architectural Details	Factor 1	Factor 2
Using effective ways to keep architectural details support the authenticity of architectural identity.	.783	
Transformation architectural details from local traditions to modern elements will reduce the belonging to place.	.621	
Copy and paste procedure for architectural details leads to lose diversity of architectural identity.	.599	
Improving the architectural details of house façade will increase the diversity.		.754
Modernization of architectural details will affect the privacy of architectural identity.		.517
Imitation of architectural details as a channel of creativity will enhance the moral aspects of architectural identity.		.490
Technology as a mode of modernity has a negative impact on authenticity of architectural details.		.406

6.8.4 Factor Analysis on House Façade Materials

The result of factor analysis for house façade materials using fifteen questions show three factors, with factor loading ranging from 0.352 to 0.730 (Table 6.34). The Bartlett's test of Sphericity is significant and the (KMO) measure of sample adequacy (Table 6.35) was 0.625 which indicating that there is sufficient number of significant inter-correlation for factor analysis. Table 6.34 present the outcomes of the extraction process which includes three factors with relative explanatory power Eigenvalues 2.27, 1.64, and 1.28 respectively. The first factor has five items, the second factor has five items and the last factor has four items. Those three factors captured 34.66% of the variance. After evaluating the items the three factors were named in descending order of total variance explained: (1) Material sustainability, (2) Materials colors, and (3) Roofing materials. One of initial scale items was eliminated from farther analysis due to loading below 0.33.

Table 6.34: Rotated Component Matrix for-Architectural Materials

Architectural Materials	Factor 1	Factor 2	Factor 3
Durability of façade local materials has a positive impact on the physical of architectural identity.	.725		
Efficient use of local materials in house façade will enhance the authenticity of architectural identity.	.715		
Using sustain materials in house façades will improve the (climate consideration) of architectural identity.	.595		
Maximizing local material in house façades will increase the soul of belonging to the place.	.535		
Mixing local materials with alien material in house façades design have a negative impact on moral properties of architectural identity.	.476		
House façade colors are a reflection of household socio cultural values.		.652	
Maximizing colors in house façade lead to confusion which affects the meaning dimension of architectural message.		.605	
Constructing new identities in local tradition is a translation of new technologies and construction methods.		.494	
Changing traditional roofing system will improve the way toward new innovations and leads to construct new identities.		.488	
Material natural colors in house façade will enhance the physical and moral aspects of architectural identity.		.463	
Using flat roof shape in house design has a positive impact on the household social activities.			.711
House roof shape is a translation of socio-cultural factors.			.686
Using sustainable materials in house roof s is one of the actions to reduce the environmental impact.			.454
Parapet line relations with adjacent buildings will reflect the continuity of architectural identity.			.377

Table 6.35: KMO and Bartlett's Test- House Façade Materials

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.625
Bartlett's Test of Sphericity	Approx. Chi-Square	357.099
	df	105
	Sig.	.000

6.8.5 Factor Analysis on House Façade Arrangement Principles

Table6.36 and Table 6.37 show the outcomes of factor analysis on seventeen questions for house façade arrangement principles, with factor loading ranging from 0.337 to 0.729. The Bartlett's test of Sphericity is significant and the Kaiser-Meyer-Olkin (KMO) measure of sample adequacy was 0.653 which indicating that there is sufficient number of significant inter-correlation for factor analysis.

Table 6.36: KMO and Bartlett's Test- House Façade Arrangement Principles

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.653
Bartlett's Test of Sphericity	Approx. Chi-Square	232.595
	df	136
	Sig.	.000

Table 6.37 outlined the results of the rotated component matrix for house façade arrangement principles. The extraction process includes four factors with relative explanatory power Eigenvalues 1.86, 1.41, 1.32, and 1.26 respectively. The first factor has five items, the second factor has three items, the third has five items and the last factor has four items. Those four factors captured 34.48% of the variance. After evaluating the items the four factors were named in descending order of total variance explained: (1) Solidity, (2) Integration, (3) Regularity, and (4) Complexity.

Table 6.37: Rotated Component Matrix for- House Façade Arrangement Principles

Opening	Factor 1	Factor 2	Factor 3	Factor 4
Increasing transparency in house façade form will lead to western outdoor looking approach.	-.663			
Minimizing house façade form solidity has a negative impact on climate consideration in hot dusty environments.	.590			
Using large transparent elements in house façade will reduce the privacy of architectural identity	.572			
House façade elements integration will increase the familiarity of architectural message.	.424			
House façade rhythm of elements will create symbolic representation.	-.377			
House façade element integration will lead to rhetoric and originality of the architectural message.		.729		
Integration between house façade elements has a positive effect on the multiplicity of meaning.		.664		
House façade element integration will intensify the symbolic expression of architectural identity.		.622		
Decreasing house façade regularity of elements will reduce the degree of visual privacy and visual isolation.			.655	
Altering rhythm of elements has a negative impact on the symbolic expression of architectural identity.			.475	
Changing house façade elements regularity has a negative impact on intelligibility of meaning understanding.			.446	
Changing rhythm of house façade elements lead to decreasing familiarity of meanings.			.443	
Altering the solidity of form will affect the symbolic expression of architectural identity.			.382	
Maximizing house façade form complexity will decrease the clarity of architectural symbols.				.499
Maximizing house façade form solidity reflects Historic Privacy of Erbil city.				-.491
Complexities of elements in house façade have a negative impact on cultural identity authenticity.				.471
Complexity of elements in house façade will increase the complication of architectural meanings.				.413

6.9 The Proposed Theoretical Model

Factor analysis results show that the proposed theoretical model contains five parameters namely, Mass and Articulation, House façade openings, House façade architectural details, House façade materials and House façade arrangement principles. The first parameter (Mass and Articulation) had changed from six dimensions to three dimensions namely, (1) house façade envelope geometry, (2) house façade orientation, and (3) house façade elements familiarity. The second parameter (House façade openings) remained unchanged. The third parameter (House façade architectural details) was rearranged into two dimensions namely, (1) Architectural detail mechanism and (2) Architectural detail enhancements. The fourth parameter (House façade materials) rearranged in the same items which are (1) Material sustainability, (2) Material colors, and (3) Roofing materials. The last parameter (House façade arrangement principles) had changed from five dimensions to four dimensions namely, (1) Solidity, (2) Integration, (3) Regularity, and (4) Complexity. The proposed conceptual framework is presented in Figure 6.16.

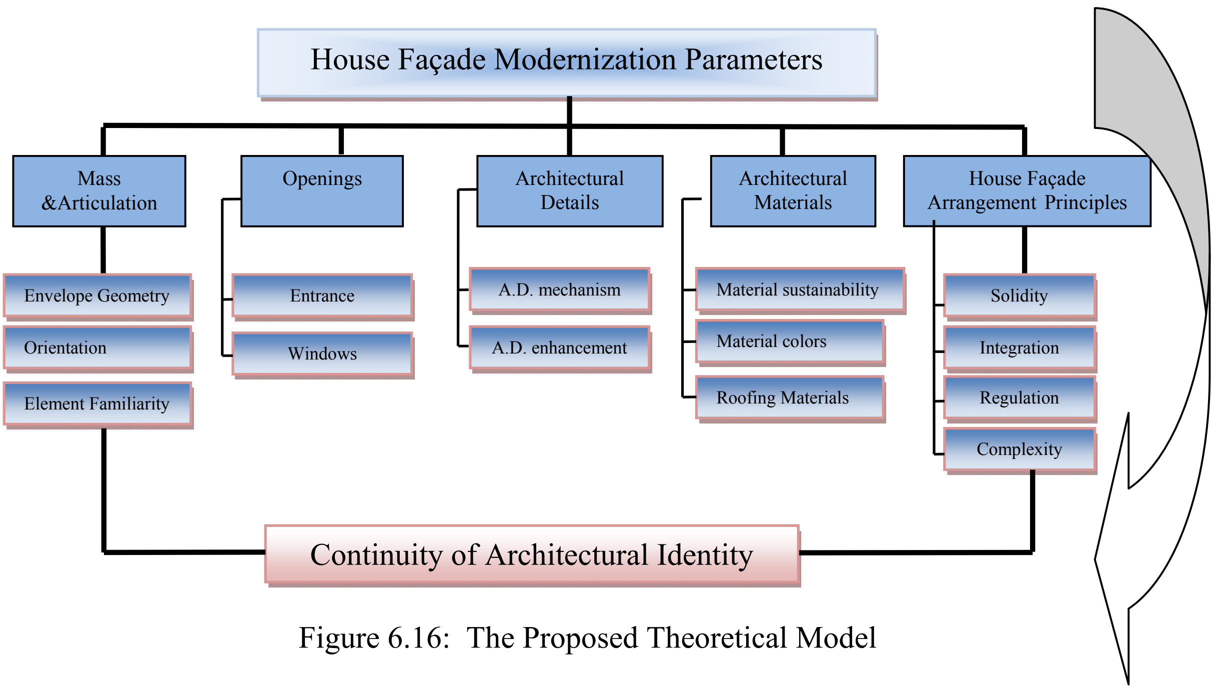


Figure 6.16: The Proposed Theoretical Model

6.10 The Relationships between House Façade Modernity Factors and Continuity of Architectural Identity (Objective No. 4)

The fourth objective of this study is to examine the relationships of house façade modernity factors (Mass and Articulation, Openings, Architectural details, Architectural material, and House façade arrangement principles) and the continuity of architectural identity. The aim is to determine the significant correlation between the factors that affect the continuity of architectural identity and to test hypothesis. Thus; correlation analysis (Pearson Product Moment Correlation Coefficient Test) was used to explore the relationships among the variables as well as to describe the strength and direction of the liner relationship between variables. Every independent variable is correlated to a dependent variable. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation whereas a value of +1.00 represents a perfect positive correlation. A value of 0.00 represents a lack of correlation (Kumar *et al*., 2005).

The correlation analysis was conducted on all variables. In interpreting the strength of relationship between variables, different authors suggest different interpretations; however, Cohen (1988) suggests the following guidelines: the strength of correlation is considered as small if (r = 0.10-.29), medium if (r = 0.30-0.49), and large if (r = 0.50-1.0) whereas Muijs (2004) proposed another guideline as indicated in Table 6.38.

Table 6.38: The Guidelines of Correlation Coefficient
Source: (Muijs, 2004)

Scale	Weak	Modest	Moderate	Strong	Very Strong
The Strength of Correlation	$r < 0.1$	$r < 0.3$	$r < 0.5$	$r < 0.8$	$r \geq 0.8$

These guidelines apply whether the r value is positive or negative as explained by (Cohen, 1998; Muijs, 2004; Kumar *et al.,* 2005) that the negative sign refers only to the direction of the relationship, not the strength. The two –tailed test of statistical significant from 0.01-0.05 was the main procedure of the correlation analysis. Table 6.39 and Table 6.40 present the outcomes of correlation analyses.

Table 6.39: Pearson Correlation between All Variables

		Mass& A.	Opening s	Details	Materials	Principles	Identity
Mass &A.	Pearson Correlation	1	.397(**)	.334(**)	.295(**)	.130(*)	.307(**)
	Sig. (2-tailed)		.000	.000	.000	.031	.000
Openings	Pearson Correlation	.397(**)	1	.350(**)	.305(**)	.177(**)	.252(**)
	Sig. (2-tailed)	.000		.000	.000	.003	.000
A. Details	Pearson Correlation	.334(**)	.350(**)	1	.309(**)	.093	.276(**)
	Sig. (2-tailed)	.000	.000		.000	.125	.000
Materials	Pearson Correlation	.295(**)	.305(**)	.309(**)	1	.185(**)	.236(**)
	Sig. (2-tailed)	.000	.000	.000		.002	.000
Principles	Pearson Correlation	.130(*)	.177(**)	.093	.185(**)	1	.095
	Sig. (2-tailed)	.031	.003	.125	.002		.119
Identity	Pearson Correlation	.307(**)	.252(**)	.276(**)	.236(**)	.095	1
	Sig. (2-tailed)	.000	.000	.000	.000	.119	

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
a Listwise N=273

In general, the house façade modernity has a significant positive correlation with the continuity of architectural identity. Table 6.40 show the correlation coefficient range 0.504 at $p < 0.01$.

Table 6.40: Pearson Correlation between Dependant and Independent Variables

		Modernity	Identity
Modernity	Pearson Correlation	1	.504(**)
	Sig. (2-tailed)		.000
Identity	Pearson Correlation	.504(**)	1
	Sig. (2-tailed)	.000	

** Correlation is significant at the 0.01 level (2-tailed).
a Listwise N=273

6.11 Hypothesis Testing

In order to determine the significant correlation between the independent variables (House façade modernity factors) and the dependent variable (The continuity of architectural identity) following hypothesis were formulated.

H 1: There is a positive relation between mass and articulation parameter and the continuity of architectural identity

H 2: There is a positive relation between house façade openings parameter and the continuity of architectural identity

H 3: There is a positive relation between house façade architectural details parameter and the continuity of architectural identity

H 4: There is a positive relation between house façade architectural materials parameter and the continuity of architectural identity

H 5: There is a positive relation between house façade arrangement principles parameter and the continuity of architectural identity

a) The Relationship between House Façade (Mass and Articulation) and the Continuity of Architectural Identity

The result of correlation analysis for the relationship between (Mass and Articulation) and the continuity of architectural identity in Table 6.41 show that the correlation coefficient is $r = 0.307$ at $p < 0.01$. This result is an indication of a significant positive relationship between (Mass and Articulation) and the continuity of architectural identity. It can be deduced that Mass and Articulation parameter play a part in determining the continuity of architectural identity.

b) The Relationship between House Façade Openings and the Continuity of Architectural Identity

The Pearson product –moment linear correlation was used to determine the existence of the above relationships, the correlation coefficient in Table 6.41was $r = 0.252$ at $p < 0.01$. As a consequence, there is significant positive relationship between (House façade openings) and the continuity of architectural identity. Therefore, the design of openings in house façades has a direct impact on the continuity of architectural identity.

c) The Relationship between House Façade Architectural Details and the Continuity of Architectural Identity

To test this hypothesis, the Pearson product –moment linear correlation was applied. As indicated in Table 6.41, the correlation coefficient was ($r = 0.276$ at $p < 0.01$). This means the availability of significant positive relationship between (House façade architectural details) and the continuity of architectural identity. Therefore, the house façade architectural details have an impact on the continuity of architectural identity.

d) The Relationship between House Façade Materials and the Continuity of Architectural Identity

In order to determine the correlation between (House façade materials) and the continuity of architectural identity, The Pearson product –moment linear correlation was conducted. Table 6.41 presents the outcome of correlation coefficient for the above variables ($r = 0.236$ at $p < 0.01$).This result implies that house façade materials have direct influence on the continuity of architectural identity.

e) The Relationship between House Façade Arrangement Principles and the Continuity of Architectural Identity

As demonstrated in Table 6.41, the correlation analysis for the relationship between house façade arrangement principles and the continuity of architectural identity produced following facts ($r = 0.095$ at $p = 0.119$). This result refers directly to a very weak relation between mentioned variables. However, it was not statistically significant. The lack of relation or very weak relationship between house façade arrangement principles and the continuity of architectural identity is an indication that house façade arrangement principles have less influence than the other variables.

6.12 Summary of Correlation Analysis

To identify the relationships between the variables the overall influence, correlations were examined. As shown in Table 6.41, the overall influence positively correlates to the most of independent variables, namely: Mass and Articulation, Openings, Architectural detail, and Materials. With the exception of (House façade arrangement principles) that correlates in a very weak relation to the study's main dependant variable (the continuity of architectural identity). The Pearson product-moment coefficient correlation results reveal that the strongest association is related to the first parameter (Mass and Articulation) with (r) value of 0.307, followed by Architectural detail (r) = 0.276, then Openings (r) = 0.252, and finally House façade materials (r) = 0.236. These results conclusively prove that house façade modernity factors have a crucial impact on the continuity of architectural identity.

Table 6.41: Summary of Correlation Analyses between Dependant and Independent Variables

S	Hypothesis	r	P	Result
H 1	There is a positive relation between mass & articulation and the continuity of architectural identity.	0.307	$p < 0.01$	Significant
H 2	There is a positive relation between house façade openings and the continuity of architectural identity.	0.252	$p < 0.01$	Significant
H 3	There is a positive relation between house façade architectural details and the continuity of architectural identity.	0.276	$p < 0.01$	Significant
H 4	There is a positive relation between house façade architectural materials and the continuity of architectural identity.	0.236	$p < 0.01$	Significant
H 5	There is a positive relation between house façade arrangement principles and the continuity of architectural identity.	0.095	$P=0.119$	Insignificant

6.13 Multiple Regression Analysis (Objective No. 4)

After identifying the overall influence and correlations between the variables, a multiple regression analysis was conducted to test the relationship further, make a prediction about the dependent variable based on its covariance with all the concerned independent variables and formulate an equation that represent the best prediction of the continuity of architectural Identity from several independent variables.

The collective effect of the independent variables formulates the mathematical formula of the study. Hence, the multiple regression analysis was employed to determine the variance of each component of house façade modernization factors. Five parameters were used as independent variables, and the continuity of architectural identity was set as the dependent variable. The recommended model was performed by determining the collective effect of the independent variables namely, (1) Mass and Articulation, (2) Openings, (3) Architectural details, (4) Materials, and (5) House façade arrangement principles toward the overall perceived of the continuity of architectural identity. In the light of the above, a regression model was developed in settling the relationships between variables. The model is as follows:

$$\textbf{Continuity} = \beta + \beta_1 \textbf{ Mass and Articulation} + \beta_2 \textbf{ Openings} + \beta_3 \textbf{ Architectural details} + \beta_4 \textbf{ Materials} + \beta_5 \textbf{ Arrangement principles} + \varepsilon$$

Where, Continuity = The Continuity of Architectural Identity
β = constant
ε = standard error

The model summary is showed in Table 6.43 and the summery of multiple regression analysis is presented in Table 6.42. Therefore, the R^2 for this model is 0.254 (Adjusted R^2= 0.251), indicating that the house façade modernity factors explained 25.4% of the variation toward the continuity of architectural Identity.

Table 6.42: Model Summary of Multiple Regression Analyses between Dependant and Independent Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.504(a)	.254	.251	.29819

Predictors: (Constant), Modernity
Dependent Variable: Identity

In terms of importance, the "Mass and Articulation" parameter (β=0.192, p= 0.003) and the "Architectural details" parameter (β=0.108, p=0.020) have significant positive associations with continuity of architectural Identity. These results reveal that "Mass and Articulation" parameter is the most influential in interpreting the continuity of architectural Identity, because every unit of change in this parameter is associated with a 0.192 change in the continuity of architectural Identity. Every unit of change in the "Architectural Details" parameter is related to a 0.108 change in continuity of architectural Identity. Interestingly, although not significant, "Openings" (β=0.086, p=0.167), "Materials" (β=0.105, p=0.097), and House façade arrangement principles (β=0.080, p=0.715) have positive relationships with the continuity of architectural identity.

Table 6.43 Summary of Multiple Regressions Analysis

	β	Std. Error	Standardized β	t	p
(Constant)	1.819	0.299		6.074	0.000
Mass and Articulation	0.192	0.065	0.189	2.952	0.003
Openings	0.086	0.062	0.090	1.385	0.167
Architectural details	0.108	0.046	0.148	2.340	0.020
Materials	0.105	0.063	0.104	1.666	0.097
Arrangement principles	0.030	0.083	0.021	0.365	0.715
R^2=0.254	Adjusted R^2=0.251				
F=0.002	Significance F=.000*				

*Significance at the 0.05level

Table 6.43 highlights the results from the multiple regression analysis. The beta values represent the unique contribution of each variable and formulate the final equation of the model which is as follow:

Continuity =1.819 + 0.192 **Mass and Articulation** + **0.086 Openings** +0.108**Architectural details** + 0.105 **Materials** + 0.030 **Arrangement principles** + 0.299

6.14 Review

This chapter presented the analyses' results of the qualitative and quantitative approaches. The first part of this chapter adapted the visual analyses which produced a brief summary about the stylistic differences of houses façade visual elements in different periods of Erbil city evolution. These results exposed the availability of relationship between modernity forces and house façade architectural identity.

The second part of this chapter expressed the results in terms of quantitative analyses. It investigated and examined the influence of house façade modernity factors on the continuity of architectural identity. Descriptive analysis, factor analysis, correlation analysis, and multiple regression analysis were conducted to fulfill the research objectives and answer the research questions. These results conclusively proved that house façade modernity factors play a great part in determining the continuity of architectural identity. The outcomes furnished many valuable insights and information that will be concluded in the next chapter.

CHAPTER 7

CONCLUSION AND RECOMMENDATION

7.1 Introduction

This chapter presents a discussion of key findings, conclusions, contribution, limitations and suggestions for further research. The chapter includes three main sections. The first section discusses the results of the data analyses, answers the study questions and demonstrates the relevant conclusions of this study. The second section provides an overview of the study contribution and summarizes the comparison of qualitative and quantitative findings. The final section discusses the study limitations and proposes recommendations for future research directions.

7.2 Validating the Research Assumption

This study raises several issues relate to the influence of modernity versus continuity of architectural identity on house facades in Erbil City. The dialectic relationships between the concept of modernity and architectural identity formulate the main assumption of the study which assumes the role of modernity and its influences in shifting architectural identity in terms of house facades in Erbil City. A three-step process is used to validate the assumption: First, the research questions are answered in detail. Second, the relevancy of the results is discussed. Finally, pertinent conclusions are formulated to provide sufficient evidence to validate the assumption. The research questions were formulated in Chapter One as follows:

1- What is the influence of house façade transformations on the continuity of architectural identity?

2- Do the stylistic features of house facades change over time?

3- What are the main pillars of architectural identity for house façades?

4- Are perceptions toward the continuity of architectural identity and the modernization factors of house façades constant?

5- Does the theoretical model comprise the inclusive factors that affect the continuity of architectural identity?

6- Do the modernity factors of house façade positively correlate with the continuity of architectural identity?

7- What are the most influential factors in interpreting the continuity of architectural identity?

7.3 Research Key Findings

Through the discussion of key findings, answering research questions, and discussing the relevancy of the results, a set of conclusions have been deduced, which provide sufficient evidence to validate the research assumption as follows:

7.3.1 Answer for research question 1

<u>What is the influence of house façade transformations on the continuity of architectural identity?</u>

This question relates to the morphology transformations of house facades. The qualitative results (Chapter 6) clarified the degree of change for the study parameters. The following subsections will discuss the influence of each parameter on the continuity of architectural identity.

7.3.1.1 Influence of Mass and Articulation

The results show that the mass and articulation parameter is an influencing factor in determining the continuity of architectural identity. Any change in the mass and articulation parameter will directly affect the continuity of architectural identity. In term of the importance, the findings of this parameter will be discussed in six subsections as follows:

a) Geometry of mass: The results in (Sec 6.2.1-a CH 6) show that geometrical form is the distinctive feature of house facades during all time periods. In most cases, the degree of change for this factor is adaptation. In spite of the alterations of house facades over time, a regular simple geometry is retained in most cases. Hence, the geometry of mass plays an important role in preserving the architectural identity of house façades that have been less influence by modernization forces.

b) Building envelope: The results in (Sec 6.2.1-b CH 6) reveal minor changes for this factor in the second and third periods, whereas major changes occur in the final period because the socio-cultural relationship between neighborhoods changed entirely. The changes in the relationship are due to a new life style, where social activities have been changed as a mode of capitalism. These changes reflect Western, outside-looking influences and affect the building envelope of house façades in large sectors of the city. In light of the above, it can be concluded that the building envelope has a strong influence on the continuity of architectural identity.

c) Type of articulated façade: Variation in the façade articulation influences the continuity of architectural identity. On the basis of the results in sec (6.2.1-c CH 6), new stylistic features of house façades appeared when major changes took place in the second and fourth periods, respectively. In this sense, changes in house façade articulation will lead to alteration of its architectural identity.

d) Orientation of mass: The degree of change for this factor is low because the directivity of house facades orientation toward the street line in all periods was similar. This result might be explained that the orientation of mass is one a of the key factors in preserving architectural identity. It is less influenced by changing forces because it associated with a range of aspects related to municipality regulation, planning considerations, urban design, and social factors (e.g., respecting the privacy of the neighbors).

e) Base relationship to the ground line (Pedestal): The results in (Sec. 6.2.1-e CH 6) indicate that the variation of base relation with the ground line by a defined pedestal in the second period transformed the connectivity of the house with the urban fabric to a state of monumentality. The second remarkable change for this factor occurred in the last period (after 2003), when the base relation with the ground line produced multiple layers of approachability. Consequently, these variations transformed the overall appearances of the house facades and influenced the continuity of architectural identity. As a result, the socio-cultural values of residents toward the urban environment have changed entirely.

f) Mass location within the plot of land: The results in (Sec. 6.2.1-f CH 6) clarify that the variation of this factor influences the continuity of architectural identity. In terms of explanatory power, the juxtaposition of house facades in a straight line (in the traditional period as one of the distinctive features of Erbil city architectural identity) transformed into an entirely new pattern of organization when the location of mass within the plot of land changed. Therefore, this factor has a direct influence on the continuity of architectural identity.

7.3.1.2 Influence of House Façade Openings

The results in Table 6.10 show that the degree of change for windows is high in the second period (1930-1980), moderate in the third period (1980-2003) and very high in the last period (after 2003). According to the morphology analysis results in section (6.2.2.1 CH 6), most traditional buildings have small windows with punctual-linear dimensionality, rectangular shape and vertical directivity. The industrial capitalism during the second period (1930-1980) brought about the emergence of new building materials and modern construction techniques. Accordingly, the house façade windows became larger and had linear dimensionality, a rectangular shape and horizontal directivity. These features continued to be the most popular characteristics of house facades during the third period (1980-2003). Finally, the idea of liberation, freedom and openness toward other cultures after 2003 influenced the characteristics features of house façade windows. Hence, window size developed into large panels and huge screen glasses are noticed in front façades in many cases as a mode of globalization.

On the other hand, the results reveal that the degree of change for entrances is very high in the second (1930-1980) and last period (after 2003). Meanwhile, the degree of change is low in the third period (1980-2003). The morphology analysis results in section (6.2.2.2 CH 6) show that most of the traditional building entrances are simple and solid, within the human scale in size, and directly connected with the street line. These features transform into defined platforms that are semisolid, larger, raised on a deck, and set back from the street line by a transition zone of green areas. Moreover, in the fourth period (after 2003), a new approach of monumentality appeared by enlarging the scale of the entrance and adding transparent glass panels on the top of main entrance. Therefore, most house entrances exceed human scale (i.e., they are large) and are semitransparent, raised on a defined pedestal and surrounded by decorative attachments.

In light of the above information, the monumentality of house façades translates forces of modernity and is considered a mode of power. Therefore, openings have a direct influence on the continuity of architectural identity. The findings related to this parameter are consistent with those of Elkadi (2005) regarding the openings' influence on façade manipulations. Elkadi argued that openings give a facade its distinctiveness and that their arrangements provide identity to the place.

7.3.1.3 Influence of the Architectural Details of House Façades

Table 6.10 shows that the degree of change for this parameter is low to moderate in the second period (1930-1980), low in the third period (1980-2003) and moderate to high in the last period (after 2003). The results from the morphology analysis in section (6.2.3 CH 6) indicate that most of the traditional buildings are rich in architectural details. The cultural values of these details contain numerous cues and signals from different civilizations. The aesthetic nature of the brick and wooden ornaments and the styles, materials, and finishes of the house façades create a fabulous image that reflects a plurality of civilizations within the integrated frame in the traditional period. It is interesting to note that the aesthetic values of the architectural details are displaced by decorative concrete masses as a mode of colonial architecture during the second period. This idea continued in the third period. Finally, nostalgia for the traditional details emerged in the advanced modernity period. Notably, the degree of change for arches is low to moderate in all periods because the influence of modernization on arches is limited due to cultural values and construction techniques.

7.3.1.4 Influence of House Façade Architectural Materials

The comparable results in Table 6.10 reveal that the degree of change for this parameter is high in the second period (1930-1980), moderate in the third period (1980-2003) and high in the last period (after 2003). According to the results in section (6.2.4), the concept of sustainability can be noticed in the traditional period, as inhabitants of that period used local materials supported by traditional roofing systems. The use of natural materials in the façades and thus their distinctive natural colors enhances this concept. During the second period, the industrial revolution replaced the local materials with mass production materials, which are related, in most cases, to western cultures. Hence, the architectural features of houses façades transformed from a local to an international style. It is interesting to note that the roof shape remains simple, flat and straight in all periods of city evolution because of socio-cultural factors and climate considerations. In the light of the above information, architectural materials play a major role in determining the continuity of architectural identity through its main components, namely, sustainability, roofing systems and colors.

7.3.1.5 Influence of House Façade Arrangement Principles

The comparable results between periods of Erbil city's evolution in Table 6.10 reveal that the degree of change for house façade arrangements is low to moderate in the second period (1930-1980), low in the third period (1980-2003) and moderate in the last period (after 2003). Several factors affected the relationship between elements and its arrangements within the house façade. According to the results in section (6.2.5), these factors are solidity, complexity, rhythm & scale, regularity and integration. Therefore, the interplay between these factors creates the characteristic features for each period. In light of the above information**,** the distinctive characteristics for the traditional period include solid mass, simplicity, unified rhythm within the human scale, regularity, and integration between elements. These unique features gradually transformed into new patterns of arrangements as the city experienced industrialization and globalization. A conclusion can be drawn from the previously described that the type of change between the periods is adaptation. This is evidence that house façade arrangement principles impact on the continuity of architectural identity is limited.

7.3.2 Answer for Research Question 2

<u>Do the stylistic features of house façades change over time?</u>

In general, the qualitative findings in Tables 6.6, 6.7, 6.8, 6.9 and the comparative results in Table 6.10 reveal that the stylistic differences of visual elements of houses façades indicate that Erbil City passed through different epochs, starting from Sumerian, Assyrian, Persian, Greek, Pre-Islamic and Islamic periods to industrial capitalism during colonial control and finally, liberation in 2003.

The summary of qualitative results in section (6.3) shows that the influence of modernity on the architectural identity of house façades is moderate to high in the second period (1930-1980), moderate in the third period (1980-2003), and high in the last period (after 2003). Hence, major changes occurred to house façade parameters in the second and fourth periods. Figure 7.1 summarizes the types of change between periods regarding the continuity of architectural identity.

The findings also reveal that the second period (1930-1980) and last period (after 2003) witnessed modernization events that brought new materials and construction techniques. These events influenced the visual aspects of architectural identity among house façades. Accordingly, new stylistic features emerged in the city. It should be noted that the first modernization coincided with industrial capitalism during colonial control. This event created forces of modernity that were enhanced by strange ideological orientations and western concepts.

In parallel, the second modernity event relates to the process of Iraq's liberation in 2003, when local society experienced radical transformations. The openness toward globalization enabled advanced technological materials in the design of house façades, leading to a state of multi-layered complexity in the house façades. These transformations altered the overall structure of the society and broke the continuity of architectural identity by inserting modern concepts within the body of traditions.

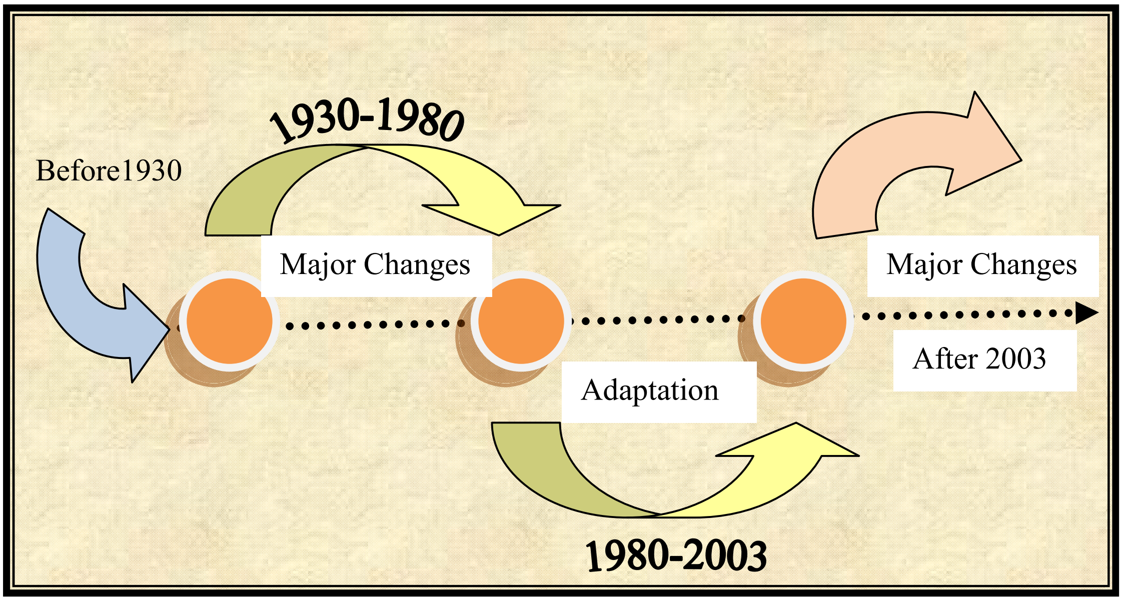


Figure 7.1 Types of Changes in Erbil City Evolution Periods
Source: The Author

7.3.3 Answer for Research Question 3

What are the main pillars of architectural identity for house façades?

Based on the perspectives of respondents, the descriptive results (Sec. 6.6 and its subsections) reveal the following key findings regarding the main pillars of house façade architectural identity:

a) The root of the building identity mostly relates to the building form.

b) In the case of Erbil city, the originality of architectural identity relates to its traditional buildings.

c) Building technique is the most effective factor in the construction of architectural identity.

d) The source of architectural identity strongly relates to past experience.

e) Forces of modernity had a negative impact on the continuity of architectural identity.

f) Fundamental changes occurred to the visual appearance of house façades over time due to modernization.

On the basis of the above findings, it can be concluded that the architectural identity in Erbil City passed through different epochs that produced different stylistics features in the appearance of house façades. Accordingly, the transformation of house façades demonstrates the evolution and diversity of the city. It should be noted that the continuity of architectural identity relates to forces of stabilization that reflect, in most cases, the heritage of the city as well as the traditions of society.

7.3.4 Answer for Research Question 4

<u>Are perceptions toward the continuity of architectural identity and the modernization factors of house façades constant?</u>

A one-way ANOVA revealed significant variations in the perceptions of respondents toward the continuity of architectural identity in Erbil city. Therefore, the continuity of architectural identity is found to be a complex phenomenon formulated by a mixture of factors (e.g., social, cultural, economic and environmental). These factors change over time and place. Hence, the knowledge level and background experience of respondents are the main reasons for the variations in their perception toward the phenomenon. In contrast, ANOVA test (Sec. 6.7 Ch 6) revealed significant variations in the perspectives of respondents toward the four primary house façade modernization factors (i.e., Mass and Articulation, Openings, Architectural details and Materials). Similarities in the opinions of respondents were observed regarding the last factor (House façade arrangement principles). In light of the above results, the significant differences relate to the belief of respondents that the first four factors had a substantial influence on continuity of architectural identity, whereas the last factor is neutral. These results reflect the multiplicity and diversity of trends in architectural practice for different occupations.

7.3.5 Answer for Research Question 5

Does the theoretical model comprise the essential factors that affect the continuity of architectural identity?

The study reviewed and developed the existing theoretical models in the pertinent literature to achieve the third objective of the study. A factor analysis using a varimax rotation revealed a clear pattern of loadings for each factor. The study identified the depths of the relationships between items and clarified factor dimensionalities. As a result, the study formulated and restructured the theoretical model as shown in Figure 6.15. As determined from the results in Sections (6.8.1, 2, 3, 4 and 5 in Ch 6), the developed model reduced a set of variables into a limited number of essential factors and categorized factors that refer to the same fundamental concept. Hence, the interplay between these factors created the overall features of the proposed model.

7.3.6 Answer for Research Question 6

Do house façade modernity factors positively correlate with the continuity of architectural identity?

The fourth objective was to investigate the strength of the correlation between the factors that affect the continuity of architectural identity. On the basis of the hypothesis testing in section (6.11 Ch.6), positive associations were found between house façade modernization factors and the continuity of architectural identity. The Pearson product-moment coefficient correlation results showed that the mass and articulation, openings, architectural detail and materials factors positively correlate with the continuity of architectural identity. With the exception of the house façade, arrangement principles factor correlates in a very weak relation to the study's main dependent variable. The correlation results revealed that the strongest associations in proper sequence were, in order, as follows: Mass and Articulation factor, followed by Architectural detail factor, then Openings factor, and finally Material factor. These findings conclusively prove that the house façade modernity factors have a crucial influence on the continuity of architectural identity.

7.3.7 Answer for Research Question 7

What are the most influential factors in interpreting the continuity of architectural identity?

The final objective of the study tested the relationship between the house façade modernity factors as predictor variables and the continuity of architectural identity as a criterion variable. The results of the multiple regressions in section (6.13) statistically support the proposed model, which predicts the continuity of architectural identity from house façade modernity factors. The house façade modernity factors explained more than a quarter of the variation from the continuity of architectural identity. The multiple regressions analysis results revealed that the "Mass and Articulation" and "Architectural details" factors are the most influential in interpreting the continuity of architectural identity because every unit of change in these factors is associated with a significant positive change in the continuity of architectural identity. Accordingly, these factors could significantly predict the continuity of architectural identity in Erbil city.

7.4 Comparison of Qualitative and Quantitative Findings

In general, the comparison of qualitative and quantitative findings validated the accuracy of findings and provided greater coherence for the results. The qualitative findings provided important contextual information about the transformation of house façades over the different periods of Erbil City. Furthermore, the qualitative results revealed the level of similarity and diversity between house façades and explained the degree of change for the main study parameters. In contrast, the quantitative findings measured the influence of house façade modernization factors on the continuity of architectural identity. The process of measurement included hypotheses tests that exposed the strength and validity of the study parameters, assessed and identified the study main factors, determined the significant correlation between factors and finally, developed a regression model. The comparison between qualitative and quantitative findings produced the following facts:

1- Regarding factors that affect the continuity of architectural identity, the qualitative and quantitative findings were quite consistent. The qualitative findings exposed house façade modernity factors (Mass and Articulation, Openings, Architectural details, Architectural materials and House façade arrangement principles) as the main factors affecting the continuity of architectural identity. Correspondingly, the quantitative finds revealed that the proposed theoretical model contains the same factors.

2- The qualitative findings revealed a direct relationship between modernity and identity while quantitative findings confirmed the positive correlations between house façade modernity factors and the continuity of architectural identity.

3- Regarding the properties of architectural identity, both qualitative and quantitative findings strongly correlated to determine the visual aspects of house façades in different periods of the evolution of Erbil city.
4- The absence of any conflicting data between qualitative and quantitative findings indicates their strong interrelations.
5- The integration between qualitative and quantitative findings provided the essential connection between practical observation from field surveys and statistical expression from respondent perceptions.

7.5 Research Contributions

This study makes an important contribution to the literature, addressing the dialectical relationship between modernity and identity by measuring the influence of modernization on house façades and the continuity of architectural identity as follow:

1) Based on the quantitative key findings in sections (6.6, 6.7, 6.8, 6.9, 6.10, 6.11, and 6.13), this study end the conflicting theoretical approaches regarding the influence of modernity on architectural identity. As indicated in the pertinent literature, one theoretical approach has implied modernity as a destructive force while another has designated modernity as an evolutional force. The quantitative findings of the current study provide statistical evidence that house façade modernity factors have direct influence on the continuity of architectural identity.
2) The qualitative findings in sections (6.2.1, 6.2.2, 6.2.3, 6.2.4, and 6.2.5) furnished many valuable insights and information by describing and documenting the physical façade features of the built environment. The illustration of the stylistic features for the different periods of Erbil city also contributes to the study and will provide a

strong basis for further studies.

3) Based on the findings in section (6.6.1, 6.6.2, 6.6.3, and 6.6.4) this study has contributed positively to the preservation programs of heritage buildings in ancient cities. The findings of the current study confirmed that heritage is one of the most important sources of architectural identity: a treasure that connects man to his origins through the process of continuity. Accordingly, these findings will act as a source of information in describing the physical properties of local traditions.
4) In terms of research methodology, the use of a mixed-method approach accessed different facts and provided a complete picture of the architectural identity phenomenon. The combination of the methods and the integration of data between the qualitative and quantitative findings contributed a great deal to the rigor of the study.
5) In term of theoretical contribution, this study expands the existing concepts of identity by formulating a comprehensive framework that includes the most effective properties of architectural identity. The collection of these properties into one framework was another contribution of the study.
6) The second theoretical contribution of the study relates to the checklist factors as a model of visual analysis that developed to establish a baseline for qualitative and quantitative analysis. The developed checklist factors could serve as descriptive guidelines in historical building codes and act as a documentation model for built environment façades.

7.6 Limitations of the Study

This study covered only the visual aspects of house façades in terms of architectural identity in Erbil City. The data collection was mostly limited to visual physical appearances of house façades. Moral aspects of architectural identity were not considered in the study. Thus, the findings are limited to visual aspects of architectural identity.

The selection of cases in the qualitative part of this study were based on their potential and richness to imitate different types of house façades due to the political, economic, and cultural circumstances of Erbil city. Therefore, research results would probably produce different consequences if applied in a different environmental, economic, or cultural context. In terms of methodological limitations, the interpretation of results in the quantitative part of the study was based on data collected within specified groups. The respondents of this study were mostly architects and upper levels students in architectural foundations. Therefore, answers of the findings are limited to group specialized in architectural background similar population groups and may not be true for others, who are not rooted from architecture.

7.7 Future Research Directions

This study investigated the influence of modernity versus the continuity of architectural identity. The study analyzed examples of house façades in Erbil City, constructed a theoretical framework of house façade checklist factors and developed the scale of measurements. The study explained the phenomenon of change and continuity in architectural identity. The measuring scales adapted by this study are useful for understanding the current trend toward achieving a cultural identity in architecture.

As this research was limited to visual aspects of architectural identity, future investigation is needed to address the various social and cultural issues of meaning, vocation of place, authenticity, symbolic function, privacy, diversity, climate consideration, place-consciousness, and sense of belonging of architectural identity. In light of the above information, the following future research directions are proposed:

1. Continuous mixed method research can be conducted to measure the interplay between moral and physical factors of house façades in terms of architectural identity.
2. An environmental study may be applied to explore the climate considerations of architectural identity in local traditions.
3. A study may examine the impact of socio-cultural factors in formulating the physical elements of house façades.
4. Further qualitative studies may be conducted to clarify the influence of the façades of heritage buildings in shaping the symbolic function of streetscapes.
5. Empirical studies can be conducted to investigate the integration between space organizations and house façade design in creating a sense of belonging.
6. Future research may examine the continuity of architectural identity as cultural resistance against globalization.

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LIST OF PUBLICATIONS Appendix-A

➢ Proceedings of International Conferences:

- ***Baper, Salahaddin Y.,*** Sanusi, Ahmad H., Mustafa, Faris A. & Ismail, Susan T. (2010). A Theoretical Study on Modernity and Transformation in Architecture. *Proceedings of the 14th IPHS Conference of Urban Transformation: Controversies, Contrasts and Challenges*, 12-15 July, Istanbul, Turkey, Volume 2, p. 197, ISBN: 978-975-561-375-8 (tk), ISBN: 978-975-561-378-9 (c.2).

- ***Baper, Salahaddin Y.,*** Sanusi, Ahmad H. (2010). A Study of Modernity and Architectural Identity in Erbil City, Iraq. Proceedings of the 1st International Conference *on Sustainable Architecture and Urban Design (ICSAUD 2010),* 3-4 March, Penang Island, Malaysia, pp. 136-150, ISBN: 978-967-5417-67-2.

- ***Baper, Salahaddin Y***., Sanusi, Ahmad H. & Ismail, Susan T. (2010). Modernization Theory and House Garden Transformation: A Case Study in Erbil City. *Proceedings of the 2nd International Seminar on Tropical ECO-Settlements: Green Infrastructure: A Strategy to Sustain Urban Settlements,* November 3-5, Bali, Indonesia.

- ***Baper, Salahaddin Y.,*** Sanusi, Ahmad H. (2012). Factors affecting the Continuity of Architectural Identity. Under Review of the 2nd International Conference-Workshop on Sustainable Architecture and Urban Design *(ICWSAUD2012),* 3rd-5th March, 2012 Penang Island, Malaysia.

➢ Peer-reviewed Journal Publications:

- ***Baper, Salahaddin Y.*** *& Sanusi, Ahmad H. (2010). The Influence of Modernity on Kurdish Architectural Identity.* Science Publications, *American Journal of Engineering and Applied Sciences*, 3 (3), pp. 552-559, ISSN: 1941-7020.

- *Mustafa, Faris A., Sanusi, Ahmad H. &* ***Baper, Salahaddin Y.*** *(2010).* Using Space Syntax Analysis in Detecting Privacy: A Comparative Study of Traditional and Modern House Layouts in Erbil City, Iraq. Canadian Center of Science and Education, *Asian Social Science,* 6 (8), pp. 157-166, ISSN: 1911-2017 (Print), ISSN: 1911-2025.

Appendix-B

UNIVERSITY SAINS MALAYSIA
INSTUTIT OF POSTGRADUTE STUDIES
SCHOOL OF HOUSING, BUILDING, AND PLANNING
Research Title

Influence of Modernity versus Continuity of Architectural Identity on House Facade in Erbil City, IRAQ

Dear Sir/Madam

This is purely an academic study that is undertaken to fulfill the partial requirement of the PhD program in Theory of Architecture at school of Housing, Building and Planning at University Sains Malaysia. The aim of the study assessing the outputs and to determine the level of architectural Identity through comparison with the assets (References) that flowed from them ... the lack of knowledge and information on the subject, responding to the questions will help in completing the research.

This questionnaire contains some Questions and Perspectives concerning the architects, engineers, academic teaching staff and students of architecture department of Salahaddin University-Hawler. Please read each question cautiously and give the correct picture of your own experience and opinion. It should be noted that this information is purely for academic purposes. Your cooperation and contribution is greatly appreciated and many thanks for your kind assistance.

If you have any questions, please feel free to contact me at 009647504534859 , 006017257549. Or E-mail address: salahaddinbaper@yahoo.com.

Sincerely,

Salahaddin Yasin Baper Alshwani
The Researcher

Section A-:- Respondent Background (please tick one)

1- Academic qualification:-

☐ Undergraduate Student ☐ Postgraduate Student ☐ B.Sc. Architecture

☐ High diploma ☐ Master degree Architecture ☐ PhD. Architecture

☐ Others please specify (…………)

2- Current Occupation:-

☐ Student ☐ Governmental Architect ☐ Private Sector Architect

☐ Consultant Architect ☐ University Teaching Staff ☐ Others, please specify (……………)

Section B:- The Pillars of Architectural Identity

B1-The following questions are characteristics of architectural identity data, collected to be used in analyzing the survey data. (Please tick one box or more than one box)

3- The Identity of a building is related to its:-

☐ Function ☐ Space arrangements ☐ Form ☐ Structure

☐ Climate treatments ☐ Symbolic features ☐ Location (place)

☐ Others, please specify (…………………………)

4- The originality of architectural identity in Erbil City is related to:

☐ Erbil Citadel Traditional Buildings ☐ Buildings (Built between 1930-1980)

☐ Buildings (Built between 1981-2003) ☐ Modern Buildings (Built after 2003)

☐ All of them ☐ Others, please specify (…………………)

5- The crucial factor that influences the construction of identity is:

☐ Culture of the society ☐ Building Technology

☐ Clients requirements ☐ Climatic Conditions

☐ Building regulations ☐ Heritage

☐ Conventions and traditions ☐ Others, please specify (…………………………).

6- The Source of Architectural identity in Erbil City you think is related to :

☐ Religion& belief ☐ Heritage ☐ Islamic Architecture

☐ Architecture of Defense Cities ☐ Hot &Dry Climate ☐ Region privacy

☐ Others, please specify (…………………………).

7- The Modernity forces (Technology, Construction methods &New materials) have a:

☐ Negative impact of Identity ☐ Positive impact of Identity ☐ Construct new Identity

☐ Ruin to Local Identity ☐ Enhance Local Identity ☐ No impacts at all.

B2-The following questions are Yes or No answer. (Please tick only one box)

9- Do you believe that there is continuity of architecture Identity in Erbil city?

☐ Yes ☐ No

10-Do you think that the architecture Identity is a process?

☐ Yes ☐ No

11-Is architectural identity created by modernity forces?

☐ Yes ☐ No

12- Theoretical Architecture Styles, mostly coming from western cultures, do you prefer to replicate these concepts in your culture?

☐ Yes ☐ No

Section C: House Façade (Mass and Articulation) Transformations

The following part of the questionnaire shed the light on (Mass and Articulations) parameters. Consider the following statements and indicate your degree of agreement or disagreement with it by ticking the appropriate number on a 5-point scale given below. (Please tick one box)

Strongly Disagree	**Disagree**	**Neutral Neither agree or disagree**	**Agree**	**Strongly Agree**
SD	D	N	A	SA

	(Mass and Articulations) Parameter	**SD**	**D**	**N**	**A**	**SA**
1	Changing façade geometry have a negative impact on place belonging.	☐	☐	☐	☐	☐
2	Altering façade geometry will decrease the continuity of architectural identity.	☐	☐	☐	☐	☐
3	Variation of façade geometry towards non- regular geometry will reduce the symbolic expression of architectural identity.	☐	☐	☐	☐	☐
4	Altering the geometry of mass will increase the diversity of architectural identity.	☐	☐	☐	☐	☐
5	Building envelope transformations from locality to modernization will increase the visual privacy.	☐	☐	☐	☐	☐
6	Building envelope alterations has a negative impact on architectural identity continuity.	☐	☐	☐	☐	☐
7	Building envelope transformation has direct relationship with meaning dimensions.	☐	☐	☐	☐	☐
8	Building envelope modernization will lead to reduce the authenticity of architectural identity.	☐	☐	☐	☐	☐
9	Altering the façade articulations will reduce the clarity of meaning understanding.	☐	☐	☐	☐	☐
10	House Base, Body and Roof rearrangement in a new pattern have a negative impact on the continuity of architectural identity.	☐	☐	☐	☐	☐
11	House façade orientation has a direct relationship with climate consideration of architectural identity.	☐	☐	☐	☐	☐
12	House façade orientation and its relationship with street line have a positive impact on visual sign and cues of architectural message.	☐	☐	☐	☐	☐
13	House façade orientation improves energy efficiency that lead to authenticity of architectural identity.	☐	☐	☐	☐	☐
14	Rising façade base line on a defined pedestal is considered as a mode of capitalism.	☐	☐	☐	☐	☐
15	The locations of Architectural form within the plot of land have a positive impact on identity belonging to the place.	☐	☐	☐	☐	☐
16	Form location within the plot of land will support the climate consideration of architectural identity.	☐	☐	☐	☐	☐
17	Setting back the form from all sides of land is a translation of western modernization toward local architectural identity.	☐	☐	☐	☐	☐

Section D: House Façade (Openings) Modernity

This section is measuring the impact of Opening parameters please tick one box where is it applicable.

	Openings Parameter	SD	D	N	A	SA
18	Changing the size of windows to large screen glazing panels is a reflection of western modernity.	☐	☐	☐	☐	☐
19	Maximizing window size will affect the climate consideration of architectural identity.	☐	☐	☐	☐	☐
20	Transparence large size windows will create new identity for house facades in the specified places.	☐	☐	☐	☐	☐
21	Changing the dimensionality of openings has a crucial impact on identity symbolic functions.	☐	☐	☐	☐	☐
22	Altering the directivity of openings will decrease the continuity of architectural identity.	☐	☐	☐	☐	☐
23	Openings shape transformations towards western modernization have a negative impact on authenticity of architectural identity.	☐	☐	☐	☐	☐
24	Hiding the entrance opening location within the mass has a negative impact on identity symbolic function.	☐	☐	☐	☐	☐
25	Enlarging the scale of entrance will enhance the modernity mode of power.	☐	☐	☐	☐	☐
26	Altering the entrance indirect accessibility will increase the continuity of architectural identity.	☐	☐	☐	☐	☐

Section E: House Façade (Architectural Detail) Changes

This section high light the architectural detail parameters (Please tick one box)

	Openings Parameter	SD	D	N	A	SA
27	Transformation architectural details from local traditions to modern elements will reduce the sense of belonging to place.	☐	☐	☐	☐	☐
28	Using effective ways to keep architectural details support the authenticity of architectural identity.	☐	☐	☐	☐	☐
29	Copy and paste procedure for architectural details leads to lose diversity of architectural identity.	☐	☐	☐	☐	☐
30	Imitation of architectural details as a channel of creativity will enhance the moral aspects of architectural identity.	☐	☐	☐	☐	☐
31	Improving the architectural details of house façade will increase the diversity.	☐	☐	☐	☐	☐
32	Modernization of architectural details will affect the privacy of architectural identity.	☐	☐	☐	☐	☐
33	Technology as a mode of modernity has a negative impact on authenticity of architectural details.	☐	☐	☐	☐	☐

Section F: House Façade (Architectural Material) Alterations

This section is measuring the architectural material parameters. (Please tick one box)

	Architectural Materials Parameter	SD	D	N	A	SA
34	Using sustain materials in house façades will improve the (climate consideration) of architectural identity.	☐	☐	☐	☐	☐
35	Durability of façade local materials has a positive impact on the physical of architectural identity.	☐	☐	☐	☐	☐
36	Efficient use of local materials in house façade will enhance the authenticity of architectural identity.	☐	☐	☐	☐	☐
37	Maximizing local material in house facades will increase the soul of belonging to the place.	☐	☐	☐	☐	☐
38	Mixing local materials with alien material in house facades design have a negative impact on moral properties of architectural identity.	☐	☐	☐	☐	☐
39	Changing traditional roofing system will improve the way towards new innovations and leads to construct new identities.	☐	☐	☐	☐	☐
40	Constructing new identities in local tradition is a translation of new technologies and construction methods.	☐	☐	☐	☐	☐
41	House roof shape is a translation of socio-cultural factors.	☐	☐	☐	☐	☐
42	Using flat roof shape in house design has a positive impact on the household social activities.	☐	☐	☐	☐	☐
43	Using sustainable materials in house roof s is one of the actions to reduce the environmental impact.	☐	☐	☐	☐	☐
44	Parapet line relations with adjacent buildings will reflect the continuity of architectural identity.	☐	☐	☐	☐	☐
45	Façade color is considered as a reflection of physical and moral aspects of architectural identity.	☐	☐	☐	☐	☐
46	Material natural colors in house façade will enhance the physical and moral aspects of architectural identity.	☐	☐	☐	☐	☐
47	Maximizing colors in house façade lead to confusion which affects the meaning dimension of architectural message.	☐	☐	☐	☐	☐
48	House façade colors are a reflection of household socio cultural values.	☐	☐	☐	☐	☐

Section G: House Façade Arrangement Principles Transformations

This section will focus on the visual Syntax analysis which can be conceded as the study of the principles and rules of architectural form. (Please tick one box)

	House Façade Arrangement Principles Parameter	SD	D	N	A	SA
49	Maximizing house façade form solidity reflects Historic Privacy of Erbil city.	☐	☐	☐	☐	☐
50	Using large transparent elements in house facade will reduce the privacy of architectural identity	☐	☐	☐	☐	☐
51	Minimizing house façade form solidity has a negative impact on climate consideration in hot dusty environments.	☐	☐	☐	☐	☐

52	Altering the solidity of form will affect the symbolic expression of architectural identity.	☐	☐	☐	☐	☐
53	Increasing transparency in house façade form will lead to western outdoor looking approach.	☐	☐	☐	☐	☐
54	Maximizing house façade form complexity will decrease the clarity of architectural symbols.	☐	☐	☐	☐	☐
55	Complexities of elements in house façade have a negative impact on cultural identity authenticity.	☐	☐	☐	☐	☐
56	Complexity of elements in house façade will increase the complication of architectural meanings.	☐	☐	☐	☐	☐
57	House façade rhythm of elements will create symbolic representation.	☐	☐	☐	☐	☐
58	Altering rhythm of elements has a negative impact on the symbolic expression of architectural identity.	☐	☐	☐	☐	☐
59	Changing rhythm of house façade elements lead to decreasing familiarity of meanings.	☐	☐	☐	☐	☐
60	Decreasing house façade regularity of elements will reduce the degree of visual privacy and visual isolation.	☐	☐	☐	☐	☐
61	Changing house façade elements regularity has a negative impact on intelligibility of meaning understanding.	☐	☐	☐	☐	☐
62	House façade element integration will intensify the symbolic expression of architectural identity.	☐	☐	☐	☐	☐
63	House façade element integration will lead to rhetoric and originality of the architectural message.	☐	☐	☐	☐	☐
64	Integration between house façade elements has a positive effect on the multiplicity of meaning.	☐	☐	☐	☐	☐
65	House façade elements integration will increase the familiarity of architectural message.	☐	☐	☐	☐	☐

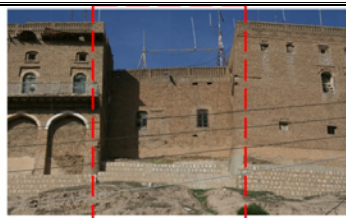
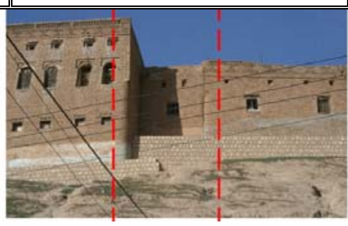
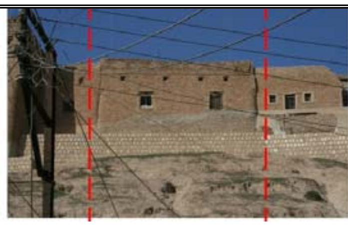
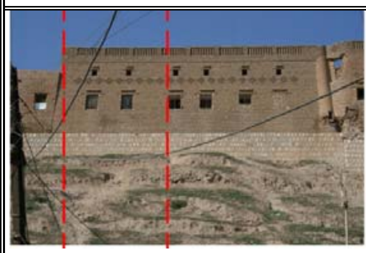
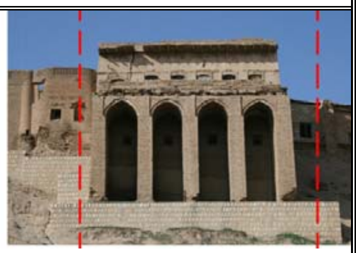
Section H: Architectural Identity Continuity

This section is measuring the architectural identity continuity. (Please tick one box)

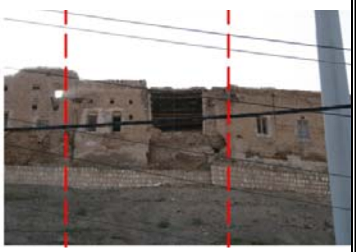
	The Continuity of Architectural Identity	**SD**	**D**	**N**	**A**	**SA**
66	Variety of façade elements affects the continuity of architectural identity.	☐	☐	☐	☐	☐
67	Changing the articulation of facades results in minimizing vocation of place.	☐	☐	☐	☐	☐
68	Altering the architectural form within the plot of land has a great impact on continuity of architectural identity.	☐	☐	☐	☐	☐
69	Efficient use of local architectural details will lead to continuity of architectural identity.	☐	☐	☐	☐	☐
70	The shape of house roof has direct impact on physical and moral aspects of architectural identity	☐	☐	☐	☐	☐
71	Using flat roof shape in house design will enhance the continuity of architectural identity.	☐	☐	☐	☐	☐
72	Regularity of house façade form plays a powerful role towards cultural continuity.	☐	☐	☐	☐	☐

You have successfully completed this Questionnaire.
Thank you for your time and support.

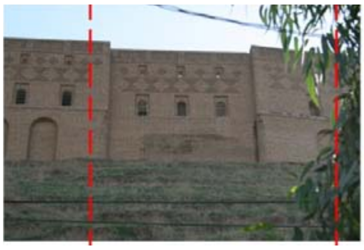
Period	**Traditional Period before 1930**		
Location	**Cases in Erbil Citadel**		
Zone Number	**First**	Case Number	**1A-12 A**

Case 1A	Case 2A	Case 3A
		
Case 4A	Case 5A	Case 6A
		
Case 7A	Case 8A	Case 9A
		
Case 10A	Case 11A	Case 12A
		

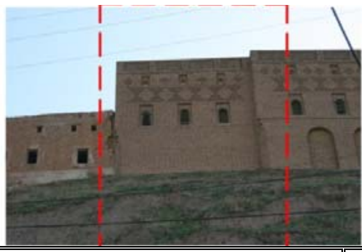
Period	**Traditional Period before 1930**		
Location	**Cases in Erbil Citadel**		
Zone Number	**First**	Case Number	**13A-24 A**

Case 13A	Case 14A	Case 15A
		
Case 16A	Case 17A	Case 18A
		
Case 19A	Case 20A	Case 21A
		
Case 22A	Case 23A	Case 24A
		

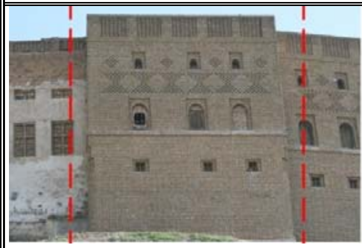
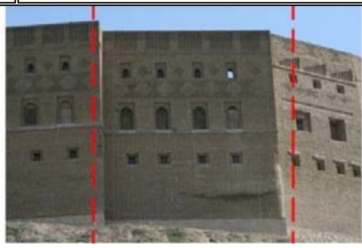
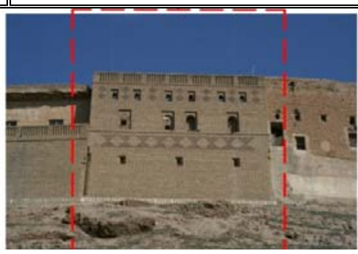
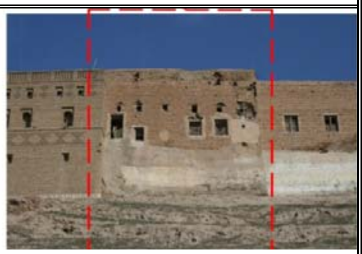
Period	**Traditional Period before 1930**		
Location	**Cases in Erbil Citadel**		
Zone Number	**First**	Case Number	**25A-36 A**

Case 25A	Case 26A	Case 27A
		
Case 28A	Case 29A	Case 30A
		
Case 31A	Case 32A	Case 33A
		
Case 34A	Case 35A	Case 36A
		

Period	Traditional Period before 1930		
Location	**Cases in Erbil Citadel**		
Zone Number	**First**	Case Number	**37A-48 A**

Case 37A	Case 38A	Case 39A
		
Case 40A	Case 41A	Case 42A
		
Case 43A	Case 44A	Case 45A
		
Case 46A	Case 47A	Case 48A
		

Period	Traditional Period before 1930		
Location	**Cases in Erbil Citadel**		
Zone Number	**First**	Case Number	**49A-60A**

Case 49A	Case 50A	Case 51A
		
Case 52A	**Case 53A**	**Case 54A**
		
Case 55A	**Case 56A**	**Case 57A**
		
Case 58A	**Case 59A**	**Case 60A**
		

Period	**Traditional Period before 1930**		
Location	**The Areas within 30th m Ring-road**		
Zone Number	**First**	Case Number	**1B-12B**

Case 1B	Case 2B	Case 3B
		
Case 4B	Case 5B	Case 6B
		
Case 7B	Case 8B	Case 9B
		
Case 10B	Case 11B	Case 12B
		

Period	**Traditional Period before 1930**		
Location	**The Areas within 30^{th} m Ring-road**		
Zone Number	**First**	Case Number	**13B-24B**

Case 13B	Case 14B	Case 15B
		
Case 16B	Case 17B	Case 18B
		
Case 19B	Case 20B	Case 21B
		
Case 22B	Case 23B	Case 24B
		

Period	**Traditional Period before 1930**		
Location	**The Areas within 30th m Ring-road**		
Zone Number	**First**	Case Number	**1C-12C**

Case 1C	Case 2C	Case 3C
		
Case 4C	Case 5C	Case 6C
		
Case 7C	Case 8C	Case 9C
		
Case 10C	Case 11C	Case 12C
		

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<tr><td>Location</td><td colspan="3">**The Areas within 30th m Ring-road**</td></tr>
<tr><td>Zone Number</td><td>**First**</td><td>Case Number</td><td>**13C-24C**</td></tr>
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<tr><td>Location</td><td colspan="3">The Areas between 30th m Ring-road and 60th m Ring-road</td></tr>
<tr><td>Zone Number</td><td>Second</td><td>Case Number</td><td>1D-12D</td></tr>
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Case 1D	Case 2D	Case 3D
		
Case 4D	Case 5D	Case 6D
		
Case 7D	Case 8D	Case 9D
		
Case 10D	Case 11D	Case 12D
		

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Period	**Modification Period (1930-1980)**		
Location	**The Areas between 30th m Ring-road and 60th m Ring-road**		
Zone Number	**Second**	Case Number	**25 D-36 D**

Case 25D	Case 26D	Case 27D
		
Case 28D	Case 29D	Case 30D
		
Case 31D	Case 32D	Case 33D
		
Case 34D	Case 35D	Case 36D
		

Period	**Modification Period (1930-1980)**		
Location	**The Areas between 30th m Ring-road and 60th m Ring-road**		
Zone Number	**Second**	Case Number	**1 E-12 E**

Case 1E	Case 2E	Case 3E
		
Case 4E	Case 5E	Case 6E
		
Case 7E	Case 8E	Case 9E
		
Case 10E	Case 11E	Case 12E
		

Period	**Modification Period (1930-1980)**		
Location	**The area between 30th m Ring and 60th m Ring road**		
Zone Number	**Second**	Case Number	**13E-24E**

Case 13E	Case 14E	Case 15E
		
Case 16E	Case 17E	Case 18E
		
Case 19E	Case 20E	Case 21E
		
Case 22E	Case 23E	Case 24E
		

Period	Modification Period (1930-1980)		
Location	**The Areas between 30th m Ring-road and 60th m Ring-road**		
Zone Number	**Second**	Case Number	**25E -36 E**

Case 25E	Case 26E	Case 27E
		
Case 28E	Case 29E	Case 30E
		
Case 31E	Case 32E	Case 33E
		
Case 34E	Case 35E	Case 36E
		

Period	**Modification Period (1930-1980)**		
Location	**The Areas between 30th m Ring-road and 60th m Ring-road**		
Zone Number	**Second**	Case Number	**1 F-12 F**

Case 1F	Case 2F	Case 3F
		
Case 4F	Case 5F	Case 6F
		
Case 7F	Case 8F	Case 9F
		
Case 10F	Case 11F	Case 12F
		

Period	**Modification Period (1930-1980)**		
Location	**The Areas between 30th m Ring-road and 60th m Ring-road**		
Case Number	**Second**	Case Number	**13 F-24 F**

Case 13F	Case 14F	Case 15F
		
Case 16F	Case 17F	Case 18F
		
Case 19F	Case 20F	Case 21F
		
Case 22F	Case 23F	Case 24F
		

Period	**Modification Period (1930-1980)**		
Location	**The Areas between 30th m Ring-road and 60th m Ring-road**		
Case Number	**Second**	Case Number	**25 F - 36 F**

Case 25F	Case 26F	Case 27F
		
Case 28F	Case 29F	Case 30F
		
Case 31F	Case 32F	Case 33F
		
Case 34F	Case 35F	Case 36F
		

Period	**Transitional Period (1980-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**1G-12G**

Case 1G	Case 2G	Case 3G
		
Case 4G	Case 5G	Case 6G
		
Case 7G	Case 8G	Case 9G
		
Case 10G	Case 11G	Case 12G
		

Period	**Transitional Period (1980-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**13 G- 24G**

Case 13G	Case 14G	Case 15G
		
Case 16G	Case 17G	Case 18G
		
Case 19G	Case 20G	Case 21G
		
Case 22G	Case 23G	Case 24G
		

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</table>

Period	**Transitional Period (1980-2003)**		
Location	**The Areas between 60^{th} m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**1H-12H**

Case 1H	Case 2H	Case 3H
		
Case 4H	Case 5H	Case 6H
		
Case 7H	Case 8H	Case 9H
		
Case 10H	Case 11H	Case 12H
		

Period	**Transitional Period (1981-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**13H- 24H**

Case 13H	Case 14H	Case 15H
		
Case 16H	Case 17H	Case 18H
		
Case 19H	Case 20H	Case 21H
		
Case 22H	Case 23H	Case 24H
		

Period	**Transitional Period (1980-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**25H- 36H**

Case 25H	Case 26H	Case 27H
		
Case 28H	Case 29H	Case 30H
		
Case 31H	Case 32H	Case 33H
		
Case 34H	Case 35H	Case 36H
		

Period	**Transitional Period (1980-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**1 I- 12 I**

Case 1 I	Case 2 I	Case 3 I
		
Case 4 I	Case 5 I	Case 6 I
		
Case 7 I	Case 8 I	Case 9 I
		
Case 10 I	Case 11 I	Case 12 I
		

Period	**Transitional Period (1981-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**13 I- 24 I**

Case 13 I	Case 14 I	Case 15 I
		
Case 16 I	Case 17 I	Case 18 I
		
Case 19 I	Case 20I	Case 21 I
		
Case 22 I	Case 23 I	Case 24 I
		

Period	**Transitional Period (1980-2003)**		
Location	**The Areas between 60th m Ring-road and Pesha-Qazi Ring-road**		
Zone Number	**Third**	Case Number	**25 I- 36 I**

Case 25 I	Case 26 I	Case 27 I
		
Case 28 I	Case 29 I	Case 30 I
		
Case 31 I	Case 32I	Case 33 I
		
Case 34 I	Case 35 I	Case 36 I
		

Period	Advanced Modernity Period (after 2003)		
Location	**Dream City Project**		
Zone Number	**Fourth**	Case Number	**1J - 12J**

Case 1J	Case 2J	Case 3J
		
Case 4J	Case 5J	Case 6J
		
Case 7J	Case 8J	Case 9J
		
Case 10J	Case 11J	Case 12J
		

Period	**Advanced Modernity Period (after 2003)**		
Location	**Dream City Project**		
Zone Number	**Fourth**	Case Number	**13 J – 24 J**
Case 13 J	Case 14 J	Case 15 J	
			
Case 16 J	Case 17 J	Case 18 J	
			
Case 19 J	Case 20 J	Case 21 J	
			
Case 22 J	Case 23 J	Case 24 J	
			

Period	Advanced Modernity Period (after 2003)		
Location	**Dream City Project**		
Case Number	**Fourth**	Case Number	**25J - 36J**

Case 25 J	Case 26 J	Case 27 J
		
Case 28 J	Case 29 J	Case 30 J
		
Case 31J	Case 32 J	Case 33 J
		
Case 34 J	Case 35 J	Case 36 J
		

<table>
<tr><td>Period</td><td colspan="3">**Advanced Modernity Period (after 2003)**</td></tr>
<tr><td>Location</td><td colspan="3">**The Areas Constructed outside the Pesha-Qazi Ring-road**</td></tr>
<tr><td>Zone Number</td><td>**Fourth**</td><td>Case Number</td><td>**1K – 12K**</td></tr>
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</table>

Case No.	Case Location	Photographic documentation.
13D	New Arab District	
Parameter	**Factors**	**Possible Values**
Mass & Articulation	Geometry of mass	■ Pure regular geometrical form
		☐ Non-regular geometrical form
		☐ Non geometric(Curvature)
		☐ Non geometric(Flexure)
		☐ Mixed form(geometry and non-geometry)
	Building envelope	☐ Pure simple envelope
		■ Subtracted parts within main frame
		☐ Added parts within main frame
		☐ Hybrid with(subtraction and addition) parts
		☐ Multi layered envelope
	Type of articulated Façade (base, body, and roof)	☐ Pure mass (non defied parts)
		☐ Pitched roof , with defined base
		■ Flat roof ,with defined base
		☐ Pitched roof without base
		☐ Flat roof without base
		☐ Others
	Orientation of mass	■ Parallel with street line
		☐ Perpendicular on street Line
		☐ Oblique on street line
		☐ Abutting street line
		☐ No relations to street line
	Base relationship to the ground line (pedestal)	☐ At the same level with ground line
		■ Rising over ground line
		☐ Stepped down from ground line
		☐ No obvious relationship
	Mass location within the plot of land	☐ Fitting with land boundaries(no setbacks)
		☐ At the setback from front only
		■ At the setback from two sides
		☐ At the setback from front and two sides
		☐ Free standing shape(setback from all sides)

Case No.:-	Case Location:-	Photographic Documentation.
13D	New Arab District	

Parameters	Factors		Possible Values
House Façade Openings	Windows	Window size	☐ Small ($X \leq 0.5$) m^2
			☐ Medium ($0.5 < X < 2.0$) m^2
			■ Large ($X \geq 2.0$) m^2
		Window dimensionality	■ Liner
			☐ Punctual
			☐ Solid
			☐ Superficial
		Window shape	■ Rectangular
			☐ Square
			☐ Triangular
			☐ Circular
			☐ Other
		Window directivity	☐ Vertical
			■ Horizontal
			☐ Inclined
			☐ Mixed
			☐ No obvious direction
	Entrance	Entrance relationship with street line	■ Parallel to street line
			☐ Perpendicular on street line
			☐ Set back from street line
			☐ Aligned on street line
		Entrance location within the Mass	■ Concentrated in center
			☐ Concentrated on sides
			☐ Random distribution
		Entrance accessibility	☐ Direct access to street
			☐ Indirect access to street
			■ Access via outer fence

13D	New Arab District		
Parameter	**Factors**		**Possible Values**
Architectural details	Arches	Types	☐ Segmental arch
			☐ Round (circular) arch
			☐ Pointed arch (2 centers)
			☐ Islamic arch (4 centers)
			☐ Flat arch
			☐ Triangular arch
			☐ Other
		Depths	☐ Surface depth
			☐ Set back into wall thickness
			☐ Deep depth
			☐ Other
	Ornaments	Types	☐ Islamic (muqarnass)
			☐ Classical
			☐ Modern
			☐ Not available
		Materials	☐ Wood
			☐ Brick
			☐ Stone
			☐ Gypsum
			☐ Cement
			☐ Marble
	Columns	Type of Metaphoric columns	☐ Tuscan
			☐ Ionic
			☐ Doric
			☐ Corinthian
			☐ Composite
			☐ Non-decorative
			☐ Other
		Functional use	☐ Arcade
			☐ Structural enhancement
			☐ Decorative elements
	Porches		☐ Front-stoop porch
			☐ Side porch
			☐ Wrap-around porch
			☐ Continuous portico
			☐ Monumental portico
			☐ Enclosed porch
			☐ Not available

House Facade Checklist Factors Survey Form-Part Four

Case No.	Case Location	Photographic documentation.
13D	New Arab District	

Parameter	Factors		Possible Values
Architectural Materials	Material Sustainability		☐ Local sustainable material
			☐ Artificial materials
			■ Mixed (sustainable and artificial)
			☐ Others
	Roofing Materials	Roofing Construction Systems	☐ Traditional (jack arch–brick arched roof)
			■ Reinforced concrete slab
			☐ Timber structure covered with clay tiles
			☐ Steel structure covered with clay tiles
			☐ Timber joists covered with clay
			☐ Others
		Roofing Shape	■ Flat roof
			☐ Pitched gable roof
			☐ Vault roof
			☐ Dome roof
			☐ Conical roof
			☐ Saw tooth roof
			☐ Pyramidal roof
	Material Colors		☐ Natural material colors
			■ Artificial paint colors
			☐ Mixture of artificial and natural colors

Case No.	Case Location	Photographic documentation.
13D	New Arab District	

Parameters	Factors		Possible Values
House Façade Arrangement Principles	Solidity		☐ Solid mass with punctual transparent openings
			☒ Solid mass with large transparent openings
			☐ Combination of solidity and transparency
			☐ Transparent mass with solid screen boxes
			☐ Transparent mass with small solid elements
	Complexity		☒ Pure form with simple elements
			☐ Simple form with complex elements
			☐ Complex form with simple elements
			☐ Complex form with complex elements
			☐ Hybrid elements within simple form
			☐ Hybrid elements within complex form
	Rhythm and Scale		☐ One unified rhythm in human scale
			☐ Unified rhythm in non-human scale
			☐ More than one rhythm
			☒ Non-unified rhythm
			☐ No rhythm
	Regularity		☒ Regular elements within building facade
			☐ Homogeneous hybrid elements
			☐ Non-regular elements within building facade
	Integration	Repetition	☒ Structured
			☐ Non-structured
		Hierarchy	☐ Hierarchy by size
			☐ Hierarchy by shape
			☒ Hierarchy by placement
			☐ No hierarchy
		Balance	☐ Dynamic balance
			☒ Stable balance
			☐ Unbalanced form

Correlation Matrix

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17
Correla	C1	1.000	.134	.072	.088	.052	.034	.036	-.005	.027	-.011	.072	-.112	-.025	-.071	.074	-.024	-.097
	C2	.134	1.000	.347	.054	.084	.119	.292	.265	.286	.144	.123	.048	.076	.090	.152	.186	.097
	C3	.072	.347	1.000	.181	.119	.066	.167	.204	.228	.132	.047	.038	-.049	.076	.101	.241	.172
	C4	.088	.054	.181	1.000	.388	.195	.071	-.004	-.032	.047	-.009	-.036	.005	.034	-.096	.010	-.077
	C5	.052	.084	.119	.388	1.000	.391	.182	.137	.003	.050	-.037	-.036	-.038	-.012	.031	.002	-.037
	C6	.034	.119	.066	.195	.391	1.000	.306	.179	.085	.041	-.039	-.017	-.068	-.040	-.004	-.009	-.054
	C7	.036	.292	.167	.071	.182	.306	1.000	.522	.348	.103	.120	.058	.073	.055	.137	.197	.156
	C8	-.005	.265	.204	-.004	.137	.179	.522	1.000	.268	.000	.093	.062	.084	-.014	.069	.217	.099
	C9	.027	.286	.228	-.032	.003	.085	.348	.268	1.000	.304	.214	.127	.220	.152	.255	.272	.115
	C10	-.011	.144	.132	.047	.050	.041	.103	.000	.304	1.000	.317	.161	.190	.242	.251	.115	.127
	C11	.072	.123	.047	-.009	-.037	-.039	.120	.093	.214	.317	1.000	.436	.332	.138	.190	.164	.174
	C12	-.112	.048	.038	-.036	-.036	-.017	.058	.062	.127	.161	.436	1.000	.248	.133	.130	.154	.028
	C13	-.025	.076	-.049	.005	-.038	-.068	.073	.084	.220	.190	.332	.248	1.000	.302	.209	.167	.163
	C14	-.071	.090	.076	.034	-.012	-.040	.055	-.014	.152	.242	.138	.133	.302	1.000	.342	.146	.135
	C15	.074	.152	.101	-.096	.031	-.004	.137	.069	.255	.251	.190	.130	.209	.342	1.000	.275	.143
	C16	-.024	.186	.241	.010	.002	-.009	.197	.217	.272	.115	.164	.154	.167	.146	.275	1.000	.240
	C17	-.097	.097	.172	-.077	-.037	-.054	.156	.099	.115	.127	.174	.028	.163	.135	.143	.240	1.000
Sig. (1-	C1		.014	.119	.074	.195	.289	.277	.466	.330	.427	.119	.033	.338	.120	.113	.349	.055
	C2	.014		.000	.188	.083	.025	.000	.000	.000	.009	.021	.213	.104	.068	.006	.001	.055
	C3	.119	.000		.001	.025	.137	.003	.000	.000	.015	.219	.267	.209	.106	.048	.000	.002
	C4	.074	.188	.001		.000	.001	.121	.474	.298	.218	.443	.278	.467	.288	.058	.432	.102
	C5	.195	.083	.025	.000		.000	.001	.012	.481	.206	.271	.277	.264	.424	.307	.488	.272
	C6	.289	.025	.137	.001	.000		.000	.001	.080	.250	.262	.390	.131	.256	.476	.441	.186
	C7	.277	.000	.003	.121	.001	.000		.000	.000	.044	.024	.169	.115	.183	.012	.001	.005
	C8	.466	.000	.000	.474	.012	.001	.000		.000	.499	.064	.153	.084	.407	.128	.000	.051
	C9	.330	.000	.000	.298	.481	.080	.000	.000		.000	.000	.018	.000	.006	.000	.000	.029
	C10	.427	.009	.015	.218	.206	.250	.044	.499	.000		.000	.004	.001	.000	.000	.029	.018
	C11	.119	.021	.219	.443	.271	.262	.024	.064	.000	.000		.000	.000	.011	.001	.003	.002
	C12	.033	.213	.267	.278	.277	.390	.169	.153	.018	.004	.000		.000	.014	.016	.005	.325
	C13	.338	.104	.209	.467	.264	.131	.115	.084	.000	.001	.000	.000		.000	.000	.003	.004
	C14	.120	.068	.106	.288	.424	.256	.183	.407	.006	.000	.011	.014	.000		.000	.008	.013
	C15	.113	.006	.048	.058	.307	.476	.012	.128	.000	.000	.001	.016	.000	.000		.000	.009
	C16	.349	.001	.000	.432	.488	.441	.001	.000	.000	.029	.003	.005	.003	.008	.000		.000
	C17	.055	.055	.002	.102	.272	.186	.005	.051	.029	.018	.002	.325	.004	.013	.009	.000	

Anti-image Matrices

		C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12	C13	C14	C15	C16	C17
Anti-image	C1	.911	-.096	-.041	-.056	-.004	.002	-.016	.038	.001	.042	-.113	.132	.001	.077	-.093	.029	.105
	C2	-.096	.776	-.196	.012	-.001	-.029	-.077	-.067	-.079	-.027	-.022	.010	-.015	-.021	-.024	-.023	.005
	C3	-.041	-.196	.763	-.136	-.022	.021	.035	-.074	-.084	-.043	.032	-.032	.123	-.027	-.001	-.104	-.119
	C4	-.056	.012	-.136	.783	-.255	-.042	-.031	.064	.046	-.028	-.016	.027	-.050	-.056	.117	-.032	.077
	C5	-.004	-.001	-.022	-.255	.728	-.231	-.025	-.053	.046	-.029	.022	.008	.008	.022	-.063	.021	.005
	C6	.002	-.029	.021	-.042	-.231	.772	-.149	-.013	-.019	-.024	.029	-.013	.042	.020	.012	.031	.045
	C7	-.016	-.077	.035	-.031	-.025	-.149	.612	-.269	-.128	-.001	-.016	-.001	.027	-.012	-.024	-.018	-.085
	C8	.038	-.067	-.074	.064	-.053	-.013	-.269	.671	-.051	.077	-.019	-.002	-.045	.048	.026	-.072	.017
	C9	.001	-.079	-.084	.046	.046	-.019	-.128	-.051	.709	-.153	-.025	.005	-.091	.001	-.067	-.087	.042
	C10	.042	-.027	-.043	-.028	-.029	-.024	-.001	.077	-.153	.780	-.159	-.002	-.012	-.096	-.086	.031	-.030
	C11	-.113	-.022	.032	-.016	.022	.029	-.016	-.019	-.025	-.159	.673	-.276	-.131	.030	-.022	-.011	-.095
	C12	.132	.010	-.032	.027	.008	-.013	-.001	-.002	.005	-.002	-.276	.762	-.080	-.025	-.016	-.060	.092
	C13	.001	-.015	.123	-.050	.008	.042	.027	-.045	-.091	-.012	-.131	-.080	.766	-.168	-.034	-.035	-.077
	C14	.077	-.021	-.027	-.056	.022	.020	-.012	.048	.001	-.096	.030	-.025	-.168	.790	-.205	-.007	-.034
	C15	-.093	-.024	-.001	.117	-.063	.012	-.024	.026	-.067	-.086	-.022	-.016	-.034	-.205	.758	-.140	-.020
	C16	.029	-.023	-.104	-.032	.021	.031	-.018	-.072	-.087	.031	-.011	-.060	-.035	-.007	-.140	.793	-.124
	C17	.105	.005	-.119	.077	.005	.045	-.085	.017	.042	-.030	-.095	.092	-.077	-.034	-.020	-.124	.850
Anti-image	C1	.414[a]	-.114	-.049	-.066	-.005	.003	-.022	.048	.001	.050	-.144	.158	.002	.091	-.112	.035	.120
	C2	-.114	.816[a]	-.255	.015	-.001	-.037	-.112	-.093	-.107	-.035	-.030	.013	-.020	-.027	-.031	-.029	.007
	C3	-.049	-.255	.681[a]	-.175	-.029	.027	.051	-.103	-.114	-.055	.045	-.042	.160	-.035	-.001	-.134	-.147
	C4	-.066	.015	-.175	.549[a]	-.338	-.053	-.044	.089	.062	-.036	-.021	.035	-.065	-.071	.152	-.041	.094
	C5	-.005	-.001	-.029	-.338	.625[a]	-.308	-.038	-.076	.064	-.039	.032	.011	.011	.029	-.085	.028	.006
	C6	.003	-.037	.027	-.053	-.308	.691[a]	-.217	-.018	-.025	-.031	.040	-.017	.055	.026	.015	.040	.056
	C7	-.022	-.112	.051	-.044	-.038	-.217	.718[a]	-.421	-.195	-.001	-.025	-.001	.039	-.017	-.035	-.026	-.117
	C8	.048	-.093	-.103	.089	-.076	-.018	-.421	.702[a]	-.074	.107	-.029	-.003	-.063	.065	.036	-.098	.023
	C9	.001	-.107	-.114	.062	.064	-.025	-.195	-.074	.817[a]	-.206	-.036	.007	-.124	.001	-.091	-.116	.054
	C10	.050	-.035	-.055	-.036	-.039	-.031	-.001	.107	-.206	.763[a]	-.219	-.002	-.016	-.122	-.112	.040	-.036
	C11	-.144	-.030	.045	-.021	.032	.040	-.025	-.029	-.036	-.219	.686[a]	-.385	-.183	.041	-.030	-.015	-.126
	C12	.158	.013	-.042	.035	.011	-.017	-.001	-.003	.007	-.002	-.385	.646[a]	-.104	-.032	-.021	-.077	.114
	C13	.002	-.020	.160	-.065	.011	.055	.039	-.063	-.124	-.016	-.183	-.104	.748[a]	-.217	-.044	-.045	-.096
	C14	.091	-.027	-.035	-.071	.029	.026	-.017	.065	.001	-.122	.041	-.032	-.217	.713[a]	-.264	-.009	-.041
	C15	-.112	-.031	-.001	.152	-.085	.015	-.035	.036	-.091	-.112	-.030	-.021	-.044	-.264	.746[a]	-.180	-.024
	C16	.035	-.029	-.134	-.041	.028	.040	-.026	-.098	-.116	.040	-.015	-.077	-.045	-.009	-.180	.815[a]	-.151
	C17	.120	.007	-.147	.094	.006	.056	-.117	.023	.054	-.036	-.126	.114	-.096	-.041	-.024	-.151	.680[a]

[a] Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
C1	1.000	.047
C2	1.000	.373
C3	1.000	.291
C4	1.000	.535
C5	1.000	.616
C6	1.000	.457
C7	1.000	.549
C8	1.000	.521
C9	1.000	.432
C10	1.000	.380
C11	1.000	.447
C12	1.000	.318
C13	1.000	.412
C14	1.000	.340
C15	1.000	.322
C16	1.000	.341
C17	1.000	.230

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.142	18.483	18.483	3.142	18.483	18.483	2.453	14.431	14.431
2	2.072	12.188	30.672	2.072	12.188	30.672	2.364	13.906	28.337
3	1.397	8.220	38.892	1.397	8.220	38.892	1.794	10.555	38.892
4	1.208	7.107	45.999						
5	1.115	6.561	52.560						
6	1.036	6.095	58.655						
7	.904	5.320	63.975						
8	.855	5.029	69.004						
9	.817	4.807	73.812						
10	.744	4.376	78.187						
11	.650	3.821	82.008						
12	.601	3.534	85.542						
13	.575	3.384	88.926						
14	.535	3.144	92.070						
15	.489	2.874	94.944						
16	.458	2.696	97.640						
17	.401	2.360	100.000						

Extraction Method: Principal Component Analysis.

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.712
Bartlett's Test of Sphericity	Approx. Chi-Square	728.294
	df	136
	Sig.	.000

Component Matrix (a)

	Component		
	1	2	3
C9	.637		
C7	.565	.420	
C16	.533		
C2	.515		
C15	.509		
C11	.507	-.357	
C10	.485		
C8	.482	.376	-.383
C13	.443	-.399	
C3	.429		
C14	.402		
C17	.370		
C12	.368	-.349	
C5		.594	.486
C6		.594	
C1			
C4		.455	.567

Extraction Method: Principal Component Analysis.
a 3 components extracted.

Rotated Component Matrix (a)

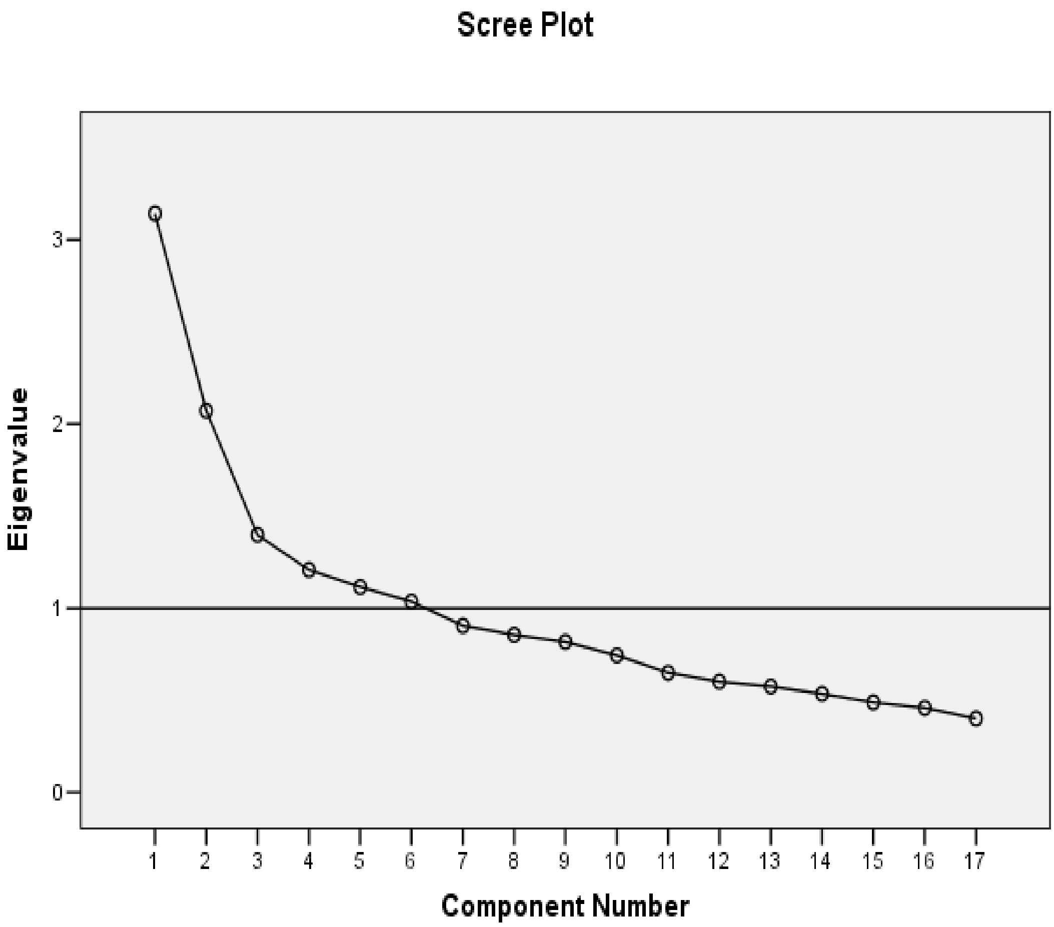
	Component		
	1	2	3
C8	.712		
C7	.705		
C2	.590		
C9	.567	.331	
C3	.509		
C16	.497		
C17	.351		
C11		.660	
C13		.634	
C10		.595	
C14		.582	
C12		.562	
C15		.503	
C5			.782
C4			.721
C6			.636
C1			

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3
1	.743	.657	.127
2	.371	-.562	.739
3	-.557	.502	.661

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.


Scree Plot
Eigenvalue
0
1
2
3
Component Number
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17

Correlation Matrix

		D21	D22	D23	D24	D25	D26	D27	D28	D29
Correlati	D21	1.000	.236	-.018	.077	.054	.048	.107	.077	.004
	D22	.236	1.000	.076	.066	-.022	.117	-.008	-.009	.087
	D23	-.018	.076	1.000	.091	.201	.148	.102	-.153	.091
	D24	.077	.066	.091	1.000	.104	.005	.118	.103	.085
	D25	.054	-.022	.201	.104	1.000	.245	.011	.072	.094
	D26	.048	.117	.148	.005	.245	1.000	.079	-.039	.080
	D27	.107	-.008	.102	.118	.011	.079	1.000	.215	.090
	D28	.077	-.009	-.153	.103	.072	-.039	.215	1.000	.140
	D29	.004	.087	.091	.085	.094	.080	.090	.140	1.000

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.602
Bartlett's Test of Sphericity	Approx. Chi-Square	113.779
	df	36
	Sig.	.000

Communalities

	Initial	Extraction
D21	1.000	.205
D22	1.000	.129
D23	1.000	.473
D24	1.000	.223
D25	1.000	.383
D26	1.000	.417
D27	1.000	.350
D28	1.000	.558
D29	1.000	.210

Extraction Method: Principal Component Analysis.

Anti-image Matrices

		D21	D22	D23	D24	D25	D26	D27	D28	D29
Anti-image Cova	D21	.921	-.220	.049	-.044	-.055	-.008	-.092	-.040	.035
	D22	-.220	.912	-.066	-.048	.079	-.104	.055	.007	-.076
	D23	.049	-.066	.888	-.067	-.165	-.065	-.118	.181	-.069
	D24	-.044	-.048	-.067	.955	-.076	.039	-.079	-.069	-.048
	D25	-.055	.079	-.165	-.076	.882	-.208	.063	-.092	-.048
	D26	-.008	-.104	-.065	.039	-.208	.905	-.076	.057	-.044
	D27	-.092	.055	-.118	-.079	.063	-.076	.908	-.196	-.042
	D28	-.040	.007	.181	-.069	-.092	.057	-.196	.883	-.122
	D29	.035	-.076	-.069	-.048	-.048	-.044	-.042	-.122	.949
Anti-image Corr	D21	.513[a]	-.240	.054	-.047	-.061	-.009	-.101	-.044	.038
	D22	-.240	.474[a]	-.073	-.052	.088	-.114	.060	.008	-.082
	D23	.054	-.073	.502[a]	-.073	-.186	-.073	-.132	.204	-.075
	D24	-.047	-.052	-.073	.642[a]	-.083	.042	-.085	-.075	-.050
	D25	-.061	.088	-.186	-.083	.505[a]	-.233	.071	-.104	-.053
	D26	-.009	-.114	-.073	.042	-.233	.561[a]	-.084	.064	-.048
	D27	-.101	.060	-.132	-.085	.071	-.084	.492[a]	-.218	-.046
	D28	-.044	.008	.204	-.075	-.104	.064	-.218	.465[a]	-.134
	D29	.038	-.082	-.075	-.050	-.053	-.048	-.046	-.134	.616[a]

a. Measures of Sampling Adequacy(MSA)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.632	18.137	18.137	1.632	18.137	18.137	1.475	16.392	16.392
2	1.315	14.615	32.753	1.315	14.615	32.753	1.472	16.361	32.753
3	1.174	13.045	45.797						
4	.972	10.804	56.601						
5	.949	10.544	67.145						
6	.916	10.181	77.326						
7	.775	8.614	85.940						
8	.699	7.763	93.703						
9	.567	6.297	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix (a)

	Component	
	1	2
D21	.367	
D22	.360	
D23	.446	-.523
D24	.423	
D25	.528	
D26	.501	-.407
D27	.438	.397
D28		.694
D29	.439	

Extraction Method: Principal Component Analysis.
a 2 components extracted.

Rotated Component Matrix (a)

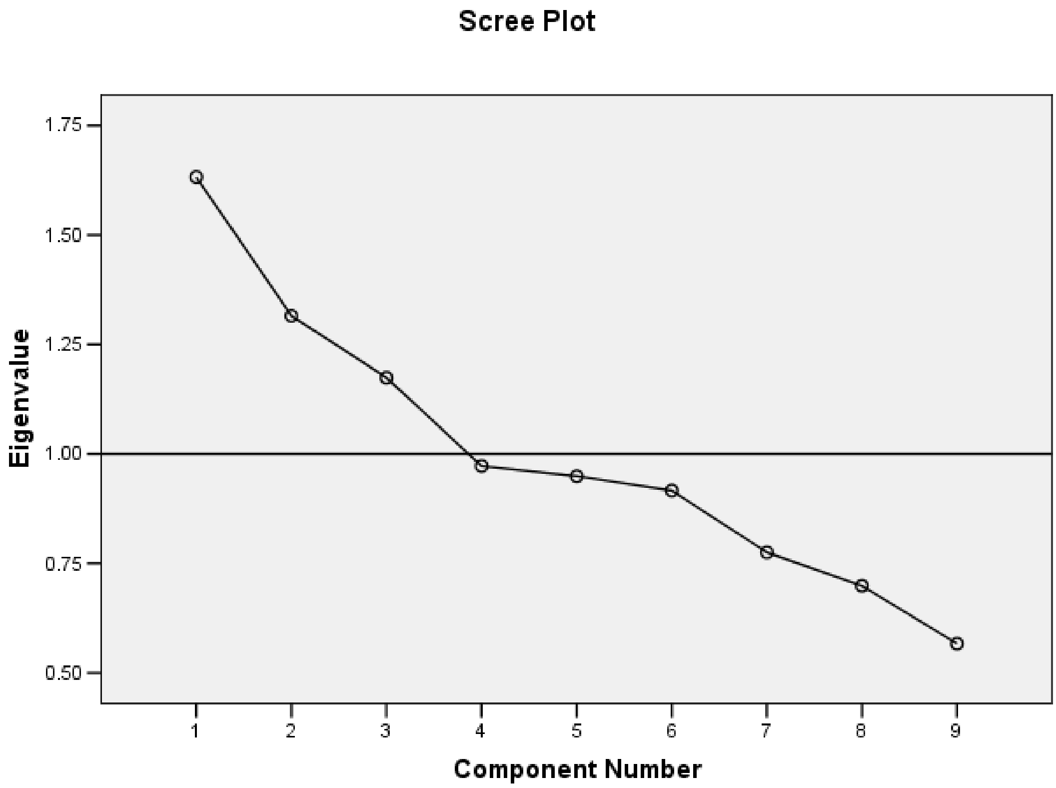
	Component	
	1	2
D21	.448	
D22		
D23		.686
D24	.449	
D25		.601
D26		.642
D27	.591	
D28	.685	
D29	.403	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Component Transformation Matrix

Component	1	2
1	.710	.704
2	.704	-.710

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.


Scree Plot
Eigenvalue
1.75
1.50
1.25
1.00
0.75
0.50
1
2
3
4
5
6
7
8
9
Component Number

Correlation Matrix

		E27	E28	E29	E30	E31	E32	E33
Correlation	E27	1.000	.183	.155	.083	.117	.063	.039
	E28	.183	1.000	.239	.001	.086	.059	.014
	E29	.155	.239	1.000	.178	.153	.128	.084
	E30	.083	.001	.178	1.000	.199	-.030	.012
	E31	.117	.086	.153	.199	1.000	.223	.103
	E32	.063	.059	.128	-.030	.223	1.000	.040
	E33	.039	.014	.084	.012	.103	.040	1.000
Sig. (1-tailed	E27		.001	.005	.087	.027	.150	.262
	E28	.001		.000	.496	.077	.168	.411
	E29	.005	.000		.002	.006	.018	.084
	E30	.087	.496	.002		.000	.310	.422
	E31	.027	.077	.006	.000		.000	.045
	E32	.150	.168	.018	.310	.000		.256
	E33	.262	.411	.084	.422	.045	.256	

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.621
Bartlett's Test of Sphericity	Approx. Chi-Square	79.958
	df	21
	Sig.	.000

Anti-image Matrices

		E27	E28	E29	E30	E31	E32	E33
Anti-image Covari	E27	.943	-.139	-.082	-.048	-.062	-.025	-.019
	E28	-.139	.916	-.193	.055	-.041	-.009	.015
	E29	-.082	-.193	.879	-.148	-.057	-.091	-.064
	E30	-.048	.055	-.148	.924	-.173	.088	.019
	E31	-.062	-.041	-.057	-.173	.885	-.196	-.082
	E32	-.025	-.009	-.091	.088	-.196	.932	-.008
	E33	-.019	.015	-.064	.019	-.082	-.008	.984
Anti-image Correla	E27	.680[a]	-.150	-.091	-.052	-.068	-.027	-.020
	E28	-.150	.576[a]	-.215	.060	-.046	-.010	.015
	E29	-.091	-.215	.614[a]	-.164	-.065	-.100	-.069
	E30	-.052	.060	-.164	.500[a]	-.192	.095	.020
	E31	-.068	-.046	-.065	-.192	.586[a]	-.216	-.088
	E32	-.027	-.010	-.100	.095	-.216	.533[a]	-.009
	E33	-.020	.015	-.069	.020	-.088	-.009	.607[a]

a. Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
E27	1.000	.390
E28	1.000	.626
E29	1.000	.457
E30	1.000	.249
E31	1.000	.581
E32	1.000	.273
E33	1.000	.167

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.664	23.768	23.768	1.664	23.768	23.768	1.387	19.821	19.821
2	1.080	15.424	39.193	1.080	15.424	39.193	1.356	19.372	39.193
3	1.046	14.939	54.131						
4	.970	13.851	67.982						
5	.857	12.239	80.221						
6	.749	10.701	90.923						
7	.635	9.077	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix(a)

	Component	
	1	2
E29	.651	
E31	.600	.471
E27	.496	-.379
E32	.414	
E30	.403	
E28	.491	-.621
E33		

Extraction Method: Principal Component Analysis.
a 2 components extracted.

Rotated Component Matrix (a)

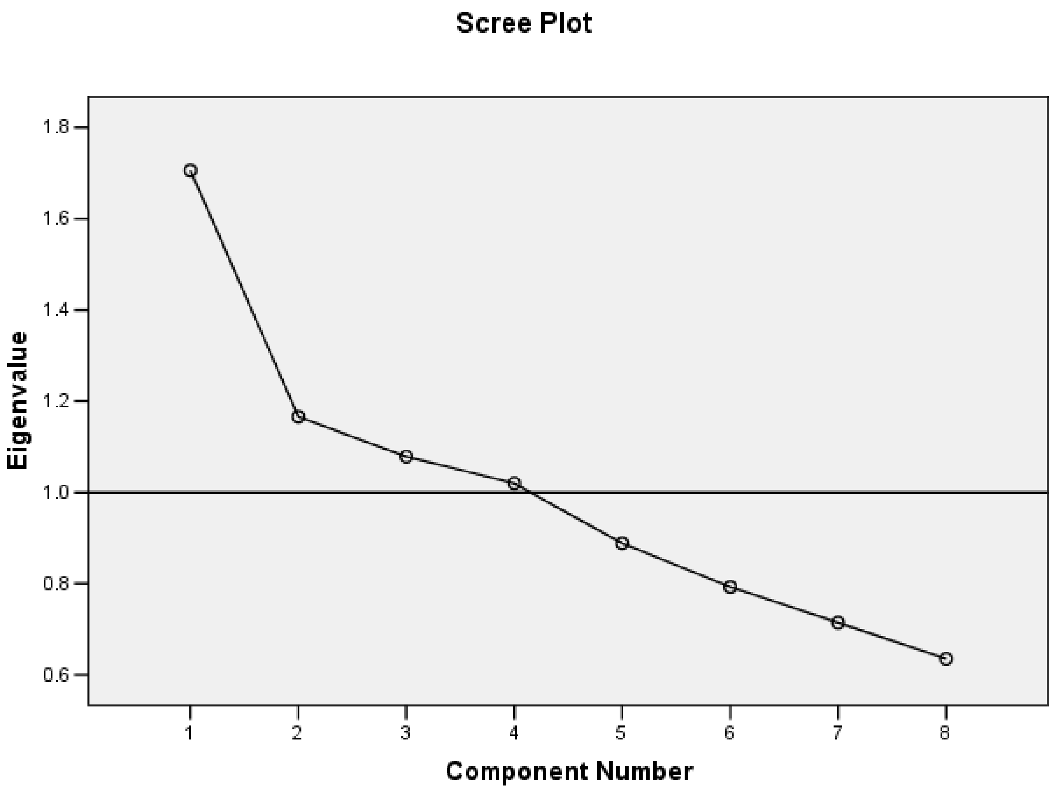
	Component	
	1	2
E28	.783	
E27	.621	
E29	.599	
E31		.754
E32		.517
E30		.490
E33		.406

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Component Transformation Matrix

Component	1	2
1	.726	.688
2	-.688	.726

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.



Correlation Matrix

		F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	F47	F48
Correla	F34	1.000	.419	.291	.075	.093	.058	.074	.098	.002	.046	-.075	-.077	-.054	.115	.104
	F35	.419	1.000	.415	.205	.140	-.019	.109	.060	.070	.077	-.051	-.126	.020	.157	.120
	F36	.291	.415	1.000	.311	.156	-.043	.051	-.009	.049	.114	-.039	-.093	.012	.144	.072
	F37	.075	.205	.311	1.000	.269	.066	.008	.019	-.037	.090	.029	-.046	.095	.022	.018
	F38	.093	.140	.156	.269	1.000	.060	.030	.121	-.028	-.007	.034	-.079	.018	.008	-.121
	F39	.058	-.019	-.043	.066	.060	1.000	.184	-.013	.101	.092	-.048	.111	.080	.097	.091
	F40	.074	.109	.051	.008	.030	.184	1.000	.089	.094	.112	.005	-.105	.022	.140	.191
	F41	.098	.060	-.009	.019	.121	-.013	.089	1.000	.260	.087	.081	.023	.015	.007	.035
	F42	.002	.070	.049	-.037	-.028	.101	.094	.260	1.000	.243	.058	-.081	-.013	.028	.103
	F43	.046	.077	.114	.090	-.007	.092	.112	.087	.243	1.000	.119	.033	-.012	.187	.250
	F44	-.075	-.051	-.039	.029	.034	-.048	.005	.081	.058	.119	1.000	.048	.036	.006	.122
	F45	-.077	-.126	-.093	-.046	-.079	.111	-.105	.023	-.081	.033	.048	1.000	.075	-.063	-.043
	F46	-.054	.020	.012	.095	.018	.080	.022	.015	-.013	-.012	.036	.075	1.000	.145	.125
	F47	.115	.157	.144	.022	.008	.097	.140	.007	.028	.187	.006	-.063	.145	1.000	.270
	F48	.104	.120	.072	.018	-.121	.091	.191	.035	.103	.250	.122	-.043	.125	.270	1.000
Sig. (1-	F34		.000	.000	.109	.062	.171	.111	.053	.489	.225	.108	.101	.188	.028	.043
	F35	.000		.000	.000	.010	.374	.036	.163	.126	.103	.202	.018	.373	.005	.024
	F36	.000	.000		.000	.005	.239	.202	.442	.209	.030	.258	.064	.420	.009	.119
	F37	.109	.000	.000		.000	.138	.451	.379	.272	.068	.319	.224	.058	.357	.385
	F38	.062	.010	.005	.000		.163	.313	.023	.323	.451	.289	.098	.385	.450	.023
	F39	.171	.374	.239	.138	.163		.001	.418	.047	.064	.213	.034	.093	.056	.066
	F40	.111	.036	.202	.451	.313	.001		.072	.061	.032	.465	.042	.362	.010	.001
	F41	.053	.163	.442	.379	.023	.418	.072		.000	.076	.092	.355	.402	.454	.283
	F42	.489	.126	.209	.272	.323	.047	.061	.000		.000	.169	.092	.412	.325	.045
	F43	.225	.103	.030	.068	.451	.064	.032	.076	.000		.025	.296	.421	.001	.000
	F44	.108	.202	.258	.319	.289	.213	.465	.092	.169	.025		.216	.278	.458	.022
	F45	.101	.018	.064	.224	.098	.034	.042	.355	.092	.296	.216		.108	.150	.241
	F46	.188	.373	.420	.058	.385	.093	.362	.402	.412	.421	.278	.108		.008	.019
	F47	.028	.005	.009	.357	.450	.056	.010	.454	.325	.001	.458	.150	.008		.000
	F48	.043	.024	.119	.385	.023	.066	.001	.283	.045	.000	.022	.241	.019	.000	

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.625
Bartlett's Test of Sphericity	Approx. Chi-Square	357.099
	df	105
	Sig.	.000

Anti-image Matrices

		F34	F35	F36	F37	F38	F39	F40	F41	F42	F43	F44	F45	F46	F47	F48
Anti-image C	F34	.777	-.243	-.115	.045	-.021	-.073	.004	-.089	.060	.005	.051	.022	.070	-.024	-.050
	F35	-.243	.701	-.194	-.071	-.044	.051	-.048	-.006	-.045	.006	.030	.044	-.017	-.051	-.039
	F36	-.115	-.194	.735	-.190	-.049	.075	-.005	.061	-.043	-.047	.029	.010	.008	-.064	.000
	F37	.045	-.071	-.190	.822	-.182	-.072	.031	-.009	.068	-.068	-.027	.028	-.081	.050	-.004
	F38	-.021	-.044	-.049	-.182	.869	-.069	-.016	-.115	.052	.011	-.053	.070	-.008	-.008	.130
	F39	-.073	.051	.075	-.072	-.069	.895	-.159	.071	-.104	-.031	.071	-.133	-.052	-.056	-.036
	F40	.004	-.048	-.005	.031	-.016	-.159	.901	-.067	-.013	-.035	.005	.099	.009	-.053	-.111
	F41	-.089	-.006	.061	-.009	-.115	.071	-.067	.886	-.226	-.015	-.053	-.063	-.020	.008	-.001
	F42	.060	-.045	-.043	.068	.052	-.104	-.013	-.226	.846	-.178	-.024	.100	.010	.040	-.020
	F43	.005	.006	-.047	-.068	.011	-.031	-.035	-.015	-.178	.844	-.078	-.068	.067	-.111	-.146
	F44	.051	.030	.029	-.027	-.053	.071	.005	-.053	-.024	-.078	.948	-.045	-.018	.017	-.105
	F45	.022	.044	.010	.028	.070	-.133	.099	-.063	.100	-.068	-.045	.925	-.076	.050	.036
	F46	.070	-.017	.008	-.081	-.008	-.052	.009	-.020	.010	.067	-.018	-.076	.939	-.117	-.093
	F47	-.024	-.051	-.064	.050	-.008	-.056	-.053	.008	.040	-.111	.017	.050	-.117	.862	-.158
	F48	-.050	-.039	.000	-.004	.130	-.036	-.111	-.001	-.020	-.146	-.105	.036	-.093	-.158	.819
Anti-image C	F34	.654[a]	-.330	-.152	.056	-.026	-.087	.005	-.107	.074	.007	.059	.026	.082	-.029	-.063
	F35	-.330	.695[a]	-.271	-.093	-.057	.065	-.060	-.007	-.058	.008	.036	.055	-.021	-.066	-.051
	F36	-.152	-.271	.697[a]	-.244	-.061	.093	-.006	.075	-.054	-.060	.035	.012	.009	-.081	.001
	F37	.056	-.093	-.244	.614[a]	-.215	-.084	.035	-.011	.081	-.082	-.031	.032	-.092	.059	-.005
	F38	-.026	-.057	-.061	-.215	.592[a]	-.078	-.018	-.132	.060	.013	-.059	.078	-.009	-.010	.154
	F39	-.087	.065	.093	-.084	-.078	.461[a]	-.177	.080	-.119	-.036	.077	-.146	-.056	-.064	-.042
	F40	.005	-.060	-.006	.035	-.018	-.177	.666[a]	-.075	-.015	-.041	.006	.109	.009	-.060	-.129
	F41	-.107	-.007	.075	-.011	-.132	.080	-.075	.492[a]	-.261	-.017	-.058	-.070	-.022	.010	-.001
	F42	.074	-.058	-.054	.081	.060	-.119	-.015	-.261	.517[a]	-.210	-.027	.113	.011	.046	-.024
	F43	.007	.008	-.060	-.082	.013	-.036	-.041	-.017	-.210	.647[a]	-.088	-.077	.075	-.131	-.176
	F44	.059	.036	.035	-.031	-.059	.077	.006	-.058	-.027	-.088	.554[a]	-.048	-.019	.018	-.119
	F45	.026	.055	.012	.032	.078	-.146	.109	-.070	.113	-.077	-.048	.507[a]	-.081	.056	.041
	F46	.082	-.021	.009	-.092	-.009	-.056	.009	-.022	.011	.075	-.019	-.081	.514[a]	-.130	-.106
	F47	-.029	-.066	-.081	.059	-.010	-.064	-.060	.010	.046	-.131	.018	.056	-.130	.693[a]	-.188
	F48	-.063	-.051	.001	-.005	.154	-.042	-.129	-.001	-.024	-.176	-.119	.041	-.106	-.188	.653[a]

[a] Measures of Sampling Adequacy(MSA)

Communalities

	Initial	Extraction
F34	1.000	.378
F35	1.000	.558
F36	1.000	.529
F37	1.000	.287
F38	1.000	.319
F39	1.000	.148
F40	1.000	.227
F41	1.000	.501
F42	1.000	.517
F43	1.000	.388
F44	1.000	.158
F45	1.000	.085
F46	1.000	.151
F47	1.000	.443
F48	1.000	.510

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.273	15.150	15.150	2.273	15.150	15.150	2.058	13.722	13.722
2	1.647	10.977	26.128	1.647	10.977	26.128	1.698	11.318	25.040
3	1.280	8.534	34.662	1.280	8.534	34.662	1.443	9.621	34.662
4	1.245	8.299	42.960						
5	1.123	7.484	50.445						
6	1.026	6.838	57.283						
7	.971	6.472	63.755						
8	.909	6.057	69.811						
9	.805	5.369	75.180						
10	.755	5.034	80.215						
11	.697	4.644	84.859						
12	.642	4.283	89.142						
13	.597	3.983	93.125						
14	.536	3.573	96.697						
15	.495	3.303	100.000						

Extraction Method: Principal Component Analysis.

Component Matrix (a)

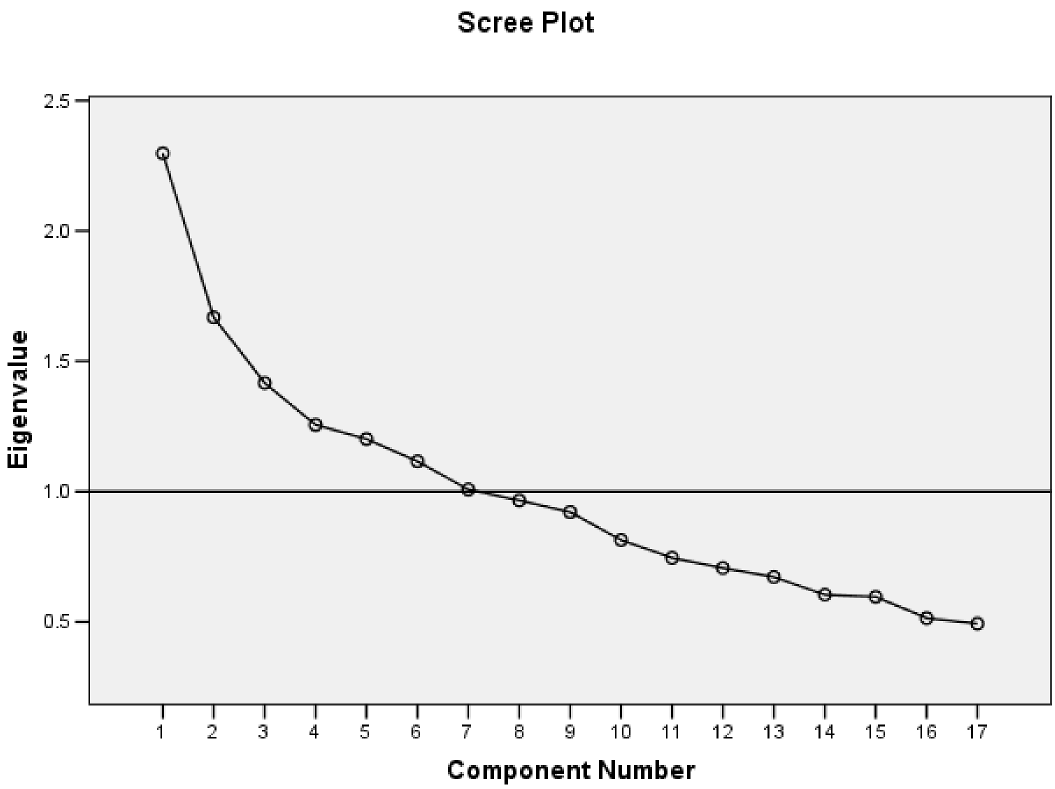
	Component		
	1	2	3
F35	.677		
F36	.627	-.365	
F34	.552		
F47	.442		-.406
F37	.422		
F40	.350		
F45			
F48	.408	.509	
F43	.395	.461	
F38		-.363	
F39			
F44			
F41			.642
F42		.415	.527
F46			

Extraction Method: Principal Component Analysis.
a 3 components extracted.

Rotated Component Matrix (a)

	Component		
	1	2	3
F35	.725		
F36	.715		
F34	.595		
F37	.535		
F38	.476		
F45			
F48		.702	
F47		.643	
F40		.420	
F39		.374	
F46		.362	
F42			.711
F41			.686
F43		.420	.454
F44			.377

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.


Scree Plot
Eigenvalue
2.5
2.0
1.5
1.0
0.5
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
Component Number

Correlation Matrix[a]

		G49	G50	G51	G52	G53	G54	G55	G56	G57	G58	G59	G60	G61	G62	G63	G64	G65
Correl	G49	1.000	.156	.009	-.004	-.031	-.058	-.056	-.029	.006	-.024	-.024	.049	.058	.059	.050	-.032	-.045
	G50	.156	1.000	.210	.004	-.160	-.056	.022	.037	-.066	-.019	-.062	-.023	-.033	.051	.016	.072	.133
	G51	.009	.210	1.000	.169	-.188	-.032	.037	.117	-.033	.000	.060	-.014	-.037	-.026	.082	.075	.197
	G52	-.004	.004	.169	1.000	.019	.009	.027	-.015	-.022	-.014	.054	.072	.125	.052	-.031	-.011	.023
	G53	-.031	-.160	-.188	.019	1.000	.190	-.032	-.116	.179	-.125	-.020	-.077	.035	-.015	.019	-.188	-.115
	G54	-.058	-.056	-.032	.009	.190	1.000	.079	-.011	.009	-.045	.009	-.041	-.034	-.076	.051	-.036	.068
	G55	-.056	.022	.037	.027	-.032	.079	1.000	.119	-.014	.027	-.065	-.039	.029	-.085	.041	.014	.011
	G56	-.029	.037	.117	-.015	-.116	-.011	.119	1.000	.104	.118	.004	-.002	.019	.007	.048	.093	.114
	G57	.006	-.066	-.033	-.022	.179	.009	-.014	.104	1.000	-.072	.056	-.131	-.006	.055	-.009	-.099	-.114
	G58	-.024	-.019	.000	-.014	-.125	-.045	.027	.118	-.072	1.000	.052	.133	.051	.070	.084	.051	-.042
	G59	-.024	-.062	.060	.054	-.020	.009	-.065	.004	.056	.052	1.000	.117	.015	-.024	-.017	-.024	.018
	G60	.049	-.023	-.014	.072	-.077	-.041	-.039	-.002	-.131	.133	.117	1.000	.115	.067	.101	-.057	.008
	G61	.058	-.033	-.037	.125	.035	-.034	.029	.019	-.006	.051	.015	.115	1.000	.069	.013	.048	-.036
	G62	.059	.051	-.026	.052	-.015	-.076	-.085	.007	.055	.070	-.024	.067	.069	1.000	.206	.183	-.021
	G63	.050	.016	.082	-.031	.019	.051	.041	.048	-.009	.084	-.017	.101	.013	.206	1.000	.294	.120
	G64	-.032	.072	.075	-.011	-.188	-.036	.014	.093	-.099	.051	-.024	-.057	.048	.183	.294	1.000	.145
	G65	-.045	.133	.197	.023	-.115	.068	.011	.114	-.114	-.042	.018	.008	-.036	-.021	.120	.145	1.000

[a] Determinant = .416

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.653
Bartlett's Test of Sphericity	Approx. Chi-Square	232.595
	df	136
	Sig.	.000

Anti-image Matrices

		G49	G50	G51	G52	G53	G54	G55	G56	G57	G58	G59	G60	G61	G62	G63	G64	G65
Anti-image	G49	.951	-.148	.009	.009	.024	.035	.051	.019	-.012	.034	.018	-.033	-.059	-.030	-.060	.052	.052
	G50	-.148	.897	-.152	.020	.081	.024	-.023	-.001	.033	.021	.060	.023	.026	-.050	.026	-.020	-.083
	G51	.009	-.152	.857	-.167	.120	.018	-.010	-.071	-.008	.015	-.059	.036	.037	.049	-.074	.003	-.118
	G52	.009	.020	-.167	.936	-.043	-.013	-.033	.027	.020	.020	-.036	-.058	-.114	-.063	.055	.007	-.005
	G53	.024	.081	.120	-.043	.832	-.156	.032	.072	-.126	.087	.020	.064	-.047	-.004	-.086	.140	.047
	G54	.035	.024	.018	-.013	-.156	.936	-.073	.002	.018	.017	-.018	.023	.031	.058	-.052	.015	-.076
	G55	.051	-.023	-.010	-.033	.032	-.073	.957	-.104	.013	-.017	.063	.035	-.038	.084	-.051	.008	.023
	G56	.019	-.001	-.071	.027	.072	.002	-.104	.920	-.136	-.107	.011	-.006	-.021	.008	.000	-.052	-.089
	G57	-.012	.033	-.008	.020	-.126	.018	.013	-.136	.904	.061	-.074	.120	.001	-.073	-.019	.076	.088
	G58	.034	.021	.015	.020	.087	.017	-.017	-.107	.061	.935	-.045	-.090	-.034	-.046	-.060	.000	.068
	G59	.018	.060	-.059	-.036	.020	-.018	.063	.011	-.074	-.045	.961	-.109	-.003	.030	.023	.003	-.021
	G60	-.033	.023	.036	-.058	.064	.023	.035	-.006	.120	-.090	-.109	.906	-.095	-.046	-.107	.110	-.007
	G61	-.059	.026	.037	-.114	-.047	.031	-.038	-.021	.001	-.034	-.003	-.095	.953	-.039	.021	-.058	.021
	G62	-.030	-.050	.049	-.063	-.004	.058	.084	.008	-.073	-.046	.030	-.046	-.039	.901	-.142	-.122	.035
	G63	-.060	.026	-.074	.055	-.086	-.052	-.051	.000	-.019	-.060	.023	-.107	.021	-.142	.841	-.228	-.077
	G64	.052	-.020	.003	.007	.140	.015	.008	-.052	.076	.000	.003	.110	-.058	-.122	-.228	.825	-.071
	G65	.052	-.083	-.118	-.005	.047	-.076	.023	-.089	.088	.068	-.021	-.007	.021	.035	-.077	-.071	.896
Anti-image	G49	.492[a]	-.160	.010	.010	.027	.037	.054	.021	-.013	.036	.019	-.036	-.062	-.033	-.067	.059	.057
	G50	-.160	.609[a]	-.173	.022	.094	.027	-.025	-.001	.036	.023	.064	.026	.028	-.056	.030	-.024	-.093
	G51	.010	-.173	.585[a]	-.187	.142	.020	-.011	-.080	-.009	.017	-.065	.041	.041	.055	-.087	.003	-.135
	G52	.010	.022	-.187	.457[a]	-.048	-.014	-.035	.029	.022	.022	-.038	-.063	-.121	-.068	.062	.008	-.005
	G53	.027	.094	.142	-.048	.587[a]	-.177	.036	.082	-.146	.099	.023	.073	-.053	-.004	-.102	.169	.054
	G54	.037	.027	.020	-.014	-.177	.548[a]	-.077	.002	.019	.019	-.019	.025	.033	.064	-.059	.017	-.083
	G55	.054	-.025	-.011	-.035	.036	-.077	.496[a]	-.110	.014	-.018	.066	.038	-.040	.091	-.057	.009	.025
	G56	.021	-.001	-.080	.029	.082	.002	-.110	.549[a]	-.150	-.115	.011	-.006	-.023	.008	.000	-.059	-.098
	G57	-.013	.036	-.009	.022	-.146	.019	.014	-.150	.503[a]	.066	-.080	.133	.001	-.081	-.022	.088	.098
	G58	.036	.023	.017	.022	.099	.019	-.018	-.115	.066	.580[a]	-.047	-.097	-.036	-.051	-.068	.000	.074
	G59	.019	.064	-.065	-.038	.023	-.019	.066	.011	-.080	-.047	.484[a]	-.116	-.003	.032	.025	.003	-.022
	G60	-.036	.026	.041	-.063	.073	.025	.038	-.006	.133	-.097	-.116	.492[a]	-.102	-.050	-.123	.127	-.008
	G61	-.062	.028	.041	-.121	-.053	.033	-.040	-.023	.001	-.036	-.003	-.102	.520[a]	-.042	.023	-.066	.023
	G62	-.033	-.056	.055	-.068	-.004	.064	.091	.008	-.081	-.051	.032	-.050	-.042	.573[a]	-.163	-.141	.039
	G63	-.067	.030	-.087	.062	-.102	-.059	-.057	.000	-.022	-.068	.025	-.123	.023	-.163	.519[a]	-.274	-.088
	G64	.059	-.024	.003	.008	.169	.017	.009	-.059	.088	.000	.003	.127	-.066	-.141	-.274	.565[a]	-.083
	G65	.057	-.093	-.135	-.005	.054	-.083	.025	-.098	.098	.074	-.022	-.008	.023	.039	-.088	-.083	.632[a]

[a] Measures of Sampling Adequacy(MSA)

Communalities

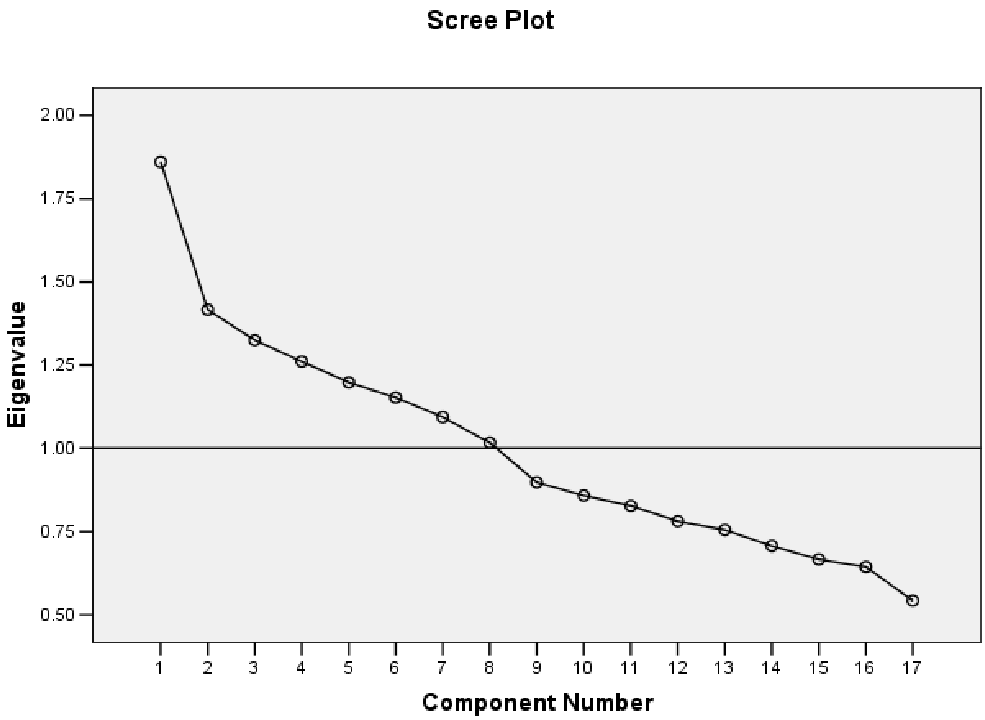
	Initial	Extraction
G49	1.000	.278
G50	1.000	.424
G51	1.000	.419
G52	1.000	.189
G53	1.000	.468
G54	1.000	.340
G55	1.000	.224
G56	1.000	.245
G57	1.000	.181
G58	1.000	.266
G59	1.000	.232
G60	1.000	.459
G61	1.000	.234
G62	1.000	.483
G63	1.000	.554
G64	1.000	.506
G65	1.000	.360

Extraction Method: Principal Component Analysis.

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.861	10.945	10.945	1.861	10.945	10.945	1.672	9.833	9.833
2	1.416	8.331	19.276	1.416	8.331	19.276	1.520	8.939	18.772
3	1.325	7.795	27.071	1.325	7.795	27.071	1.353	7.958	26.730
4	1.261	7.417	34.488	1.261	7.417	34.488	1.319	7.758	34.488
5	1.198	7.046	41.534						
6	1.152	6.778	48.312						
7	1.094	6.435	54.747						
8	1.017	5.982	60.729						
9	.898	5.280	66.009						
10	.858	5.046	71.055						
11	.827	4.863	75.918						
12	.781	4.593	80.510						
13	.755	4.441	84.951						
14	.707	4.157	89.108						
15	.666	3.919	93.027						
16	.644	3.786	96.812						
17	.542	3.188	100.000						

Extraction Method: Principal Component Analysis.



Component Matrix(a)

	Component			
	1	2	3	4
G53	-.564		.357	
G64	.557		.406	
G51	.493	-.365		
G65	.451	-.343		
G50	.420			-.366
G56				
G62		.523		
G60		.469	-.351	
G61		.419		
G58		.340		
G63	.422		.527	
G54			.402	.336
G57				
G49				-.441
G59				.399
G52				.349
G55				.340

Extraction Method: Principal Component Analysis.
a 4 components extracted.

Rotated Component Matrix(a)

	Component			
	1	2	3	4
G53	-.663			
G51	.590			
G50	.572			
G65	.424			.385
G57	-.377			
G63		.729		
G64		.664		
G62		.622		
G60			.655	
G58			.475	
G61			.446	
G59			.443	
G52			.382	
G54				.499
G49				-.491
G55				.471
G56				.413

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Component Transformation Matrix

Component	1	2	3	4
1	.786	.575	.193	.118
2	-.423	.470	.612	-.474
3	-.435	.637	-.420	.477
4	-.118	-.205	.641	.730

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Case Processing Summary

		N	%
Cases	Valid	273	97.5
	Excluded(a)	7	2.5
	Total	280	100.0

a Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.754	.761	72

Item Statistics

	Mean	Std. Deviation	N
C1	3.52	.936	273
C2	3.79	.923	273
C3	3.07	.745	273
C4	2.90	.701	273
C5	1.88	.959	273
C6	2.98	.769	273
C7	3.47	.818	273
C8	3.17	.823	273
C9	2.64	.854	273
C10	3.07	.855	273
C11	3.06	.827	273
C12	3.70	.705	273
C13	2.88	.885	273
C14	3.01	.831	273
C15	2.87	.847	273
C16	3.29	.815	273
C17	3.12	.740	273
D18	4.25	.705	273
D19	3.34	.794	273
D20	3.58	.888	273
D21	2.66	.776	273
D22	2.72	.859	273
D23	2.77	.860	273
D24	2.13	.779	273
D25	3.52	1.082	273

D26	3.08	.902	273
	Mean	Std. Deviation	N
E27	3.38	1.116	273
E28	2.86	1.141	273
E29	2.90	1.068	273
E30	3.71	.909	273
E31	2.53	.883	273
E32	2.14	.827	273
E33	3.23	.832	273
F34	3.11	.954	273
F35	3.04	1.037	273
F36	2.80	1.010	273
F37	3.58	.929	273
F38	3.06	.870	273
F39	2.16	.868	273
F40	2.92	.908	273
F41	3.92	.882	273
F42	3.76	.898	273
F43	3.51	.944	273
F44	2.52	1.026	273
F45	3.67	.936	273
F46	3.54	.911	273
F47	2.84	.968	273
F48	3.49	.993	273
G49	3.63	.981	273
G50	3.73	.962	273
G51	3.43	.953	273
G52	3.00	.891	273
G53	2.82	1.074	273
G54	2.11	.960	273
G55	2.11	.906	273
G56	3.01	.836	273
G57	3.46	.939	273
G58	2.49	.896	273
G59	2.33	.837	273
G60	2.08	.798	273
G61	2.40	.794	273
G62	2.93	.801	273
G63	2.99	.931	273
G64	2.69	.723	273
G65	3.03	.729	273
H66	2.28	.700	273
H67	3.70	.804	273
H68	3.25	.811	273
H69	3.76	.973	273
H70	3.74	.895	273
H71	3.68	.966	273
H72	3.53	.853	273

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
C1	217.81	219.704	.053	.756
C2	217.55	211.866	.347	.746
C3	218.27	213.478	.368	.747
C4	218.43	221.732	-.008	.756
C5	219.45	217.830	.116	.754
C6	218.36	219.112	.103	.754
C7	217.87	211.656	.409	.745
C8	218.17	212.523	.369	.746
C9	218.69	210.567	.434	.744
C10	218.27	214.434	.275	.749
C11	218.27	213.987	.305	.748
C12	217.64	217.688	.186	.752
C13	218.46	216.911	.167	.752
C14	218.32	215.712	.231	.750
C15	218.47	212.956	.339	.747
C16	218.04	213.432	.334	.747
C17	218.22	216.633	.223	.750
D18	217.09	218.639	.140	.753
D19	218.00	216.680	.203	.751
D20	217.76	216.204	.193	.751
D21	218.68	217.108	.190	.751
D22	218.62	217.010	.170	.752
D23	218.57	213.966	.292	.748
D24	219.21	214.656	.297	.748
D25	217.82	214.207	.211	.750
D26	218.26	214.458	.256	.749
E27	217.95	209.840	.339	.745
E28	218.47	213.419	.220	.750
E29	218.44	211.070	.317	.746
E30	217.63	220.440	.029	.756
E31	218.81	213.348	.307	.748
E32	219.20	216.095	.217	.750
E33	218.11	217.735	.147	.752
F34	218.22	209.976	.404	.744
F35	218.30	208.621	.412	.743
F36	218.53	211.257	.333	.746

F37	217.76	217.309	.142	.753
F38	218.27	216.391	.191	.751
F39	219.18	219.344	.076	.755
F40	218.42	214.781	.242	.750
F41	217.41	216.707	.176	.752
F42	217.58	216.907	.164	.752
F43	217.83	216.062	.184	.751
F44	218.82	219.868	.037	.757
F45	217.67	225.341	-.148	.762
F46	217.80	220.264	.035	.756
F47	218.50	213.597	.266	.749
F48	217.85	214.101	.240	.749
G49	217.71	220.399	.024	.757
G50	217.60	215.336	.205	.751
G51	217.91	214.201	.249	.749
G52	218.34	217.489	.143	.753
G53	218.51	231.163	-.314	.770
G54	219.23	221.809	-.024	.758
G55	219.22	218.534	.100	.754
G56	218.32	216.337	.204	.751
G57	217.88	228.043	-.242	.765
G58	218.85	219.040	.083	.755
G59	219.00	218.739	.105	.754
G60	219.25	218.190	.137	.753
G61	218.94	221.735	-.013	.757
G62	218.41	220.206	.050	.755
G63	218.35	217.332	.140	.753
G64	218.64	217.583	.185	.752
G65	218.30	215.139	.298	.749
H66	219.05	219.773	.086	.754
H67	217.64	215.775	.238	.750
H68	218.09	211.073	.438	.744
H69	217.58	218.797	.080	.755
H70	217.59	221.051	.007	.757
H71	217.66	218.887	.078	.755
H72	217.81	217.986	.132	.753

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
221.34	222.048	14.901	72

Descriptive for Each Item in (Mass and Articulation)

			N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
							Lower Bound	Upper Bound		
C1	Student		122	3.40	1.018	.092	3.22	3.58	1	5
	Governmental Architect		77	3.65	.791	.090	3.47	3.83	1	5
	Private Sector Architect		31	3.45	.925	.166	3.11	3.79	2	5
	Consultant Architect		15	3.73	.961	.248	3.20	4.27	2	5
	University Teaching Staff		28	3.68	.905	.171	3.33	4.03	1	5
	Total		273	3.52	.936	.057	3.41	3.64	1	5
	Model	Fixed Effects			.934	.057	3.41	3.64		
		Random Effects				.070	3.33	3.72		
C2	Student		122	3.40	.888	.080	3.24	3.56	1	5
	Governmental Architect		77	4.13	.695	.079	3.97	4.29	2	5
	Private Sector Architect		31	4.10	1.012	.182	3.73	4.47	1	5
	Consultant Architect		15	4.07	.884	.228	3.58	4.56	2	5
	University Teaching Staff		28	4.04	.962	.182	3.66	4.41	1	5
	Total		273	3.79	.923	.056	3.68	3.90	1	5
	Model	Fixed Effects			.861	.052	3.68	3.89		
		Random Effects				.226	3.16	4.42		
C3	Student		122	2.82	.772	.070	2.68	2.96	1	5
	Governmental Architect		77	3.35	.739	.084	3.18	3.52	2	5
	Private Sector Architect		31	3.23	.617	.111	3.00	3.45	2	5
	Consultant Architect		15	3.07	.458	.118	2.81	3.32	2	4
	University Teaching Staff		28	3.18	.548	.104	2.97	3.39	2	4
	Total		273	3.07	.745	.045	2.98	3.15	1	5
	Model	Fixed Effects			.712	.043	2.98	3.15		
		Random Effects				.150	2.65	3.48		
C4	Student		122	2.98	.596	.054	2.87	3.08	1	4
	Governmental Architect		77	2.92	.823	.094	2.74	3.11	1	5
	Private Sector Architect		31	2.65	.661	.119	2.40	2.89	1	4
	Consultant Architect		15	2.67	.617	.159	2.32	3.01	2	4
	University Teaching Staff		28	2.96	.793	.150	2.66	3.27	1	5
	Total		273	2.90	.701	.042	2.82	2.99	1	5
	Model	Fixed Effects			.696	.042	2.82	2.99		
		Random Effects				.068	2.72	3.09		

			N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
							Lower Bound	Upper Bound		
C5	Student		122	1.87	.900	.081	1.71	2.03	1	4
	Governmental Architect		77	2.01	1.045	.119	1.78	2.25	1	5
	Private Sector Architect		31	1.71	.938	.168	1.37	2.05	1	5
	Consultant Architect		15	1.60	.737	.190	1.19	2.01	1	3
	University Teaching Staff		28	1.93	1.086	.205	1.51	2.35	1	5
	Total		273	1.88	.959	.058	1.77	2.00	1	5
	Model	Fixed Effects			.960	.058	1.77	2.00		
		Random Effects				.058(a)	1.72(a)	2.04(a)		
C6	Student		122	2.95	.861	.078	2.80	3.11	1	5
	Governmental Architect		77	3.09	.611	.070	2.95	3.23	2	4
	Private Sector Architect		31	2.90	.651	.117	2.66	3.14	2	4
	Consultant Architect		15	3.00	.756	.195	2.58	3.42	2	4
	University Teaching Staff		28	2.89	.875	.165	2.55	3.23	1	5
	Total		273	2.98	.769	.047	2.89	3.07	1	5
	Model	Fixed Effects			.771	.047	2.89	3.07		
		Random Effects				.047(a)	2.85(a)	3.11(a)		
C7	Student		122	3.07	.718	.065	2.95	3.20	1	5
	Governmental Architect		77	3.81	.762	.087	3.63	3.98	2	5
	Private Sector Architect		31	3.74	.773	.139	3.46	4.03	1	5
	Consultant Architect		15	3.73	1.033	.267	3.16	4.31	2	5
	University Teaching Staff		28	3.79	.568	.107	3.57	4.01	3	5
	Total		273	3.47	.818	.049	3.37	3.56	1	5
	Model	Fixed Effects			.743	.045	3.38	3.55		
		Random Effects				.231	2.82	4.11		
C8	Student		122	2.89	.730	.066	2.75	3.02	1	5
	Governmental Architect		77	3.45	.851	.097	3.26	3.65	2	5
	Private Sector Architect		31	3.29	.739	.133	3.02	3.56	2	5
	Consultant Architect		15	3.40	.828	.214	2.94	3.86	2	5
	University Teaching Staff		28	3.36	.870	.164	3.02	3.69	2	5
	Total		273	3.17	.823	.050	3.07	3.27	1	5
	Model	Fixed Effects			.787	.048	3.07	3.26		
		Random Effects				.167	2.71	3.63		
C9	Student		122	2.16	.754	.068	2.03	2.30	1	4
	Governmental Architect		77	2.97	.688	.078	2.82	3.13	1	5
	Private Sector Architect		31	3.10	.651	.117	2.86	3.34	2	4
	Consultant Architect		15	2.93	.799	.206	2.49	3.38	1	4
	University Teaching Staff		28	3.18	.863	.163	2.84	3.51	1	5
	Total		273	2.64	.854	.052	2.54	2.75	1	5
	Model	Fixed Effects			.739	.045	2.56	2.73		
		Random Effects				.287	1.85	3.44		

			N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
							Lower Bound	Upper Bound		
C10	Student		122	2.80	.830	.075	2.65	2.95	1	5
	Governmental Architect		77	3.30	.779	.089	3.12	3.48	2	5
	Private Sector Architect		31	3.13	.885	.159	2.80	3.45	1	5
	Consultant Architect		15	3.20	.862	.223	2.72	3.68	1	5
	University Teaching Staff		28	3.43	.836	.158	3.10	3.75	1	5
	Total		273	3.07	.855	.052	2.96	3.17	1	5
	Model	Fixed Effects			.824	.050	2.97	3.16		
		Random Effects				.158	2.63	3.50		
C11	Student		122	2.84	.786	.071	2.70	2.98	1	5
	Governmental Architect		77	3.18	.773	.088	3.01	3.36	2	5
	Private Sector Architect		31	3.19	.792	.142	2.90	3.48	2	5
	Consultant Architect		15	3.20	.775	.200	2.77	3.63	2	5
	University Teaching Staff		28	3.50	.962	.182	3.13	3.87	1	5
	Total		273	3.06	.827	.050	2.96	3.16	1	5
	Model	Fixed Effects			.802	.049	2.97	3.16		
		Random Effects				.141	2.67	3.46		
C12	Student		122	3.57	.703	.064	3.45	3.70	2	5
	Governmental Architect		77	3.78	.700	.080	3.62	3.94	2	5
	Private Sector Architect		31	3.61	.803	.144	3.32	3.91	2	5
	Consultant Architect		15	4.07	.594	.153	3.74	4.40	3	5
	University Teaching Staff		28	3.93	.539	.102	3.72	4.14	3	5
	Total		273	3.70	.705	.043	3.62	3.78	2	5
	Model	Fixed Effects			.694	.042	3.62	3.78		
		Random Effects				.093	3.44	3.96		
C13	Student		122	2.68	.774	.070	2.54	2.82	1	4
	Governmental Architect		77	2.92	.943	.107	2.71	3.14	1	5
	Private Sector Architect		31	2.87	.922	.166	2.53	3.21	1	5
	Consultant Architect		15	3.13	.640	.165	2.78	3.49	2	4
	University Teaching Staff		28	3.50	.962	.182	3.13	3.87	1	5
	Total		273	2.88	.885	.054	2.77	2.98	1	5
	Model	Fixed Effects			.856	.052	2.78	2.98		
		Random Effects				.158	2.44	3.32		
C14	Student		122	2.84	.775	.070	2.70	2.98	1	4
	Governmental Architect		77	3.01	.896	.102	2.81	3.22	1	5
	Private Sector Architect		31	3.23	.805	.145	2.93	3.52	1	5
	Consultant Architect		15	3.27	.884	.228	2.78	3.76	2	5
	University Teaching Staff		28	3.43	.690	.130	3.16	3.70	2	5
	Total		273	3.01	.831	.050	2.92	3.11	1	5
	Model	Fixed Effects			.812	.049	2.92	3.11		
		Random Effects				.126	2.66	3.37		

			N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
							Upper Bound	Upper Bound		
C15	Student		122	2.43	.715	.065	2.30	2.55	1	4
	Governmental Architect		77	3.21	.833	.095	3.02	3.40	1	5
	Private Sector Architect		31	3.06	.727	.131	2.80	3.33	2	4
	Consultant Architect		15	3.27	.704	.182	2.88	3.66	2	4
	University Teaching Staff		28	3.43	.690	.130	3.16	3.70	2	5
	Total		273	2.87	.847	.051	2.77	2.97	1	5
	Model	Fixed Effects			.749	.045	2.78	2.96		
		Random Effects				.267	2.13	3.61		
C16	Student		122	2.88	.687	.062	2.75	3.00	2	5
	Governmental Architect		77	3.60	.674	.077	3.44	3.75	2	5
	Private Sector Architect		31	3.65	.915	.164	3.31	3.98	2	5
	Consultant Architect		15	3.60	.737	.190	3.19	4.01	3	5
	University Teaching Staff		28	3.71	.810	.153	3.40	4.03	2	5
	Total		273	3.29	.815	.049	3.20	3.39	2	5
	Model	Fixed Effects			.728	.044	3.21	3.38		
		Random Effects				.246	2.61	3.98		
C17	Student		122	2.85	.768	.070	2.71	2.99	1	5
	Governmental Architect		77	3.34	.598	.068	3.20	3.47	2	5
	Private Sector Architect		31	3.42	.720	.129	3.16	3.68	2	5
	Consultant Architect		15	3.27	.594	.153	2.94	3.60	3	5
	University Teaching Staff		28	3.29	.713	.135	3.01	3.56	2	5
	Total		273	3.12	.740	.045	3.03	3.21	1	5
	Model	Fixed Effects			.704	.043	3.04	3.20		
		Random Effects				.158	2.68	3.56		

a Warning: Between-component variance is negative. It was replaced by 0.0 in computing this random effects measure.

Descriptive Details for Factors in (Mass and Articulation)

		N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean Upper Bound	Upper Bound	Min	Max
Geometry	Student	122	3.1496	.45529	.04122	3.0680	3.2312	2.00	4.25
	Governmental Architect	77	3.5130	.40737	.04642	3.4205	3.6054	2.50	4.75
	Private Sector Architect	31	3.3548	.55066	.09890	3.1529	3.5568	1.50	4.50
	Consultant Architect	15	3.3833	.45185	.11667	3.1331	3.6336	2.50	4.00
	University Teaching Staff	28	3.4643	.62255	.11765	3.2229	3.7057	1.25	4.50
	Total	273	3.3205	.49707	.03008	3.2613	3.3797	1.25	4.75
Envelope	Student	122	2.6947	.57452	.05201	2.5917	2.7976	1.25	4.25
	Governmental Architect	77	3.0909	.55445	.06319	2.9651	3.2168	2.00	4.75
	Private Sector Architect	31	2.9113	.50228	.09021	2.7271	3.0955	1.50	4.25
	Consultant Architect	15	2.9333	.50415	.13017	2.6541	3.2125	2.00	3.50
	University Teaching Staff	28	2.9911	.50223	.09491	2.7963	3.1858	2.25	4.50
	Total	273	2.8745	.57287	.03467	2.8063	2.9428	1.25	4.75
Articulation	Student	122	2.4836	.60622	.05488	2.3749	2.5923	1.00	4.50
	Governmental Architect	77	3.1364	.55982	.06380	3.0093	3.2634	1.50	4.50
	Private Sector Architect	31	3.1129	.55842	.10029	2.9081	3.3177	2.00	4.00
	Consultant Architect	15	3.0667	.62297	.16085	2.7217	3.4117	2.00	4.50
	University Teaching Staff	28	3.3036	.74956	.14165	3.0129	3.5942	1.00	5.00
	Total	273	2.8553	.69009	.04177	2.7731	2.9375	1.00	5.00
Orientation	Student	122	3.0301	.50707	.04591	2.9392	3.1209	2.00	4.33
	Governmental Architect	77	3.2944	.61171	.06971	3.1555	3.4332	2.00	4.67
	Private Sector Architect	31	3.2258	.69061	.12404	2.9725	3.4791	2.00	5.00
	Consultant Architect	15	3.4667	.48469	.12515	3.1983	3.7351	2.67	4.67
	University Teaching Staff	28	3.6429	.63459	.11993	3.3968	3.8889	2.33	5.00
	Total	273	3.2137	.60256	.03647	3.1419	3.2855	2.00	5.00
Base & Ground line Relationship	Student	122	2.6311	.58847	.05328	2.5257	2.7366	1.00	4.00
	Governmental Architect	77	3.1104	.69122	.07877	2.9535	3.2673	1.50	5.00
	Private Sector Architect	31	3.1452	.63500	.11405	2.9122	3.3781	1.50	4.00
	Consultant Architect	15	3.2667	.62297	.16085	2.9217	3.6117	2.50	4.50
	University Teaching Staff	28	3.4286	.58869	.11125	3.2003	3.6568	2.00	4.50
	Total	273	2.9414	.68750	.04161	2.8595	3.0233	1.00	5.00
Mass Location within the plot of Land	Student	122	2.8648	.54937	.04974	2.7663	2.9632	1.50	4.50
	Governmental Architect	77	3.4675	.45406	.05174	3.3645	3.5706	2.50	5.00
	Private Sector Architect	31	3.5323	.65746	.11808	3.2911	3.7734	2.50	5.00
	Consultant Architect	15	3.4333	.45774	.11819	3.1798	3.6868	3.00	4.50
	University Teaching Staff	28	3.5000	.54433	.10287	3.2889	3.7111	2.50	5.00
	Total	273	3.2070	.61254	.03707	3.1340	3.2799	1.50	5.00

One –way ANOVA- Mass and Articulation Factors

		Sum of Squares	df	Mean Square	F	Sig.
Geometry	Between Groups	7.091	4	1.773	7.904	.000
	Within Groups	60.114	268	.224		
	Total	67.205	272			
Envelope	Between Groups	8.026	4	2.006	6.619	.000
	Within Groups	81.240	268	.303		
	Total	89.266	272			
Articulation	Between Groups	31.292	4	7.823	21.340	.000
	Within Groups	98.243	268	.367		
	Total	129.535	272			
Orientation	Between Groups	10.737	4	2.684	8.173	.000
	Within Groups	88.021	268	.328		
	Total	98.758	272			
Base Relationships	Between Groups	23.462	4	5.865	14.956	.000
	Within Groups	105.101	268	.392		
	Total	128.562	272			
Mass Location	Between Groups	25.968	4	6.492	22.867	.000
	Within Groups	76.088	268	.284		
	Total	102.057	272			

Descriptive for Mass and Articulation (Over All)

	N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Student	122	2.8486	.25195	.02281	2.8034	2.8938	2.24	3.47
Governmental Architect	77	3.2781	.25527	.02909	3.2201	3.3360	2.59	3.82
Private Sector Architect	31	3.1954	.24367	.04376	3.1061	3.2848	2.71	3.71
Consultant Architect	15	3.2471	.23550	.06081	3.1166	3.3775	2.76	3.59
University Teaching Staff	28	3.3655	.35990	.06801	3.2260	3.5051	2.35	4.29
Total	273	3.0840	.33951	.02055	3.0436	3.1245	2.24	4.29

ANOVA for Mass and Articulation (Over All)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	12.664	4	3.166	45.401	.000
Within Groups	18.689	268	.070		
Total	31.352	272			

Descriptive Details for Factors in (House Façade Openings

		N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
						Upper Bound	Upper Bound		
Size	Student	122	3.5628	.52150	.04721	3.4694	3.6563	2.00	4.67
	Governmental Architect	77	3.8268	.40324	.04595	3.7353	3.9184	3.00	4.67
	Private Sector Architect	31	3.9785	.47090	.08458	3.8058	4.1512	3.00	5.00
	Consultant Architect	15	3.8444	.53254	.13750	3.5495	4.1394	2.67	4.67
	University Teaching Staff	28	3.7738	.48051	.09081	3.5875	3.9601	2.67	4.67
	Total	273	3.7216	.50146	.03035	3.6619	3.7814	2.00	5.00
Dimensionality	Student	122	2.5820	.62774	.05683	2.4695	2.6945	1.00	4.00
	Governmental Architect	77	2.7857	.52207	.05950	2.6672	2.9042	1.50	4.00
	Private Sector Architect	31	2.5806	.48471	.08706	2.4029	2.7584	2.00	3.50
	Consultant Architect	15	3.1000	.73679	.19024	2.6920	3.5080	1.50	4.00
	University Teaching Staff	28	2.7857	.67259	.12711	2.5249	3.0465	1.50	4.50
	Total	273	2.6886	.60796	.03680	2.6162	2.7611	1.00	4.50
Shape	Student	122	2.55	.910	.082	2.39	2.71	1	5
	Governmental Architect	77	2.90	.736	.084	2.73	3.06	1	4
	Private Sector Architect	31	2.94	.854	.153	2.62	3.25	1	5
	Consultant Architect	15	3.00	.756	.195	2.58	3.42	2	4
	University Teaching Staff	28	3.04	.838	.158	2.71	3.36	2	5
	Total	273	2.77	.860	.052	2.66	2.87	1	5
Directivity	Student	122	1.93	.854	.077	1.77	2.08	1	4
	Governmental Architect	77	2.36	.583	.066	2.23	2.50	1	4
	Private Sector Architect	31	2.19	.703	.126	1.94	2.45	1	3
	Consultant Architect	15	2.33	.724	.187	1.93	2.73	1	4
	University Teaching Staff	28	2.21	.833	.157	1.89	2.54	1	4
	Total	273	2.13	.779	.047	2.04	2.22	1	4
Entrance Location	Student	122	3.16	1.021	.092	2.97	3.34	1	5
	Governmental Architect	77	3.69	1.150	.131	3.43	3.95	1	5
	Private Sector Architect	31	3.77	1.023	.184	3.40	4.15	1	5
	Consultant Architect	15	4.20	.676	.175	3.83	4.57	3	5
	University Teaching Staff	28	3.96	.881	.167	3.62	4.31	2	5
	Total	273	3.52	1.082	.065	3.39	3.65	1	5
D26 Accessibility	Student	122	2.82	.833	.075	2.67	2.97	1	5
	Governmental Architect	77	3.39	.876	.100	3.19	3.59	1	5
	Private Sector Architect	31	3.23	1.087	.195	2.83	3.62	1	5
	Consultant Architect	15	3.27	.704	.182	2.88	3.66	2	4
	University Teaching Staff	28	3.07	.858	.162	2.74	3.40	1	4
	Total	273	3.08	.902	.055	2.97	3.18	1	5

One –way ANOVA- House Façade Openings Factors

		Sum of Squares	df	Mean Square	F	Sig.
Size	Between Groups	6.276	4	1.569	6.769	.000
	Within Groups	62.122	268	.232		
	Total	68.398	272			
Dimensionality	Between Groups	5.278	4	1.319	3.712	.006
	Within Groups	95.257	268	.355		
	Total	100.535	272			
Shape	Between Groups	10.787	4	2.697	3.800	.005
	Within Groups	190.209	268	.710		
	Total	200.996	272			
Directivity	Between Groups	10.212	4	2.553	4.413	.002
	Within Groups	155.041	268	.579		
	Total	165.253	272			
Entrance Location	Between Groups	32.832	4	8.208	7.709	.000
	Within Groups	285.344	268	1.065		
	Total	318.176	272			
Accessibility	Between Groups	16.830	4	4.208	5.513	.000
	Within Groups	204.554	268	.763		
	Total	221.385	272			

Descriptive for House Façade Openings (Over All)

	N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Student	122	2.9226	.32665	.02957	2.8640	2.9811	1.89	3.78
Governmental Architect	77	3.2655	.29240	.03332	3.1991	3.3319	2.56	4.11
Private Sector Architect	31	3.2473	.23607	.04240	3.1607	3.3339	2.89	4.00
Consultant Architect	15	3.3926	.33032	.08529	3.2097	3.5755	2.78	3.89
University Teaching Staff	28	3.2421	.39666	.07496	3.0883	3.3959	2.56	4.22
Total	273	3.1148	.36009	.02179	3.0719	3.1577	1.89	4.22

ANOVA for House Façade Openings (Over All)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	8.412	4	2.103	20.985	.000
Within Groups	26.856	268	.100		
Total	35.268	272			

Descriptive for House Façade Architectural Details (Over All)

	N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Student	122	2.7482	.43465	.03935	2.6703	2.8261	1.57	3.86
Governmental Architect	77	3.1187	.46372	.05285	3.0135	3.2240	1.86	4.00
Private Sector Architect	31	3.2074	.39182	.07037	3.0637	3.3511	2.43	4.14
Consultant Architect	15	3.0286	.39751	.10264	2.8084	3.2487	2.00	3.71
University Teaching Staff	28	3.1837	.34745	.06566	3.0489	3.3184	2.43	4.00
Total	273	2.9649	.46987	.02844	2.9090	3.0209	1.57	4.14

ANOVA for House Façade Architectural Details (Over All)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10.773	4	2.693	14.646	.000
Within Groups	49.280	268	.184		
Total	60.052	272			

Descriptive Details for Factors in (House Façade Architectural Materials)

		N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
						Upper Bound	Upper Bound		
Material Sustainability	Student	122	2.7803	.51452	.04658	2.6881	2.8726	1.20	4.00
	Governmental Architect	77	3.4026	.50523	.05758	3.2879	3.5173	2.00	4.40
	Private Sector Architect	31	3.5161	.57451	.10319	3.3054	3.7269	2.00	4.40
	Consultant Architect	15	3.0400	.57669	.14890	2.7206	3.3594	1.80	3.80
	University Teaching Staff	28	3.4214	.44668	.08441	3.2482	3.5946	2.60	4.40
	Total	273	3.1194	.60363	.03653	3.0475	3.1913	1.20	4.40
Roofing Materials	Student	122	3.1393	.49586	.04489	3.0505	3.2282	1.80	4.20
	Governmental Architect	77	3.3247	.49634	.05656	3.2120	3.4373	2.00	4.40
	Private Sector Architect	31	3.4194	.45418	.08157	3.2528	3.5859	1.80	4.00
	Consultant Architect	15	3.3467	.41034	.10595	3.1194	3.5739	2.60	4.00
	University Teaching Staff	28	3.3357	.47470	.08971	3.1516	3.5198	2.60	4.60
	Total	273	3.2549	.49355	.02987	3.1961	3.3138	1.80	4.60
Materials Colors	Student	122	3.3361	.53375	.04832	3.2404	3.4317	1.75	4.50
	Governmental Architect	77	3.2955	.49790	.05674	3.1824	3.4085	2.25	4.25
	Private Sector Architect	31	3.3629	.42249	.07588	3.2079	3.5179	2.50	4.50
	Consultant Architect	15	3.4000	.42046	.10856	3.1672	3.6328	2.75	4.00
	University Teaching Staff	28	3.8571	.58701	.11093	3.6295	4.0848	2.50	4.75
	Total	273	3.3846	.53418	.03233	3.3210	3.4483	1.75	4.75

One –way ANOVA- House Façade Architectural Materials Factors

		Sum of Squares	df	Mean Square	F	Sig.
Material Sustainability	Between Groups	27.730	4	6.932	26.029	.000
	Within Groups	71.377	268	.266		
	Total	99.107	272			
Roofing Materials	Between Groups	3.152	4	.788	3.346	.011
	Within Groups	63.104	268	.235		
	Total	66.256	272			
Materials Colors	Between Groups	7.170	4	1.792	6.819	.000
	Within Groups	70.446	268	.263		
	Total	77.615	272			
	Within Groups	27.730	4	6.932	26.029	.000
	Total	71.377	268	.266		

Descriptive for House Façade Architectural Materials (Over All)

	N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Student	122	3.0339	.31727	.02872	2.9770	3.0907	2.20	3.87
Governmental Architect	77	3.2788	.30121	.03433	3.2104	3.3472	2.60	3.93
Private Sector Architect	31	3.3785	.25027	.04495	3.2867	3.4703	2.87	3.87
Consultant Architect	15	3.2089	.22235	.05741	3.0858	3.3320	2.87	3.60
University Teaching Staff	28	3.4571	.34365	.06494	3.3239	3.5904	2.93	4.60
Total	273	3.1951	.34038	.02060	3.1546	3.2357	2.20	4.60

ANOVA for House Façade Architectural Materials (Over All)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	6.678	4	1.670	18.017	.000
Within Groups	24.835	268	.093		
Total	31.513	272			

Descriptive Details for Factors in (House Façade Arrangement Principles)

		N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
						Upper Bound	Upper Bound		
Solidity	Student	122	3.3393	.45191	.04091	3.2583	3.4203	2.00	4.20
	Governmental Architect	77	3.3143	.46615	.05312	3.2085	3.4201	2.00	4.40
	Private Sector Architect	31	3.2645	.43015	.07726	3.1067	3.4223	2.40	4.00
	Consultant Architect	15	3.2000	.37033	.09562	2.9949	3.4051	2.80	4.00
	University Teaching Staff	28	3.4071	.42681	.08066	3.2416	3.5726	2.40	4.40
	Total	273	3.3231	.44633	.02701	3.2699	3.3763	2.00	4.40
Complexity	Student	122	2.3552	.52265	.04732	2.2615	2.4489	1.00	3.67
	Governmental Architect	77	2.3593	.55873	.06367	2.2325	2.4861	1.00	4.33
	Private Sector Architect	31	2.5914	.58822	.10565	2.3756	2.8072	1.33	4.33
	Consultant Architect	15	2.4222	.42663	.11015	2.1860	2.6585	1.33	3.00
	University Teaching Staff	28	2.6071	.62231	.11761	2.3658	2.8485	1.67	4.00
	Total	273	2.4127	.55186	.03340	2.3469	2.4785	1.00	4.33
Rhythm	Student	122	2.8169	.53715	.04863	2.7207	2.9132	1.67	4.00
	Governmental Architect	77	2.7749	.45705	.05209	2.6712	2.8786	1.67	4.00
	Private Sector Architect	31	2.6344	.48193	.08656	2.4576	2.8112	1.67	4.00
	Consultant Architect	15	2.6444	.47920	.12373	2.3791	2.9098	2.00	3.33
	University Teaching Staff	28	2.6786	.64459	.12182	2.4286	2.9285	1.33	4.00
	Total	273	2.7607	.51974	.03146	2.6988	2.8226	1.33	4.00
Regularity	Student	122	2.2336	.64342	.05825	2.1183	2.3489	1.00	4.00
	Governmental Architect	77	2.2338	.55360	.06309	2.1081	2.3594	1.00	4.00
	Private Sector Architect	31	2.3065	.55793	.10021	2.1018	2.5111	1.50	3.50
	Consultant Architect	15	2.2333	.41690	.10764	2.0025	2.4642	1.50	3.00
	University Teaching Staff	28	2.2321	.63073	.11920	1.9876	2.4767	1.00	4.00
	Total	273	2.2418	.59422	.03596	2.1710	2.3126	1.00	4.00
Integration	Student	122	2.7787	.51746	.04685	2.6859	2.8714	1.50	4.00
	Governmental Architect	77	2.9545	.39053	.04450	2.8659	3.0432	2.00	4.00
	Private Sector Architect	31	3.0242	.36717	.06595	2.8895	3.1589	2.50	3.75
	Consultant Architect	15	3.1000	.50709	.13093	2.8192	3.3808	2.25	4.50
	University Teaching Staff	28	3.1250	.54220	.10247	2.9148	3.3352	2.00	4.50
	Total	273	2.9093	.48533	.02937	2.8515	2.9672	1.50	4.50

One –way ANOVA- House Façade Arrangement Principles Factors

		Sum of Squares	df	Mean Square	F	Sig.
Solidity	Between Groups	.570	4	.142	.712	.584
	Within Groups	53.615	268	.200		
	Total	54.185	272			
Complexity	Between Groups	2.673	4	.668	2.234	.066
	Within Groups	80.163	268	.299		
	Total	82.836	272			
Rhythm	Between Groups	1.287	4	.322	1.195	.313
	Within Groups	72.188	268	.269		
	Total	73.476	272			
Regularity	Between Groups	.146	4	.037	.102	.982
	Within Groups	95.898	268	.358		
	Total	96.044	272			
Integration	Between Groups	4.496	4	1.124	5.057	.001
	Within Groups	59.572	268	.222		
	Total	64.069	272			

Descriptive for House Façade Arrangement Principles (Over All)

	N	Mean	Std. D.	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Student	122	2.8115	.22100	.02001	2.7719	2.8511	2.35	3.41
Governmental Architect	77	2.8388	.25398	.02894	2.7812	2.8965	2.18	3.29
Private Sector Architect	31	2.8653	.22072	.03964	2.7843	2.9462	2.53	3.53
Consultant Architect	15	2.8275	.14826	.03828	2.7453	2.9096	2.65	3.12
University Teaching Staff	28	2.9328	.33265	.06286	2.8038	3.0618	2.53	4.18
Total	273	2.8386	.24201	.01465	2.8098	2.8674	2.18	4.18

ANOVA for House Façade Arrangement Principles (Over All)

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.362	4	.091	1.558	.186
Within Groups	15.569	268	.058		
Total	15.931	272			

Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.307(a)	.094	.091	.32846

a Predictors: (Constant), C
b Dependent Variable: Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.048	1	3.048	28.252	.000(a)
	Residual	29.237	271	.108		
	Total	32.285	272			

a Predictors: (Constant), C
b Dependent Variable: Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.458	.182		13.506	.000
	C	.312	.059	.307	5.315	.000

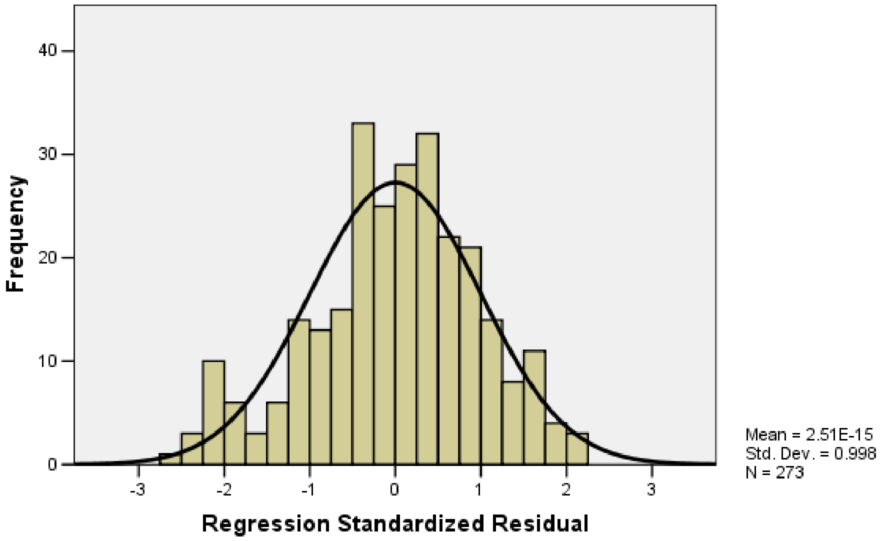
a Dependent Variable: Identity

Residuals Statistics (a)

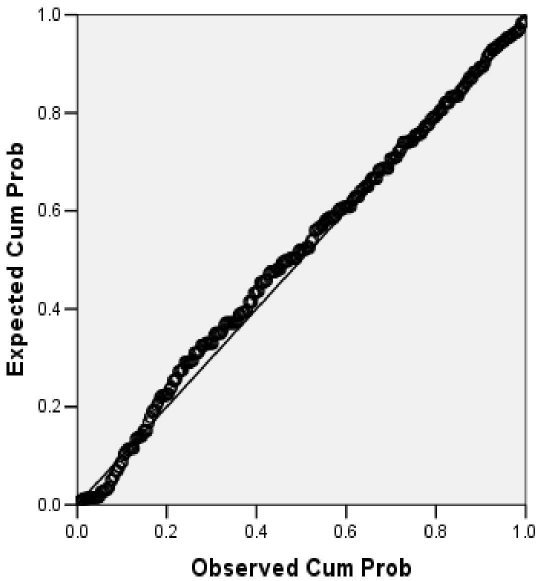
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.1550	3.7970	3.4197	.10586	273
Residual	-.86260	.72717	.00000	.32785	273
Std. Predicted Value	-2.500	3.564	.000	1.000	273
Std. Residual	-2.626	2.214	.000	.998	273

a Dependent Variable: Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity



Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.252(a)	.063	.060	.33402

a Predictors: (Constant), D
b Dependent Variable: Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.049	1	2.049	18.366	.000(a)
	Residual	30.235	271	.112		
	Total	32.285	272			

a Predictors: (Constant), D
b Dependent Variable: Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.669	.176		15.134	.000
	C	.241	.056	.252	4.286	.000

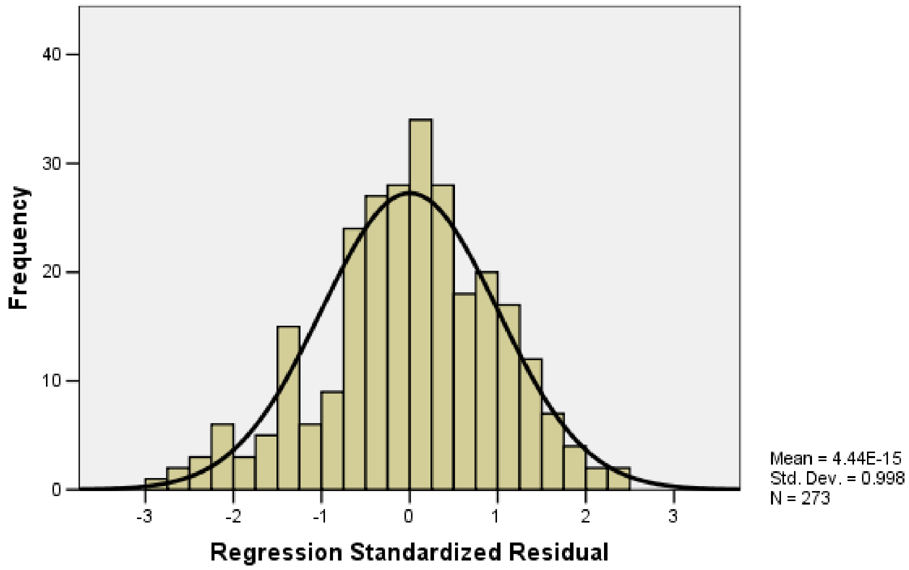
a Dependent Variable: Identity

Residuals Statistics (a)

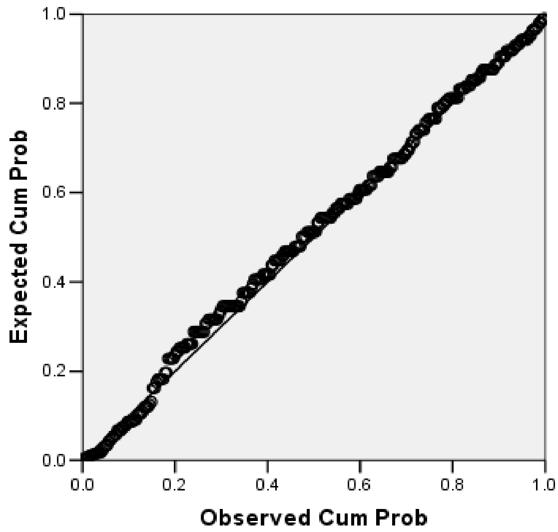
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.1242	3.6866	3.4197	.08679	273
Residual	-.95449	.77763	.00000	.33341	273
Std. Predicted Value	-3.404	3.076	.000	1.000	273
Std. Residual	-2.858	2.328	.000	.998	273

a Dependent Variable: Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity



Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.276(a)	.076	.073	.33173

a Predictors: (Constant), E
b Dependent Variable: Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.462	1	2.462	22.374	.000(a)
	Residual	29.822	271	.110		
	Total	32.285	272			

a Predictors: (Constant), E
b Dependent Variable: Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.819	.129		21.940	.000
	C	.202	.043	.276	4.730	.000

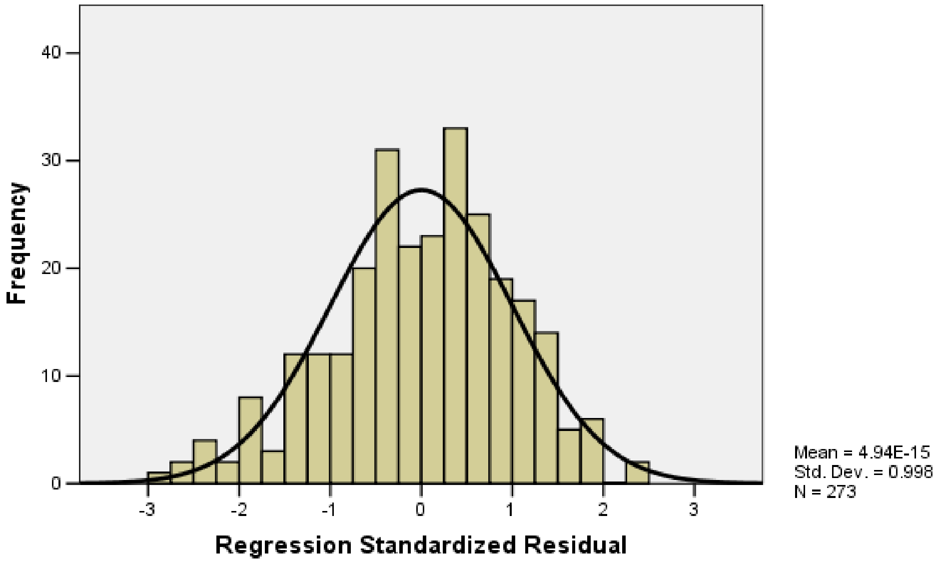
a Dependent Variable: Identity

Residuals Statistics (a)

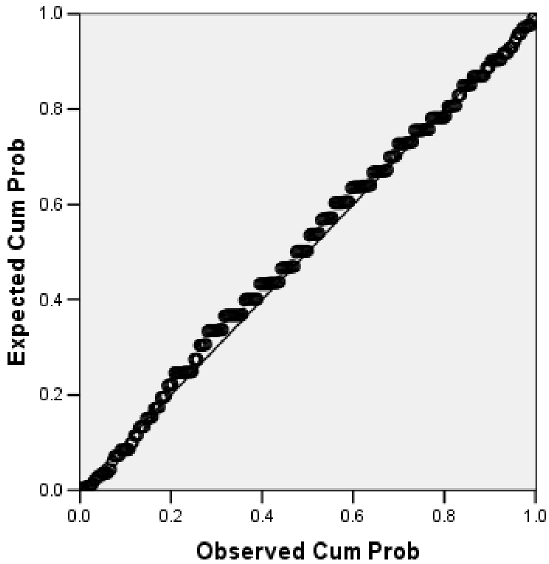
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.1375	3.6582	3.4197	.09514	273
Residual	-.91320	.80109	.00000	.33112	273
Std. Predicted Value	-2.966	2.507	.000	1.000	273
Std. Residual	-2.753	2.415	.000	.998	273

a Dependent Variable: Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity



Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.236(a)	.056	.052	.33540

a Predictors: (Constant), F
b Dependent Variable: Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.800	1	1.800	15.999	.000(a)
	Residual	30.485	271	.112		
	Total	32.285	272			

a Predictors: (Constant), F
b Dependent Variable: Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.656	.192		13.836	.000
	C	.239	.060	.236	4.000	.000

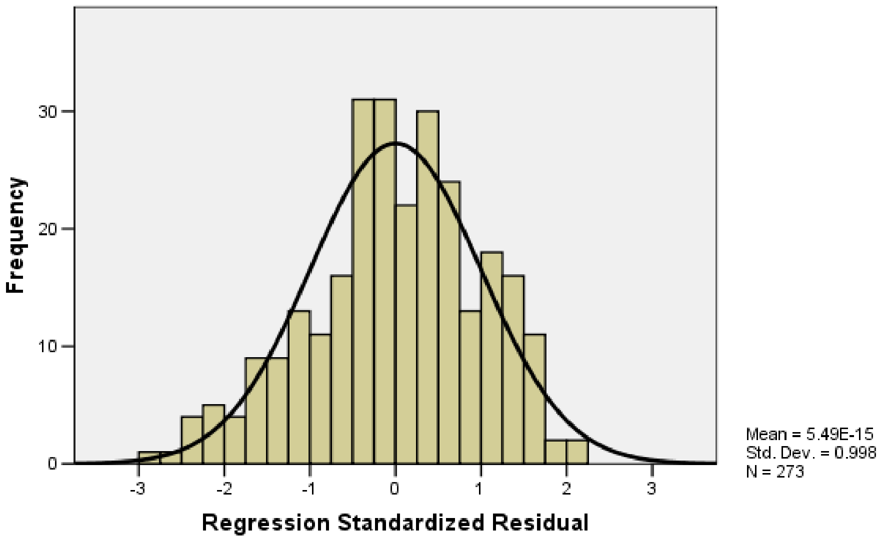
a Dependent Variable: Identity

Residuals Statistics (a)

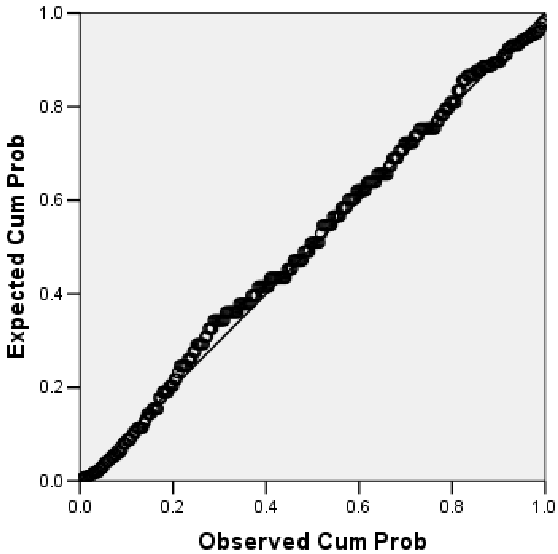
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.1819	3.7554	3.4197	.08134	273
Residual	-.92907	.72149	.00000	.33478	273
Std. Predicted Value	-2.924	4.127	.000	1.000	273
Std. Residual	-2.770	2.151	.000	.998	273

a Dependent Variable: Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity



Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.095(a)	.009	.005	.34361

a Predictors: (Constant), G
b Dependent Variable: Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.289	1	.289	2.448	.119(a)
	Residual	31.995	271	.118		
	Total	32.285	272			

a Predictors: (Constant), G
b Dependent Variable: Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.037	.245		12.385	.000
	C	.135	.086	.095	1.565	.119

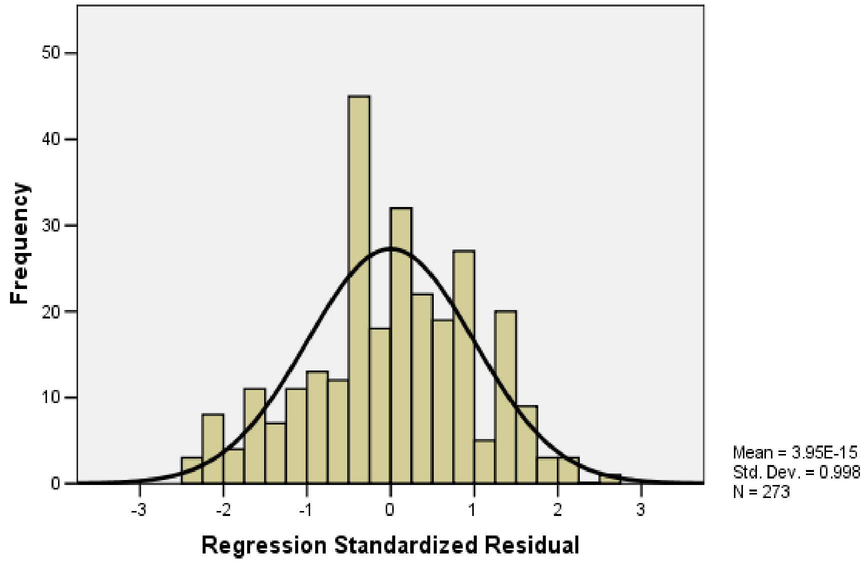
a Dependent Variable: Identity

Residuals Statistics (a)

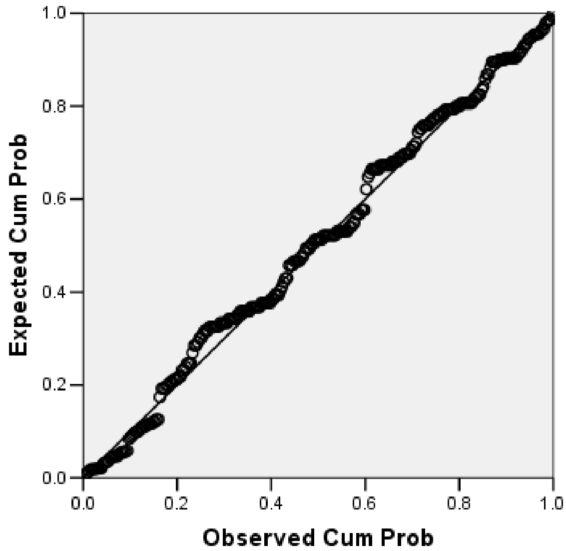
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.3305	3.5999	3.4197	.03260	273
Residual	-.84622	.89184	.00000	.34297	273
Std. Predicted Value	-2.736	5.528	.000	1.000	273
Std. Residual	-2.463	2.596	.000	.998	273

a Dependent Variable: Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity



Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.385(a)	.148	.132	.32098

a Predictors: (Constant), C, G, F, E, D
b Dependent Variable: Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.776	5	.955	9.270	.000(a)
	Residual	27.509	267	.103		
	Total	32.285	272			

a Predictors: (Constant), C, G, F, E, D
b Dependent Variable: Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.819	.299		6.074	.000
	C	.030	.083	.021	.365	.715
	D	.105	.063	.104	1.666	.097
	E	.108	.046	.148	2.340	.020
	F	.086	.062	.090	1.385	.167
	G	.192	.065	.189	2.952	.003

a Dependent Variable: Identity

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions (Constant)	G	F	E	D	C
1	1	5.955	1.000	.00	.00	.00	.00	.00	.00
	2	.017	18.512	.01	.05	.01	.88	.00	.00
	3	.009	25.317	.02	.12	.12	.07	.44	.24
	4	.008	27.874	.01	.21	.57	.04	.13	.18
	5	.008	28.128	.01	.03	.26	.01	.42	.52
	6	.003	43.857	.95	.58	.05	.00	.01	.06

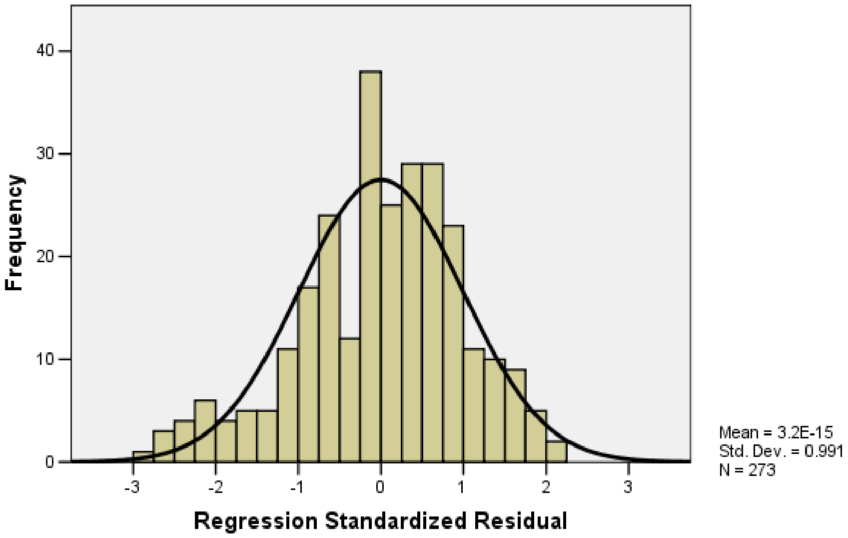
a. Dependent Variable: Identity

Residuals Statistics (a)

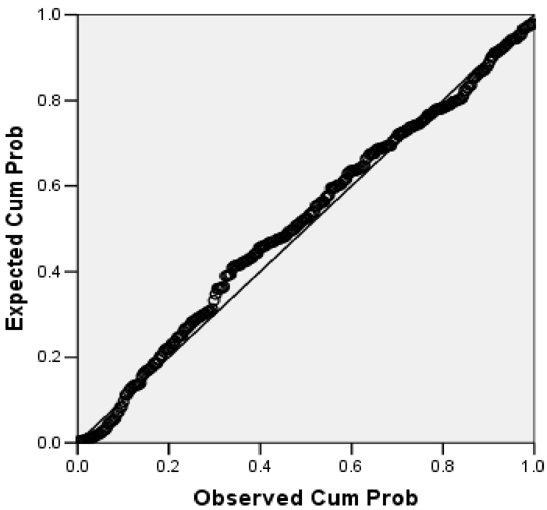
	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.0862	4.0465	3.4197	.13250	273
Residual	-.89779	.65040	.00000	.31802	273
Std. Predicted Value	-2.517	4.731	.000	1.000	273
Std. Residual	-2.797	2.026	.000	.991	273

a Dependent Variable: Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity



Model Summary (b)

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.504(a)	.254	.251	.29819

a Predictors: (Constant), House Façade Modernity Factors
b Dependent Variable: Continuity of Architectural Identity

ANOVA (b)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8.188	1	8.188	92.092	.000(a)
	Residual	24.096	271	.089		
	Total	32.285	272			

a Predictors: (Constant), House Façade Modernity Factors
b Dependent Variable: Continuity of Architectural Identity

Coefficients (a)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.842	.269		3.130	.002
	C	.838	.087	.504	9.596	.000

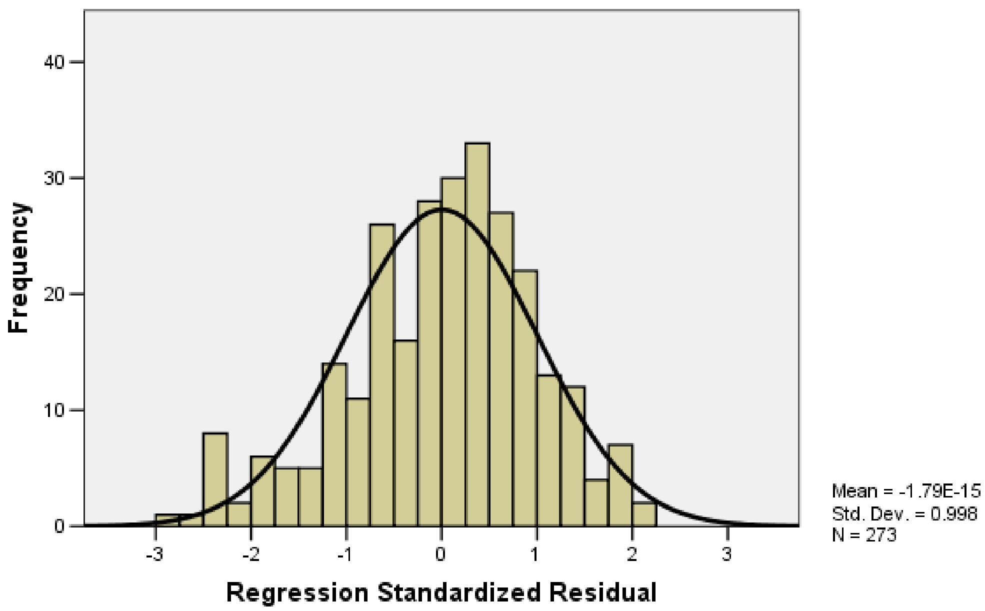
a Dependent Variable: Continuity of Architectural Identity

Residuals Statistics (a)

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	3.0082	4.4404	3.4197	.17351	273
Residual	-.85283	.63933	.00000	.29764	273
Std. Predicted Value	-2.371	5.883	.000	1.000	273
Std. Residual	-2.860	2.144	.000	.998	273

a Dependent Variable: Continuity of Architectural Identity

Histogram
Dependent Variable: Continuity of Architectural Identity



Normal P-P Plot of Regression- Standardized Residual
Dependent Variable: Continuity of Architectural Identity