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Ansam Saleh Ali * and Salahaddin Yasin Baper

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Towards a Comprehensive Model of Placemaking Strategy Assessment of Livability in Commercial Streets via Placemaking

Ansam Saleh Ali [1,*] and Salahaddin Yasin Baper [2]

[1] Salahaddin University-Erbil / ansam.ali@su.edu.krd
[2] Architectural Engineering Department SUE-KRI / salahaddin.baper@su.edu.krd
* Correspondence: ansam.ali@su.edu.krd

Abstract: Livability is one of the paramount characteristics of the current era that architects striving to achieve. This situation becomes even more important on commercial streets, whose functional diversity and constant movement of people require special action. In Erbil, commercial streets suffer from neglect in terms of adopting places for livability. Although it has huge potential to form an attractive and entertaining environment other than shopping. Some countries have developed standards for the design of commercial streets. The basic requirements are the same, but details usually vary according to the diverse needs of people. The research aims to identify a comprehensive framework (A Checklist) for placemaking to form the basis for measuring livability in one of the vital streets in Erbil city. This Framework is considered the basis for assessing and designing at the same time, supporting designers to achieve two main pillars: develop existing streets and suggest basic principles for future street design. This article adopts a practical framework, a questionnaire, a field survey, and observation as research methods. The research concluded that altogether placemaking dimensions are essential in activating livability, and a sort of balance between the main dimensions appeared. The more applied strategies, the higher the street livability. The results varied according to the research methods, between quantitative and qualitative. The quantitative findings resulted from the questionnaire and one section in the practical framework. Street width, in terms of quantity, had an impact on activating containment and safety. The same applies to the sidewalks, which accommodate the movement of four people or more, continuous and uninterrupted. The qualitative findings, resulted from the other two sections of the practical framework, in addition to field survey and observation. It was noticed that the street possesses local elements that it maintained and continued, which had a great impact on raising the street's livability.

Keywords: placemaking; livability; models; practical framework

1. Introduction

Streets are the main component of urban form and the city in general. An absence of understanding of people's needs and urban design has led to the creation of dead streets that are not lively and do not encourage interaction,[1]. Streets are places where children play, housewives and old people spend their lives. it's the outside of the house and a significant part of our urban environment, [2]. Both Allan and Appleyard turned slightly back toward the importance of the street in city design and how its regarded as the city's lungs, [3]. Streets are multi-use places of social interaction, diverse activities, economical, walkable places, playing for children, and many other activities that take place in this space, [4] . The character of a city is well-defined by its streets and public places. These places create the city's image, from squares and roads to neighborhood parks and playgrounds. Streets connect places, and people, enabling commerce, social interaction, and movement. Streets contribute to defining cities' cultural, social, economic, and political functions, [5]. The goal of generating cities is to attract the largest possible number of people to walk within its streets, bringing more life and adding a richness of experiences, especially when fast traffic turns into a slow one, [6]. PPS (The Project of Public Spaces), presented a model for evaluating public places in general, including streets, it works as a tool that helps people assess any place. The model includes

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four dimensions; accessibility; easy clear movements, people involved in activities; the space being comfortable and having a good image; and, it is a sociable place: where people meet each other, [7]. PPS is the end of a modernization of a large number of factors and dimensions that constitute vital places. Its beginnings date back to the 1960s when Jane Jacobs mentioned that the key to the city is through its efficient and lively streets. At the same time, people enjoy observing the streets and the entertainment it contains. The principle is to focus on the street's physical characteristics as; form, the pavement's width, height, buildings' edges, variety of activities, and greenery, [8].

This article will discuss and develops the dimensions presented by placemaking, and theories of place presented by researchers, urban theorists, and designers, to identify the essential dimensions that effects improving the quality of the place and raising its livability. It proposes a new theoretical and practical framework to assess the livability of commercial streets. This article aims to lay the foundations for comprehensive and integrated placemaking strategies to assess the commercial street in terms of its livability. As well as aims to adopt the practical framework as a means to check the level of street implementation of these strategies, in addition to being a basis for the design of the commercial street in the future. To select a research sample (commercial street), a pilot study was conducted to find out people's opinions about the best commercial streets in Erbil city, and the most livable one from their point of view. The quick questionnaire was associated with social, local, and physical dimensions.

The article is divided into the following steps: first, presents the models and dimensions identified by theorists, researchers, and (PPS), and has been applied to several case studies. The second step characterizes the added dimensions and factors that enrich the new model. The third step is; determining theorists' opinions regarding essential dimensions to raise the place value, encourage belonging to the place, and increase human interaction. As a result of the aforementioned three parts, an integrated and accurate (Framework) was extracted for assessing placemaking. The proposed theoretical framework was applied to the selected research sample to assess the percentage of street application of the placemaking strategy. The final part presents a case study discussion, results, conclusions, and recommendations.

2. Materials and Methods

2.1. Dimension Extraction

This part displays models adopted by the placemaking concept to identify the influential and frequent dimensions. Several researchers deliberately developed these models or modified them according to the research problem, need, and context they worked with. PPS presented four main dimensions recognized by; uses and activities, comfort and images, access and linkages, and sociability. The following Figures display the models presented by architects, researchers, or development organizations. After comparing these models, they were regrouped according to the types of dimensions introduced by PPS. To determine the basic dimensions on which the theoretical Framework was erected, the research applied the following steps:

2.1.1. First Step (Models Review)

- Thirteen models adopted by researchers, architectural theorists, and urban designers were reviewed to evaluate placemaking within a commercial street. The most frequent dimensions were: Sociability, Accessibility, Uses and Activities, Comfort, and Imageability.
- The dimensions were regrouped into four groups based on the common dimensions among the models. As well as the derivation of the new dimension between them
- First group with three models out of thirteen, all four dimensions were adopted for evaluating and redeveloping streets, this group relied on the dimensions of (PPS), which become the basis for their research and practical assessment. Figure 1, Appendix A1. [7], [9], [10]
- The second group with three models shared the same basic dimensions. Other dimensions were added according to the context of the research sample, site analysis, and conservation since the

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selected site was within a conservation area. Both climatic and economic were added to the considerations of the selected samples, Appendix A2, [11], [12], [13].

- Other three models added commercial and economic dimensions to the model, either implicitly in one of the basic dimensions or explicitly. Appendix 3. [14],[15],[16].
- Dimensions such as design, environmental, urban context, historical, spatial, human scale, climatic, and sense of place were mentioned individually and according to the research need and problem in this group. The researchers praised the importance of these dimensions, considered one of the basic pillars of placemaking that was not used previously. Appendix A4. [17], [18], [19], [20]. (The compared dimensions table in Appendix part A).
- By comparing the dimensions of the aforementioned models presented by the researchers, an extrapolation was made to determine the most important and repeated factors to use within the model and the Framework, both (Theoretical and Practical).
- The least frequent dimensions in the previous studies were also included in the theoretical framework. A comprehensive evaluation list for placemaking was extracted, to evaluate livability in the commercial street, Figure 2.

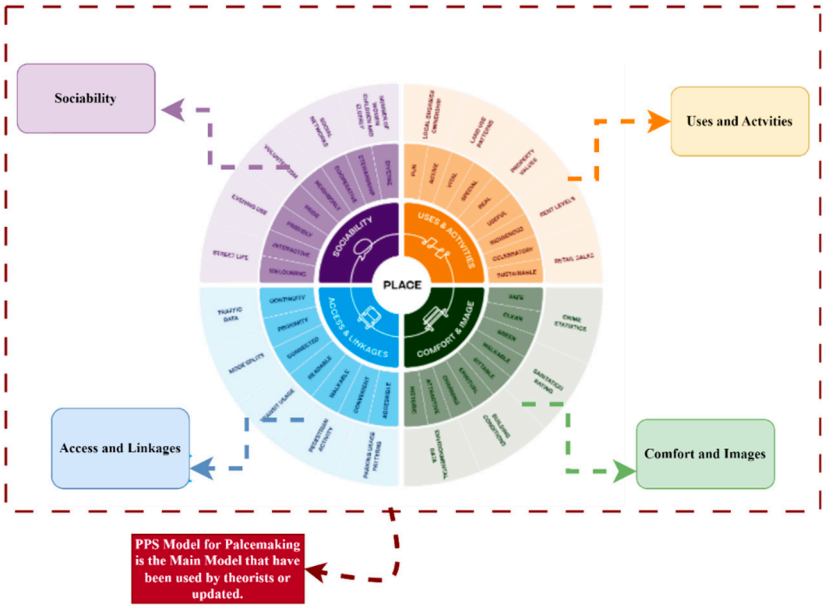

Figure 1. The PPS Placemaking Model with Four Main Dimensions

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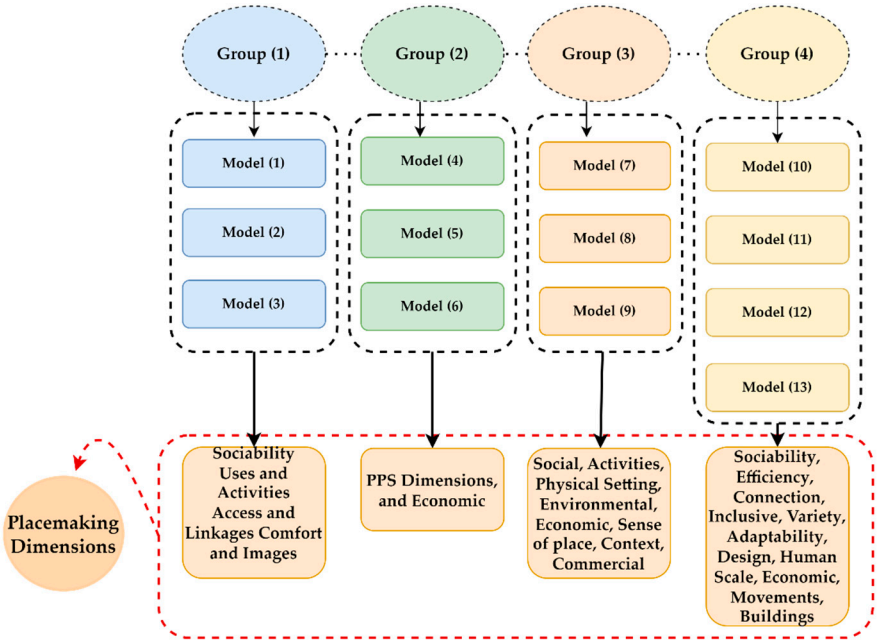

Figure 2. Dimensional extrapolation, Source: Author

2.1.2. Second Step (The Added Dimension)

This part deals with adding an influential dimension to the placemaking framework, which did not appear explicitly in the previous models. Despite this, it has been widely mentioned by many researchers who have praised its effectiveness in placemaking.

2.1.2.1. Sense of Place

P. J. Ellery presented a model where individuals embody its core, all sensory information assembled from the place, perceptions they form based on their relations with a place, and connections they create between the individual and the place. No matter how positive or negative these perceptions are, they will form a certain association with the place. This is called a sense of place and has great benefits, including improving social communication and strengthening the relationships of individuals. He presented a Placemaking model that depends on the connection between place and people. This is considered an essential part of placemaking mechanics,[14]. PPS declares that space and place as terms they often used reciprocally, and consist of different meanings depending on the setting in which they operate. Placemaking explains that place creation exceeds the physical dimension and involves other aspects, such as sociability, mixed uses, accessibility, interaction, and comfort. This produces bonds between people and places to create a sense of place, [7]. Cresswell regarded a sense of place as a way of knowing more about places, it is more cognitive than existential, and it is the spatial connection that people have to place. The availability of spatial sufficiency associated with the needs of people and the appointed time generates a meaning of the place. [21]. Lynch identified that the psychology of the place is connected to a mental map people use as a guide in urban places, using their senses to express whether the place is safe, comfortable, vital, or threatening, [22]. Iris presents several theorists' perspectives on a sense of place and how a sense of belonging is formed through buildings with historical character. Placemaking can be achieved on a variety of scales, from the balcony of a house to the city streets where all people meet, [23]. Many aspects of placemaking rely on inviting people to suggest activities. Giving input to the development of places, as they become more familiar with needs and activities a sense of place will generate. To influence social structures, it seeks for a practical application to link the relationship between people and place. communication between place and people in a specific space will generate as a result of

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the sensory understanding of community participation. It appears when people understand and accept the place they use, [24]. Ralph describes a sense of place as the possession and creation of place, developing a system of meaningful places, giving shape to our experiences, [25]. The creation of place comes as a result of the synthesis of spatial experiences, scenes, stories, feelings, and ideas. It is intricately linked to history, cultural identity, and social relations, to be an essential component of an event, [26]. Experience is one of the essential factors in a sense of place, [27]. It involves psychological, cognitive, emotional processes, and physical activities, and can be defined in three parts; identifying or recognizing a place, feelings about or evaluating a place, and behaviors and interactions that occur in a place, [28]. Depending on what was mentioned, sense of place is an integral part of the place and one of its necessary specifications demonstrates the strength of human attachment, then the place is successful in terms of interaction and vitality.

2.1.2.2. Sense of Place and Placemaking

Sense of place usually developed from common relations, activities, interactions in small places, and receiving and sharing information. Such small actions like setting or standing and talking, over time, develop a place's character and are regarded as essential motivations for developing people's sense of place. Theoretical research holds that traditional environments provide a better sense of place and evoke deep-rooted cultural meanings. Placemaking stems from dissatisfaction with the design that is not depending on place within contemporary urban, [18]. Placemaking endorses a substantial sense of belonging and sense of place. The changing public place is the result of the imagination and interactions between people. It is essential for place comfort, safety, and security to create a unique identity for the place, [29]. Placemaking gradually started focusing on the cultural developments in urban places, as it greatly impacts the creation of a sense of place that evokes the city character, [30]. Creating a sense of place is likewise related to the number of activities and events included within the space. These activities provide opportunities for conversations and social gatherings, as is evident in the "Power of Ten", which includes the availability of a good number of activities that suit all ages in the city. These are some strategies that have been followed to attract a higher density of people within the premise of providing vital entertainment venues. Places often succeed when people have a range of reasons (more than ten activities). These might contain a place to sit, playgrounds, any kind of art, music, food, history to experience, and people to meet, as well, some of these activities will be unique to that place, reflecting the culture of the surrounding community,[31]. Another important component of placemaking is the availability of retail, these offer a wide variety and choices to people within the urban space. It has economic, social, and local dimensions, not to mention the density it will achieve in this place. [30]. Another important element in the city that constitutes an essential part of its structure is the streets, which include many activities and functions that give them a sense of place. Therefore, all physical features in the street, such as buildings, their elements, and landscape design significantly contribute to making the street legible and accessible providing safety, and a comfortable environment for people.[27]. According to the mentioned above, a question will arise; Why is a sense of place an effective factor in placemaking? Sense of place is linked with three basic components; it has a strong connection with the knowledgeable aspect of the place. It is related to being an applied practical reference formed through place attachment and place identity. Finally, is related to the psychological aspect and its effects on the users. Accordingly, it is related to three components of placemaking dimensions that were proposed before, they are; sociability, imageability, and activities. At this stage, an initial model was formed to be a base for modifying the model (the framework). Figures 3 and 4.

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Figure 3. Placemaking Dimension, Source: [7]

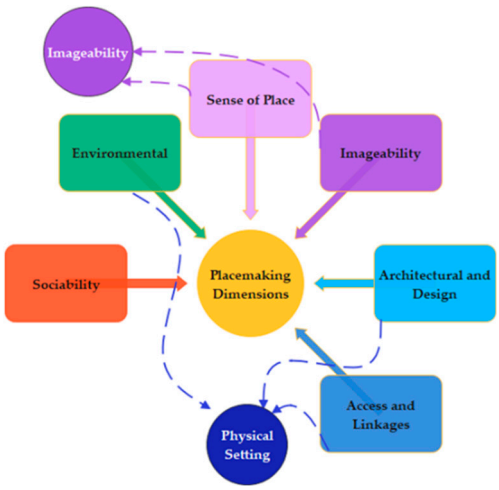

Figure 4. Source: author.

2.1.3. Third Step (Theorists Dimensions)

The final step is defining the model upon which to base the placemaking Framework. Several theorists' opinions on place and placemaking were reviewed in their identification of the dimensions and basic factors related to generating lively places. Despite the great disparity in theorists' attitudes towards place theory, most of them praised the importance of physical setting, imageability, activities, and diversity to activate the place, and the connection between humans and place. These dimensions are regarded as one of the basics of placemaking theory that conveys many benefits to both environment and society. Jane Jacob aroused attention to life in the street as a social place, instead of being a street for cars only. She was the first to explore place quality regarding activities producing value in a built environment, [8].

Christopher Alexander quote “Streets should be for staying in, and not just for moving through, the way they are today”. Alexander is one of the theorists who presented ideas and theories that impressed the design of cities and streets in all their details. Among these, is the wholeness concept, which adopts the idea of integrating space with all needs to reach a vital and usable place for people. In “New Concept in Complex Theory”, he interpreted wholeness as the basis for spatial configurations, and a key to many events and phenomena representing aspects of system behavior. In his book “A pattern of language”, he pointed out the importance of adopting people's concepts when designing the city and the street. This idea will revive the livability aspect, since people's needs are basic within the public space, and adopting these images represents the essence of creating beautiful places, [32], [33]. Most of the beautiful places in the world weren't made by architects, but

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by people themselves, [7]. He also talked about the process of locating any shop within the street, which must take into account several basic points, including the need and filling the functional void, and the existence of activities, [32]. Three basic ideas that are the essence of placemaking are advanced by Christopher: wholeness, adopting people's ideas and needs when designing, and dealing with the smallest details that are related to daily needs.

Gehl argued that successful urban places are mostly based on street life and the different ways that activities are distributed and occur in the street, [34], (1989). One of the essential fundamentals of placemaking is, changing space to place, as Cresswell explained, space turns into place when the person adds his touches and changes to it (a man who makes the place meaningful), this will make the place belongs to him. He mentioned that place memory and spatial recognition impact place theories as well. For him, location, locality, and sense of place are the main components of place, [21]. In turn, Gehl drew architects' and planners' attention to the importance of the spaces between buildings and their impact on creating a livable environment, through connecting physical settings and activities in the street, [35]. Punter suggests a model for enhancing a sense of place which is discussed by Montgomery. He regarded a sense of place as an essential factor in activating placemaking meaning from human experience effects on spatial correlation. Punter reinterpreted the models presented by both Relph, (1976) and Canter (1977). The model was about connecting activities, physical settings, and means to enhance the use of places, see Figure 5. [36], cited from (Punter, 1991).

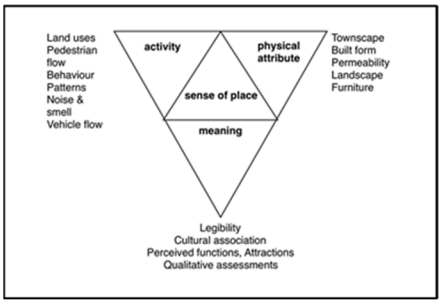

Figure 5. Component of sense of place.

Canter, introduced an identification process for the place, his theory revolves around three main pillars, a place for him a realm of; activities, physical attributes, and conceptions,[37], [38], Canter's theory owns a practical dimension in addition to theoretical, as it hits the core of design decisions. To lay the foundation for place theory, Canter explained the importance of integrating two realms; the various design aspects presented by designers, and the results of the environment and behavioral research. Accordingly, a framework appears based on place experience integrating; social, individual, and cultural aspects. On the other hand, different behavioral and environmental research models work as independent theories alongside the models of place theories. Hypothetically, these aspects assume the importance of analyzing place studies as meaning with building perception reveals similar components of spatial experience. The theory integrates personal, social, and cultural, using the place as a neutral technical term in a physical and social experience of place. See Figure 6, [39]. Montgomery put forward two models for discussion, the first is for Canter, where the model-centered place, came as a result of (perception, idea, cognition, and physical attributes) asserting a person's perception and experience in knowing the place. He also discussed the components of place for Punter, focusing on the importance of a sense of place in activating placemaking, and how ideas and meaning derived from human experience with place affect the spatial association. Montgomery stressed the importance of these three principles in highlighting the quality of a good location. [36]. He believes these principles greatly impact deriving the characteristics of placemaking and creating successful urban places. Instead of being a place only, the main axis has become a sense of place, and all of the activities, physical settings, and meaning are acquired from the place. He combines what is

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appropriate from the two models to form the basis of placemaking to best determine the work of qualitative specifications, see Figure 7.

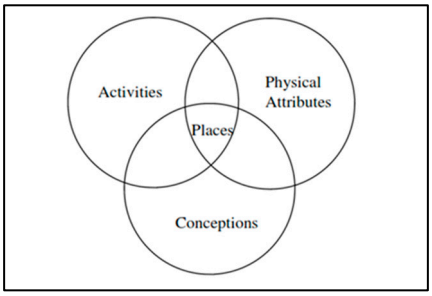

Figure 6. Canter model, place components.

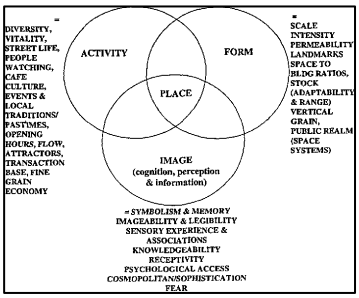

Figure 7. The Updated Place Component by Montgomery.

Mojgan reviewed most of the previous models and emphasized that the model he presents enhances the quality of place, and how design contributes to a sense of place. By considering the importance of these components, it is easy to adapt this theory to placemaking principles. See Figure 8. [38]. Seamon said “To be is to be in a place", which means that human is essentially implanted where any understanding of their life is truly related to the quality of the place anywhere life occurs, [40]. He introduced a tried component to constitute place theory; the environment and geographical basis of the place, the people of the place, and the togetherness of the place. He combined these motive elements in a three-arrowed model, [41]. Seamon regarded the place as a phenomenon connecting humans and their activity, presenting a complete image of a place. Originally place is a phenomenon due to its close connection to human and their activities. To explain the three components, Seamon identified six place processes that connect each other to present a complete image of the place, Figure 9. Figure 10, shows research steps for extracting dimensions and adopting the new Framework.

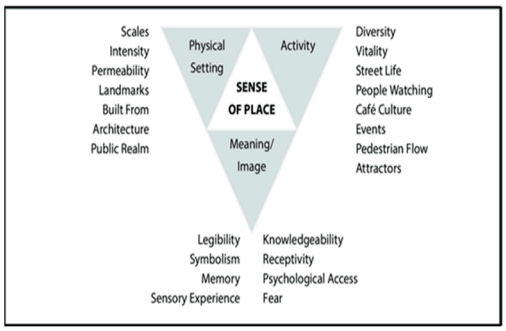

Figure 8. [38] (p.5), [36] (p.85).

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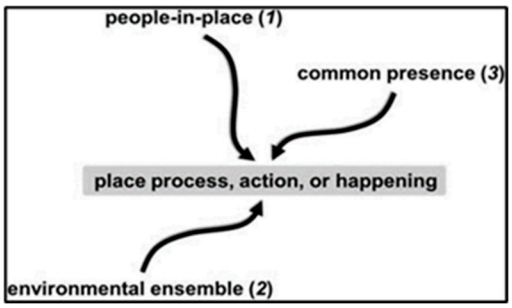

Figure 9. Seamon place Components, [40], [41] (p.7).

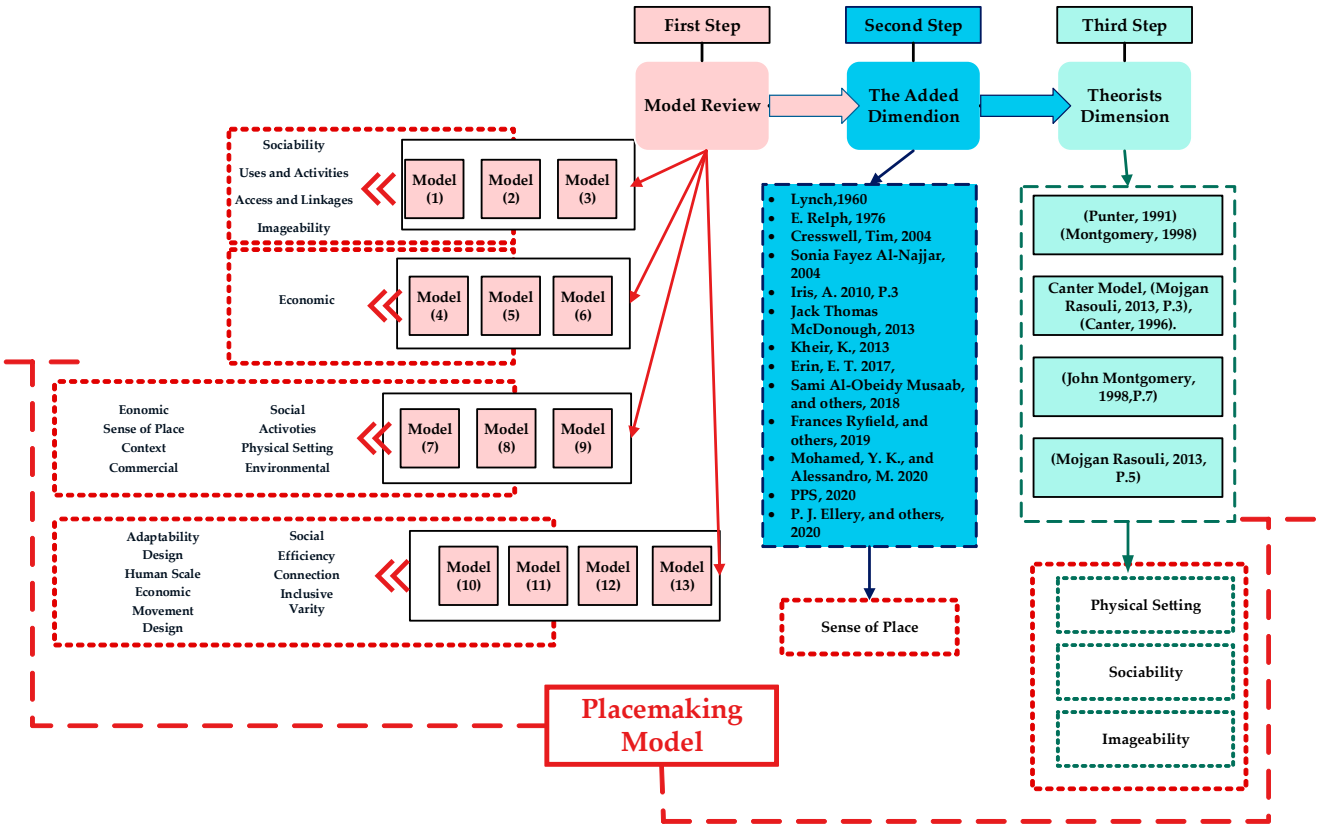

Figure 10. The Research Steps for extracting dimensions and adopting the new Framework. Source: Author

2.2. Placemaking Model

According to the previous review of place theory and theorists, the research identified the following points:

- Dimensions have been compared to identify the more influential ones in place and placemaking.
- By reviewing the models and according to previous studies that developed or applied the models, all of them indicated the importance of the four dimensions within the strategies of place; Sociability, Access and linkages, Uses and Activities, and Comfort and Images, [7], [9], [10], [11], [12], [13], [14], [15], [16], [17], [18], [19], [20]. As for the theorists of the place, Punter, Canter, Montgomery, Mojgan, and Seamon, [36], [38], [39], [40], [41], agreed on the presence of three basic dimensions that have an impact on raising the quality of the place, which are the social aspect, the physical setting, and the meaning or sense of the place, and by comparing the practical and theoretical sides of both models and the theorists, the model was restructured to suit the local commercial street.

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- According to the previous literature, the aforementioned (Theoretical Framework) was reconfigured into a (Practical Framework) consisting of three main pillars. Consequently, the organization of these three dimensions has been reduced and restructured as shown in Table 1.
- The research decided to identify three basic dimensions: Physical Setting, Sociability, and Imageability. Each dimension is subdivided into another secondary dimension, factors, secondary factors, and possible values, Figure 11.
- The research adopted these dimensions and factors to place the foundation of the Practical Framework. The placemaking framework has been identified, constituting the appropriate approach for assessing P.M. strategies in commercial streets.
- The practical framework consists of 5 sequences, starting with dimensions, sub-dimension, factors, sub-factors, and possible values which have detailed selections regarding every single factor that appeared as a descriptive approach to identify the best or worse phenomena in the street, example for the Practical Framework Table 2. For more details, the whole (practical Framework) is available in appendix part B.

Table 1. Theoretical Framework, (Dimensions, Factors, and Possible values). Source: Author.

No.	Dimensions		Factors	Sub-Factors
1	Sociability And Diverse Activity Dimension		Social design and Activities	Density
				Diversity
				Functionality
			Quality of Street	Visibility
				Furniture Availability & Maintenance
				Satisfaction
			Economic	Economic Satisfaction
				Adaptability
2	Physical Setting Dimension	Architectural and Design Sub-Dimension	Building Design	Human Scale
				Edge Compatibility
				Morphological, (Building Direction, Building length,
				Inclusiveness
			Street Design	Connectivity
				Unity
				Physical Characteristics
				Enclosure
			Architectural Design	Architectural Style
				Urban Context
				Legibility
		Access and Linkages Sub-	Accessibility	Proximity & Transitivity
				Clarity
			Walkability	Movement Patterns
				Continuity
				Spatial Layout (Patterns)

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				Spatial Characteristics	Spatial Configuration
					Spatial-Temporal
			Environmental	Sub-Climate Comfort	Climate protection
					Greenery Convenience
3	Imageability Dimension			Memory	Attractiveness
					Locality and Identity
					Place Attachment
			Images	Safety	Separation
					Speed
				Comfort	Physical Comfort
					Social Comfort
			Sense of Place (SOP)	Qualified Street	Unified Sense of Place
					Social Bonding
					Sense of Belonging

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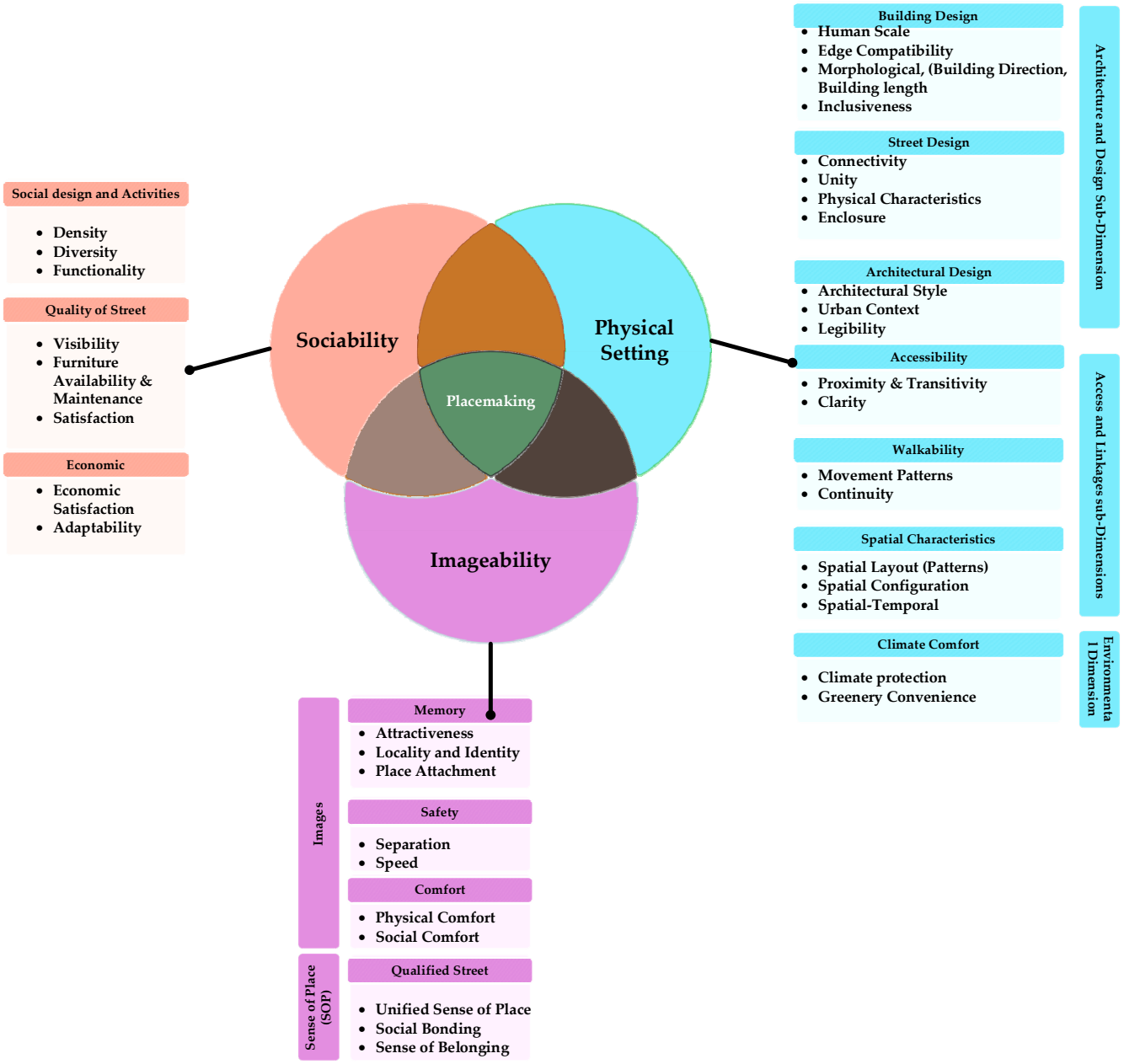

Figure 11. The Placemaking Model (Theoretical Framework), Source: Author

Example for the suggested Framework.

Table 2. Placemaking Framework (Practical Framework) Source: Author

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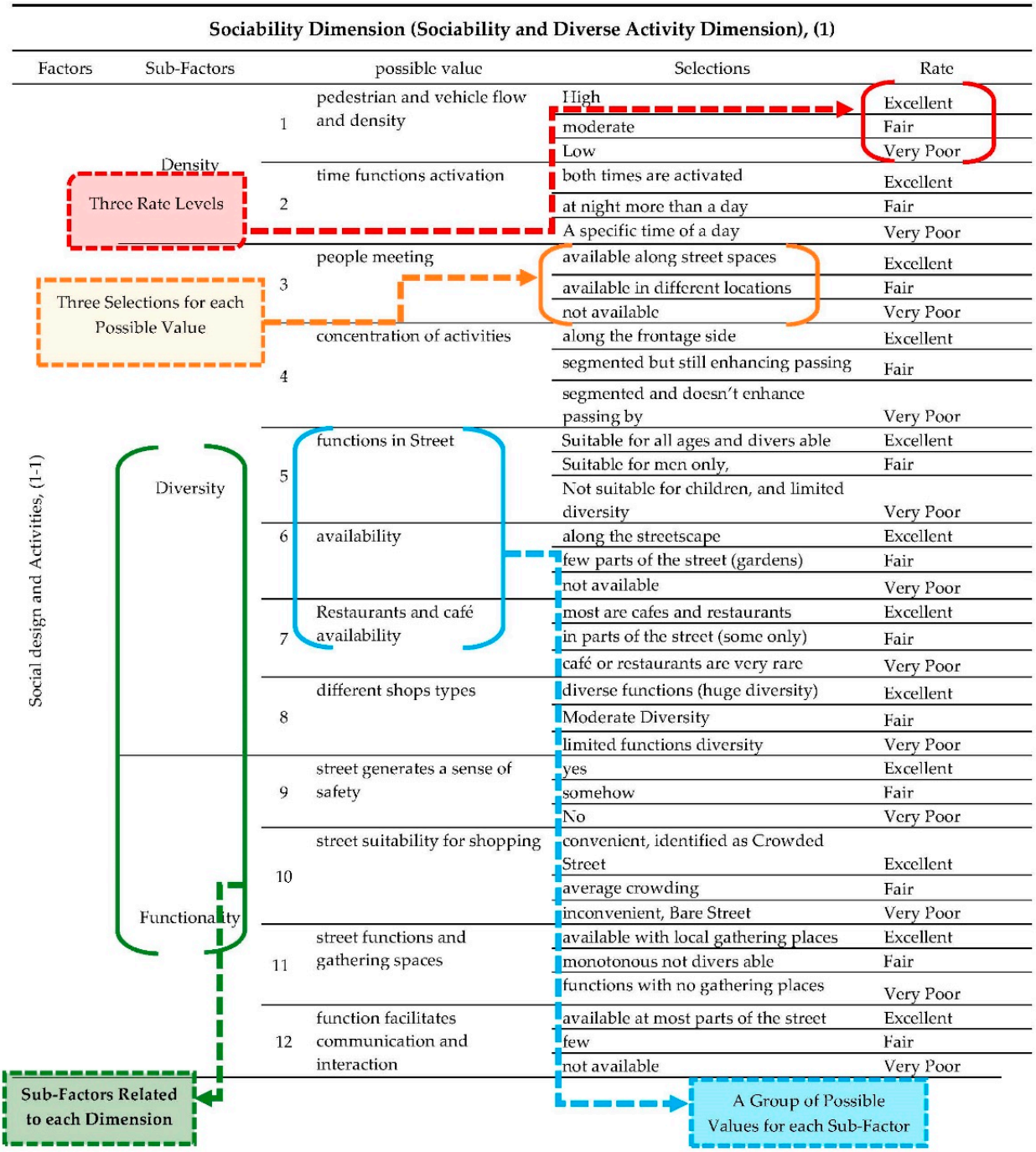

- Three basic dimensions identified within the model and the Framework, are as follows:

2.2.1. Sociability Dimension

Streets with neither people nor everyday life experience no effective or attractive atmosphere. The social dimension identifies the people's responses to any street based on the density of people in a place generates by the street design, [42]. This dimension concerns social life in the street. places are not physical features and spaces only, it contains social values as well, [43]. Carmona, believes that understanding the relationship between people and place, is an essential element in urban design, [44]. Placemaking is essentially a human experience. The principle of inspiration is to reinvent the physical and social environment that people share. The way people gather and form a safe, comfortable, and social environment as a result of purposeful, systematic design and planning, will not be a social environment only but will enhance the place features, [12]. External places include

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many social activities and events, usually formed as a result of planning, and Place design in addition to comfort and safety. Correspondingly feelings and attachments to place will form, the social activity in itself is a catalyst for relationships, and is linked to the human senses, [35]. Places that contribute to the formation of a community foundation and relationships between its members, provide continuity from past to present, meet many daily needs, and contribute to defining the community identity. Such a place has a positive influence on daily life and encourages interaction, [45]. Diversity is one of the important notions related to urban vitality, including primary uses and activities that people need in their daily life. A Combinations of mixed activities are the key to generating diversity and people density, creating successful urban places, leads to social interactions, [38].

The social dimension includes a group of factors whose importance is seen in supporting people's expected interactions as a result of creating interaction in the street. This dimension includes density, diversity, functionality, visibility, furniture availability and maintenance, economic satisfaction, and adaptability. These factors are interrelated to create spatial interaction between people.

2.2.2. Physical Setting Dimension

Lynch believes that any physical form has an impact on people's activities, the city expresses both physical characteristics and social units. the city has a size, plan, and pattern that serve as vital features to create its physical form. people who live in the city will shape their characteristics, and be shaped by them, the perceived value is based on how people perceive value and determine what it means, [22]. The place is defined by a mental image arrangement, behavior, and physical setting. A model with a mental image has an implicit temporal dimension where experience is reflected in affective and cognitive responses to current physical settings. This image is articulated to the physical settings and activities inside these settings, [46]. It is incorrect to separate the social aspect and the physical setting, as the physical features including landscape design, sidewalks, furniture, etc., enrich the place's characteristics and provide comfort for users, so creating a lively image encourages use, diversity, and the formation of social relations. [47]. The improvement of street livability has a close connection with the physical elements, planning, and architectural design of both sidewalks and streets, and buildings. Among these physical details is controlling the vehicle’s movement and the separation from pedestrians, and how street furniture plays a vital role in creating a spatial presence,[43]. Physical characteristics are the dominant factors that can influence a person’s sense of place, [48]. It affects many factors and increases the functioning of other visual dimensions, the sense of place, and social aspects as well. Walkability for example is greatly affected by the physical features of a place and bears a meaningful relationship with the conditions of the built environment, [49]. One of the placemaking elements is to enliven the streets by providing visual interest and encouraging people to walk. Accordingly, the edges of the streets must be lined to be supported by functional diversity and activities. This affects guiding people and enhances continuity,[4]. Characteristics of outdoor activities are mainly affected by planning and physical settings. Adding a specific color or material or a certain type of plant or exposing sidewalks and providing seating areas, all of which create patterns of activities and generate a positive atmosphere [46]. The physical dimension is divided into three secondary sub-dimensions and factors that increase the performance of the place. The presence of physical components affects positively the provision of suitable architectural forms in a commercial street, as well as creates attractive street design. This dimension included the following factors: Human Scale, Edge Compatibility, Morphological, (Building direction, Building length, Inclusiveness, Connectivity, Unity, Physical Characteristics, Enclosure, Architectural Style, urban context, Legibility, Proximity & Transitivity, Clarity, Movement Patterns, Continuity, Spatial Layout (Patterns), Spatial Configuration, Spatial-temporal, climate protection, and Greenery convenience.

2.2.3. Imageability Dimension

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Lynch and Relph pointed out the importance of images, place experience, and physical setting in identifying place identity. Images form in human minds when they first used the place, presenting meaningful forms that strengthen the bonds between place and humans. Lynch presented five elements that assist in creating a mental map to forming wayfinding for people. Imageability and legibility are essential factors in placemaking according to Lynch's approach. He defined 'imageability' as the quality of a physical feature that gives the individual a strong intense image, the paths, the usual network, or potential lines of movement through the urban context, [22], [25]. Seamon emphasizes the importance of phenomenology in creating placemaking. The place is a phenomenon that connects with humans and their activities. This presents a whole image of place phenomenology forming the basic step in envisioning placemaking. [40]. Most current design guidelines use constant, communal, generic terms to describe urban design and placemaking requirements. Following such guidelines lead to reliable place, and can lead to consistency in placemaking. In turn are regarded as essential for perceptual qualities, such as imageability and visual enclosure, [48]. Imageability is the quality of the space that makes the place recognizable, memorable, and distinguishable. It is associated with specific physical elements and creates a unique place. Imageability is the result of other urban design characteristics such as human scale, permeability, connectivity, and enclosure. When the spatial structure of a space is understandable, with an opportunity to define a coherent pattern for it, then a place will be readable, [38]. Community images and identity are often formed through historical existence, as placemaking seeks to create unique and vital destinations by highlighting historical existence and features, [24]. Placemaking may be enhanced by Kevin Lynch's theory of imageability, it helps to create places with a clear regard for the built environment making it easier to understand and navigate cities, [50]. As a result, the research identified a group of factors within imageability that have an impact on activating the imageability dimension. The factors included are as follows: Memory (Attractiveness, Locality, Identity, Place Attachment), Safety (Separation, Speed), Comfort (Physical Comfort and Social Comfort), and Qualified Street (Unified Sense of Place, Social Bonding, and Sense of Belonging, Figure 12.

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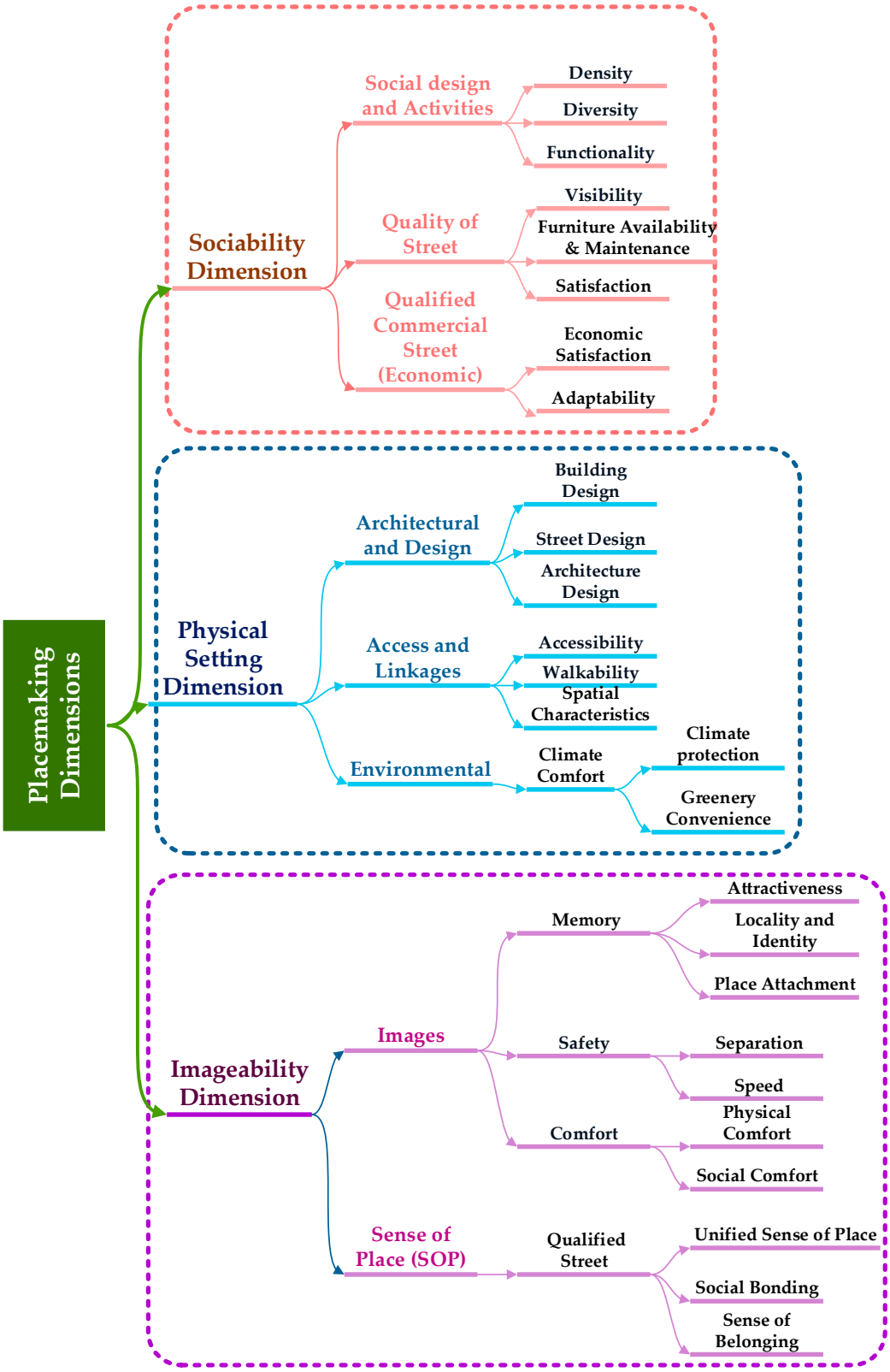

Figure 12. The three Main Dimensions

2.3. Placemaking Framework

The research presented an extensive study for theoretical references on the concept of place theory and placemaking. A comprehensive knowledge base was reached for the placemaking

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strategies, with steps and an accurate description for each paragraph, which depended on the dimensions previously identified.

Each dimension includes factors supposed to improve its performance within its relationship with the other dimensions in the model. This Framework included a group of possible values that explain the; design, social, imageability, and physical aspects. The result of each set of indicators is associated with one of the factors, and the latter leads to one of the three dimensions. For the Framework to be accurate in assessment, a three-level Likert scale was adopted to describe each possible value. Through the application of the list, the

placemaking activating steps are evaluated, as it is assumed that the more the placemaking steps are applied, the higher the livability of the commercial street.

2.4. Study Method

2.4.1. Selecting the Street

Selecting the research sample was initially determined after a systematic approach that relied on what was stated in previous studies, and according to the city context and streets.

- The first stage is to identify several streets to which the specifications for commercial streets apply.
- The research decided to select the connector streets between the circles of Erbil city, as it was categorized by a set of characteristics that qualified it to be crowded and diverse commercial streets.
- The width of the selected streets is between (20-50) m, and the lengths ranged from (600-2000) m.
- Through this quick explanation, (7) streets have been identified to meet the selection specifications set by the research. Table 3, Table 4.
- A quick pilot study was conducted in which people were asked about their opinion of the most lively and livable street, Figure 13. Among the seven commercial streets, Eskan with the higher rate (35%) has been selected as the research sample.
- People identified the reason for choosing this street as being multi-functional and diverse, with attraction points, in addition to being a street that contains two parking spaces. Figure 14.
- Eskan Street was adopted as a research sample to apply a placemaking Framework, and assess livability.

Table 3. Selection List, (Criteria of Selecting Case Study) Source: Author.

No.	selection items	Sub-Numbers	Characteristics
1	location	1.1	The selected streets between (Street 30m) and (Street 120m) ring roads.
		1.2	(Street 60 or 100) are not included, while the internal streets link the main traffic circles in Erbil city, connecting two important streets or (the connector roads between circle roads).
		1.3	The street falls within the framework of commercial streets that have developed over the years.
		1.4	people identified this street as a commercial street.
2	social characteristics	2.1	A clear density of pedestrians on the sidewalks of these streets.
		2.2	Functional diversity in activities and services is clear.
		2.3	Provides some activities of economic attraction.
		2.4	Providing the daily needs of people.
		2.5	Each selected sample must have a sidewalk at least allows the passage of 2 people.
		2.6	The commercial street includes some activities that provide places to sit and rest.

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3	commercial approach	3.1	The ground floor is dedicated to commercial activities.
		3.2	should be mixed-use activities, (diversity).
		3.3	The possibility of shopping in the street.
		3.4	The streets include a mixture of formal and informal shops
4	Architectural feature	4.1	some important buildings available within street spaces
		4.2	The presence of common spaces within the commercial street space
		4.3	At least one or two types of street furniture are present in the selected samples
		4.4	Street height and width are convenient or (in acceptable proportion)
5	street type	5.1	The street should be either the type of shared street or integrated activities
		5.2	Being a Minor Streets type where this size will provide spatial enclosure within the three dimensions
		5.3	Specified within the commercial street from the municipality
		5.4	Collector street, between two main rings in Erbil city
6	sizes & dimensions (physical Attributes)	6.1	street length is between (600-2000) m
		6.2	The sidewalk's dimensions are similar.
		6.3	The height of the buildings on both sides is no more than 10 floors
		6.4	There are designated places for pedestrians to cross between both sides of the street
		6.5	The width of the street is between (20-50) meters, and there are at least two lanes on each side, back and forth

Table 4. The sequence of selecting the Case Study

Erbil Sectors	**No. of Connector Roads**	**Road Connector width (30-60 m)**	**Length (500-2000)**	**Connectors specified as a Commercial**	**Changed from Commercial to Another function**	**Changed to Commercial**		**Street Name**	**No Colleges or Universities**	**Functions Compatible with Research need**
Sector-2	15	12	4	7	0	0	7	Eskan	0	1
Sector-3	4	4	4	4	0	0	4	Shorsh	0	1
Sector-4	6	5	5	2	0	1	3	Bryati	0	1
Sector-5	4	4	4	3	0	1	4	Malla Afandi	0	1
Sector-6	3	3	3	0	0	1	1	Runaki	2	1
Sector-7	4	4	3	1	0	2	3	Adalla	1	1
Sector-8	3	3	2	1	0	0	0	Nawroze	0	0
Sector-9	4	4	4	2	1	1	3	Baxhtyari	0	1
Sector-10	2	2	2	1	0	1	2	Ainkawa	0	0
Total Street Number	45	41	31	21	1	7	27		3	7

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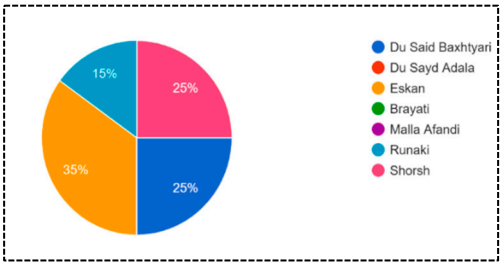

Figure 13. Comparing the Streets

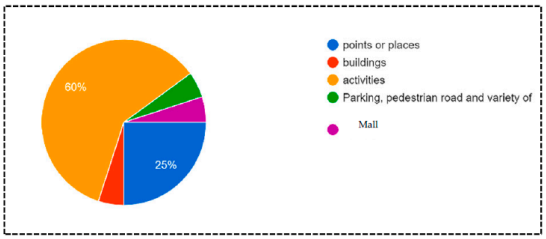

Figure 14. Reasons for Selecting Eskan Street

2.5. Case Study

Erbil Governorate is located in the northern part of Iraq within the Kurdistan Region. It is characterized by dry semi-continental weather, in summer is hot and dry, whereas in winter is cold and wet. Erbil is regarded as the commercial and administrative center in the Region, and one of the oldest continuously inhabited cities in the world, [51]. Eskan one of the neighborhoods in Erbil city, it is about (14) minutes away from the city center. One of the famous and important streets in Erbil city passes through it. Eskan Street is located to the south of the historic Erbil Citadel, about a kilometer away. It is considered one of the most popular and lively streets in the neighborhood, in addition to that it is considered one of the most important commercial areas, and regarded as the first market in Erbil city, contains several restaurants, cafes, shops, gardens, and street vendors. It includes a wide range of necessary recreational facilities that make it a comprehensive and integrated area, [52].

2.6. Street Description

- Eskan Street is one of the crowded streets frequented by many Erbil residents as well as tourists, the street connects two vital streets in Erbil city, the (30) Street, and the (60) Street, Figure 15.
- The street is distinguished by its many activities and the variety of restaurants and cafes, most of which are local dishes.
- It also includes other activities such as hotels and motels, markets, mobile shops, car accessories, and clothes shops, in addition to tailors and barber shops. At the end of the street, towards the city center to (30) street, there is a large mall with many shops and various activities. Figure 16.
- The street includes several cafes, which are considered a good entertaining place for many young people.
- It contains a large garden that occupies the left side of the street, with an area of approximately (6,592) m^2 as a cafeteria.
- The length of the street is approximately (670) meters with an area of (12,226) square meters and a width of (20) meters.
- The street contains many carts and booths selling local foods and juices, varying according to the seasons of the year.

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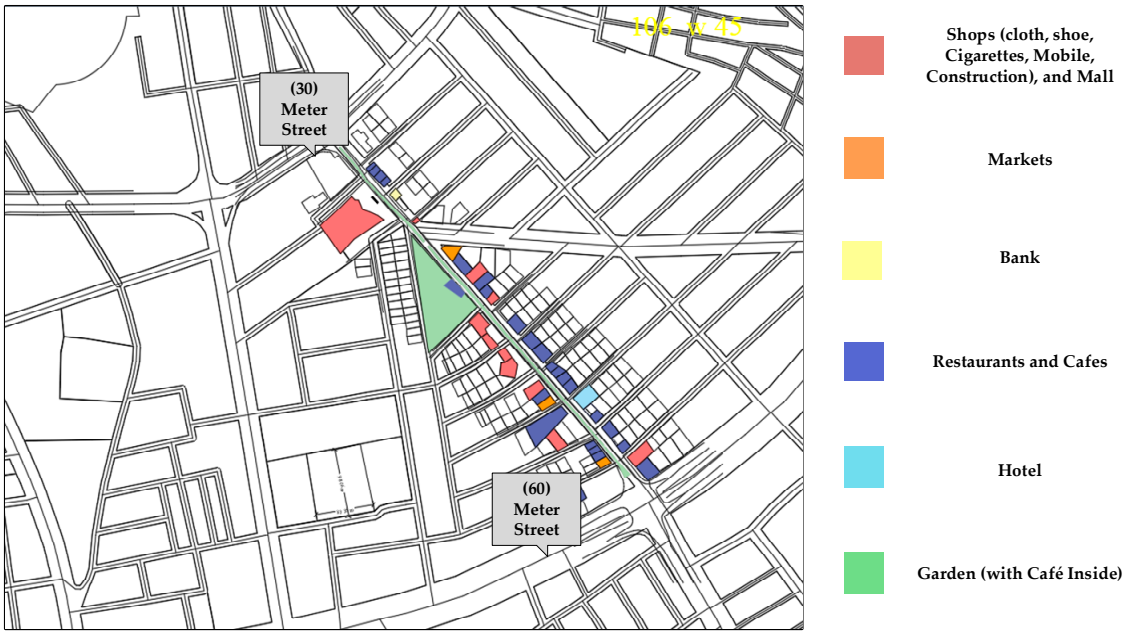

Figure 15. The Main Land use in Eskan Street

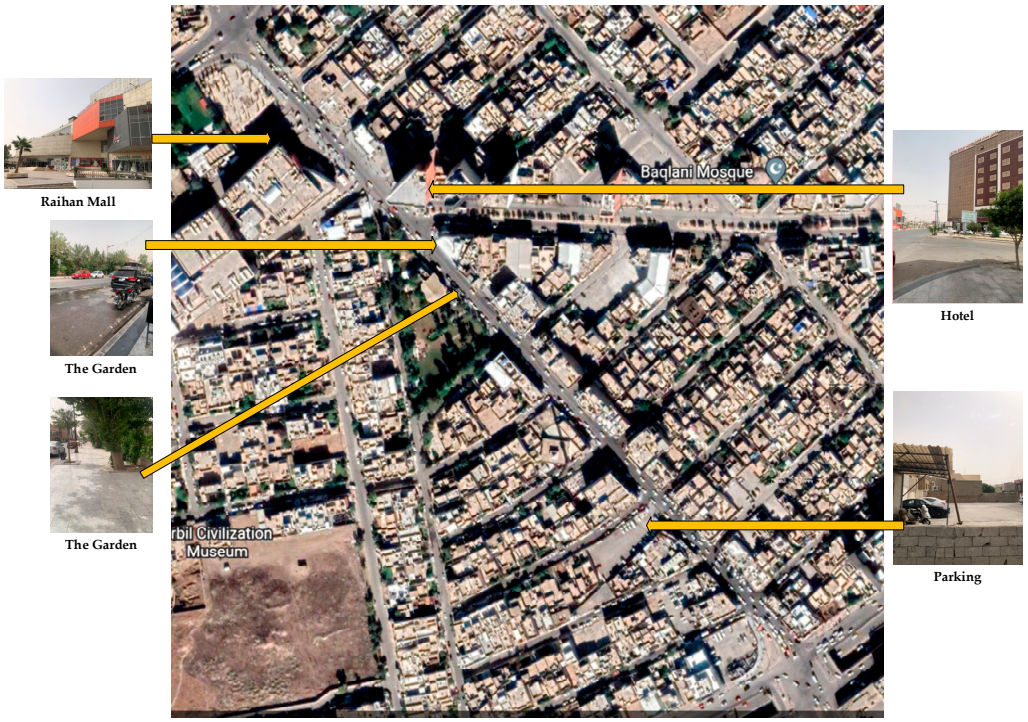

Figure 16. Important Activities in Eskan street

2.7. Methods

Methods adopted by the research include the Practical Framework. A questionnaire directed to architects and urban designers. The research identified the positive and negative points through observation and survey.

2.7.1. Field Survey

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- The research depended on several ways to collect data, the first of which is the field survey, it was divided into three main parts, the physical part including; urban, design, architectural details, and factors related to both street and sidewalks, furniture, street vegetation, and diverse activities. The social aspect and the imageability aspect.
- The field survey included three basic times: 9:00 a.m., 1:00 p.m., and 9:00 p.m. Information was entered into the survey table to determine diversity, social difference, and people density to which activities according to the times between day and night.
- The field survey was carried out during two seasons (summer and winter).
- In Summer, the survey began on (15 June to 15 July) and three times per day, from (9:00 am-1:00 pm, from 2:00 pm-5 pm, and then from 6:00 to 9:00, to midnight.
- For the period between (9:00 a.m.-1:00 p.m.), most of the activities that operate during this period are supermarkets, mobile, and construction shops, and the most effective ones are restaurants and cafeterias that serve breakfast for people going to work. Since the location of the street has a close connection with Erbil city center, where most of the businesses take a place, people use these restaurants for breakfast before going to work. Then density gradually reduces for an hour (but never decreases).
- Density and overcrowding increase again and for the period between (12:00 p.m.-2:00 p.m.) due to the lunch period.
- The fact that the street offers local and popular dishes and their prices are affordable in addition to the location of the street within the city, was among the reasons for the density.
- In summer, for the period between (2:00 p.m. -6:00 p.m.) people's motion decreases due to the intense heat, and the density gradually returns from (6:30 p.m.-12:00 a.m.). On holidays (Friday and Saturday) People stay up until 2:00 am.
- The survey times included these periods to determine the people density and most used activities.
- Some construction shops and mobile services end at (6:00 p.m.). Continuing to work are sweet shops, markets, and defiantly restaurants and cafeterias.
- In summer, the garden operates from 6:00 p.m.-12:00 a.m. It is rarely used during the day due to the heat. The garden returns to work after daytime hours at night.
- The survey was repeated to identify the most important changes and activities that flourish in winter.
- The survey was for a month as well, and it lasted from (15-December-15-January), and for three times: (9:00 a.m., 1:00 p.m., and 4:00 p.m.).
- Juice shops have changed to shops serving tea, coffee, and traditional sweets.
- The use of the garden changed from hours after (6:00 pm) to daytime hours from (12:00 p.m.-5:00 pm at sunset).
- In winter, activities did not continue till midnight, most of them ended at 8:00 and 9:00 p.m.
- In general, the use of the street in the summer lasted longer hours than the day, but the movement usually increases in summer after (6:00 p.m.), since the temperature decreases and it facilitates the movement of people in extremely hot weather.
- On the other hand, after (6:00 p.m.) in winter, the movement of people decreased, so it was noticed that some shop owners put temporary structures made of nylon material, with a fireplace on wood and gas within the space of the street in order to create a comfortable atmosphere for use by people.

2.7.2. Observation

Observation is conducted to identify the following points:

- The movement of people and the density were monitored and on which activities the density of people was higher.
- The most frequently used activities and the ages and genders of the people who mostly use the street.

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- Formal and informal activities, as in Erbil culture people like eating and drinking local foods, booths, and carts present affordable local food.
- Pedestrian movement, ease of walking, accessibility, sidewalk width, suitability for movement, and the number of people within sidewalk space.
- Transfer between the two sides and the appropriate physical features and elements that facilitate the transition.
- Amenities and furniture and their availability within street space and sidewalks.

3. Results & Discussion

3.1. Field and Observation Results

Several positive and negative points were identified. Focusing on activating the positive points will raise the performance and use of the street by people. Determining the negative points will represent the solutions that must be added to the street to raise its vitality, livability, and continuous use by people. The results were reviewed based on the basic divisions of the research dimensions.

3.1.1. Activities and land use in Street, (Sociability)

- Types of uses and functions have been identified in the street on both sides, the street has a variety of uses, but the largest percentage was for restaurants and cafes, followed by construction companies, real estate, car accessories, clothing stores, and tailors in the third rank. Figure 17, Figure 18.

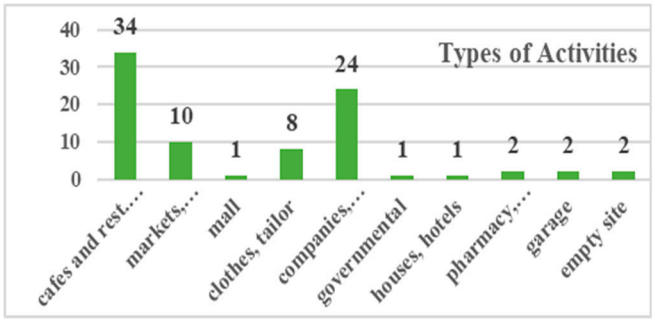

Figure 17. Activities Type in Street

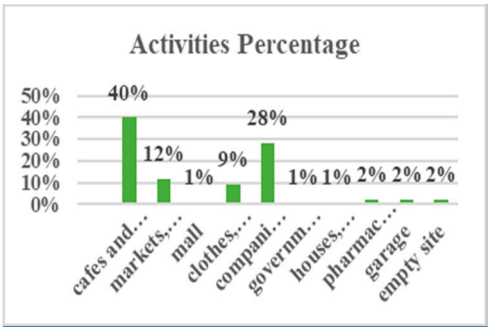

Figure 18. Activities Percentage

- Activities were mostly restaurants and cafeterias, the food served in the restaurants varied greatly between local and fast food, and this affects attracting many people, mainly men.
- The street contains many other shops that meet people's daily needs.
- A large mall from the (30) street side occupied with many shops, services, and clothes frequented by people from all parts of the city. Figure 19.

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- The number of restaurants and cafeterias had a great impact on attracting people, especially young people. In some important events such as the (world cup), which was held in December 2022, the street is closed and cars are prevented from passing in, to provide a suitable environment for people to move safely and to exploit the street and accept the largest number of people since the sidewalks cannot bear a large number of people, Figure 20.
- One of the attraction points for people is the presence of food and juice carts and booths, with a variety of meals change what serves between the seasons from juices and cold drinks in summer, and hot local foods and drinks in the winter such as (tea, baklava, hummus, broad bean, and turnip). Many people buy these foods or stop by to eat with friends, creating a social gathering, and the feeling of vitality is very evident. Figure 21 and Figure 22.

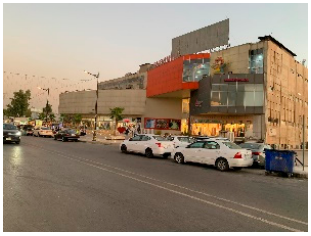

Figure 19. The Mall

Figure 20. Restaurants and Cafes

Figure 21. Local Food

Figure 22. Food Booths

- The street is crowded all day, except in the early morning hours, at night the traffic is highest, and the speed of the car does not exceed (30) km per hour, this will provide some protection for pedestrians when transitioning between two sides of the street.

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- Among the things that negatively affect the continuity of people's walkability are the presence of activities that interrupt the shop's continuity or that may not work after (4 p.m.), and empty sites.
- One of the positive points, Eskan Street was almost devoid of houses and empty or unbuilt sites. This encouraged the continuity of commercial facades and thus strengthened the spatial connection, Figure 23. The presence of houses causes the creation of intermittent and dead commercial facades, which affects the facade continuity and people's walkability.

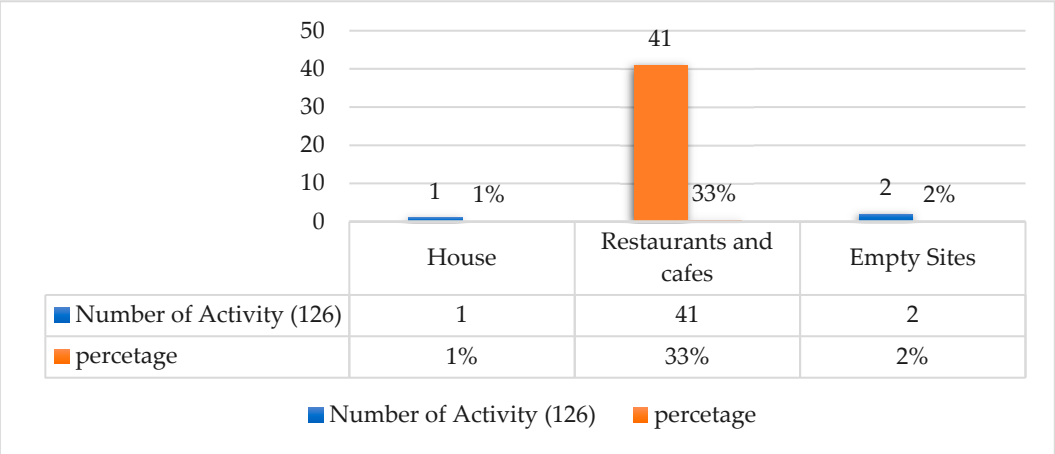

Figure 23. Houses and Empty Sites percentage to Restaurants and Cafes on the Street.

- Building plinths are continuous with diverse activities, and have excellent lighting at night, with a suitable pedestrian area accommodating four people, Figure 24. Plinths are a very important part of buildings, the ground floor, and the city at eye level. A building may be unpleasant, but with a lively plinth, the experience can be positive. The other way around is possible as well as the building can be very beautiful, but if the ground floor is a dead wall, the experience on the street level is hardly positive, [5] (p.18).
- Most of the visitors and users of the street were men. About fifty men walking or buying in the street there were approximately two women. This is one of the negative points of the commercial street.

(a) (b)

Figure 24. The Continuous Plinths (elevations at the Ground Level).

3.1.2. Physical Setting

- The street sidewalks were distinguished by several positive points that encourage walking, including the width that occupies four people, approximately (5) meters width, and in some parts of it especially in front of the mall, reaches (10) meters.
- Good tiling quality with unified material, most are continued without interruptions (almost the same level), and continuous sidewalk encourages walkability.
- Minimum width of the sidewalk in commercial streets within the central area is (4.8) m, [53] (p.3).

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- Sidewalk design includes three design components: frontage zone, pedestrian zone, and furnishing zone. Figure 25.
- The height of the sidewalks was appropriate in a way that prevents any overtaking by cars on the sidewalks or cutting off pedestrian traffic.
- Despite the lack of canopies that protect pedestrians, most of the buildings had setbacks on the ground floor to allow forming a cover for pedestrians from the sun while walking, Figure 26.
- The percentage of vegetation cover was limited as well as the number of trees, except for the afforestation on the right side of the street, due to the presence of a garden that covers approximately (6,592) m2, which works as a café and sitting area, Figure 27.

Figure 25. Three Parts Available on Streets Sidewalks.

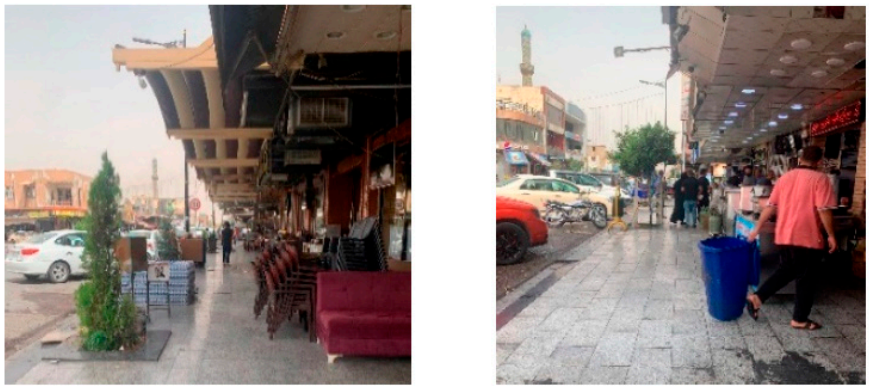

Figure 26. Pedestrian Protection Slab.

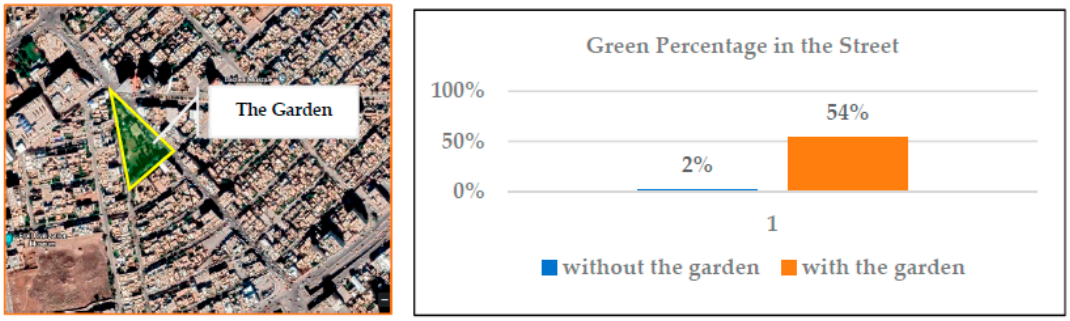

Figure 27. Garden and Green Cover Percentage in the Street

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- Number of trees is very limited; most are not maintained. The approximate number of trees in the whole street is (40) only, Figure 28. The garden is occupied by many trees, Figure 29. It is important to give more attention to trees as they protect pedestrians from the sun, soften the weather, and give an aesthetic and attractive image to the commercial street.

Figure 28. Trees Situation in Street (Very Limited).

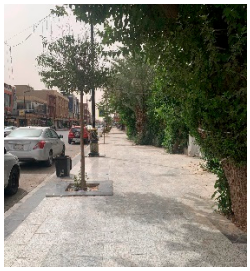

Figure 29. Trees Mostly in the Garden.

- The general line of the building's facades and within the perspective of the street was somewhat proportional and uniform in height. Most of the buildings were two floors high, except for a few buildings that exceeded three, and one of the buildings reached (8) floors. Figure 30.

Figure 30. Building Height on the Street (Mostly Two Floors).

3.1.3. Imageability

- Among the important things that define the street and distinguish it from others are points of attraction and the well-known buildings in it. Better to define a street with buildings, either of a different height or functions or even an architectural style. Two buildings were the identification for Eskan street in general, both were from the (30m) street side, Figure 31.

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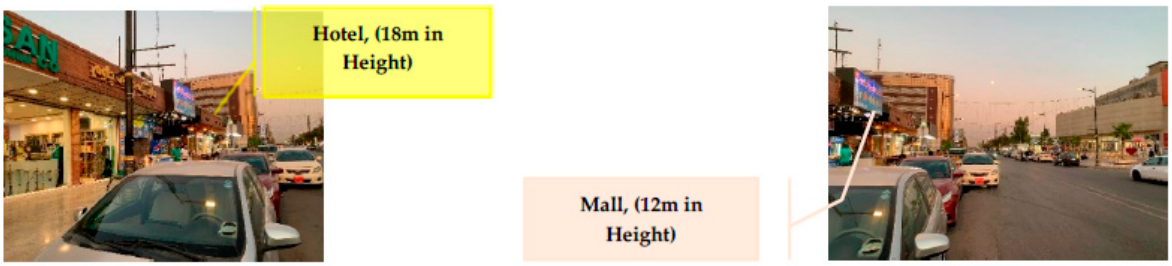

Figure 31. Important Buildings in street.

- Short poles were observed in some parts, serving as an edge demarcating sidewalk from the street and car overtaking. These columns are very important in terms of providing safety.
- Within the Furnishing zone, there were electricity poles, trees, billboards, and trash bins. These elements define the edge, preventing cars from overtaking, and forming a clear visual axis for the street and the sidewalks on both sides, Figure 32.

Figure 32. Sidewalk Furniture.

- Although sidewalks were suitable for the movement of people, the shop owners took advantage of them to display their goods, sell food and juices, or put chairs that belongs to the restaurant.
- Some buildings and restaurants took advantage of the frontage zone to add structural elements such as some levels and a few steps for entry. These elements were considered an obstacle to the movement of people, and in some places, people were forced to go down to the street to continue their movement and expose themselves to confrontation with cars, Figure 33.

Figure 33. Overtaking on sidewalks by shop owners.

- One of the positive and negative points at the same time is the availability of sitting places on some parts of sidewalks, but they belong to the private property of restaurants and cafe owners, and passers-by cannot use them. The street is devoid of public seating. Furniture and its availability on the sidewalks and the street provide comfort for pedestrians, Figure 34.

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Figure 34. Seating on sidewalks.

- Although trees are limited, they provide shade and enrich the visual aesthetics of this part of the street. The differences are clear between parts with trees and parts without, Figure 35.


Figure 35. Trees on sidewalks (very limited).

- One of the pedestrian attractions on the commercial street is the transparency of shop fronts. The problem is that most of the shops on Eskan street are restaurants and cafeterias, and some others are various shops. Many restaurants relied on using sidewalks as sitting places, while shop owners used sidewalks to display their goods. The interface has almost disappeared except for a few of them.
- For other shops the fronts were completely transparent, showing what is inside, this raised the visual connection between pedestrians and shops. at night This sensory connection and visual transparency increased due to lighting. Figure 36.


Figure 36. Façade tranceperancy in shops.

- Sidewalks show a clear visual connection, uniform tiling materials, and limited obstacles within the pedestrian zone. This visual connection had an impact on many levels, including giving a unified character to sidewalks, encouraging walking, feeling comfortable when moving, and presenting a beautiful street image, Figure 37.

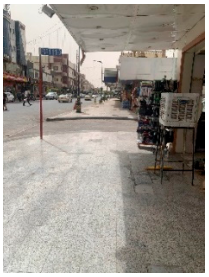


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Figure 37. Sidewalks continuity.

- Some uses of street furniture and Tree planting boxes positively attracted people to sit and enjoy with friends and created an interactive atmosphere, especially since the space in front of the mall was spacious and could hold many activities, Figure 38.

Figure 38. Furniture creates an attractive point for people to gather.

- One of the points that negatively affect the aesthetic image of the street is the weakness of cleaning and maintenance for the street, its furniture, and lighting. Cleanliness is very important in attracting people and the constant desire to return and use it. In general, there is interest in cleanliness, but not at high levels, Figure 39.

Figure 39. Sidewalk Maintenance.

- The street did not include standardization in architectural styles, elements, and forms designs were individual and did not follow general frameworks. One of the positive points is that some restaurant owners use traditional materials such as bricks, which add a local character to the facades. Figure 40.

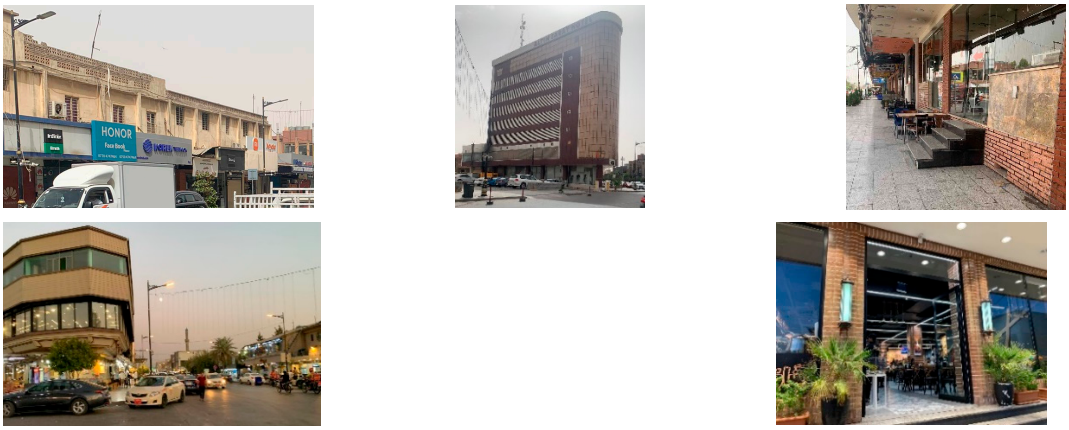

Figure 40. Architectural styles, elements in the street

3.2. Practical Framework and Questianeer Results

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A questionnaire was applied and directed to architects and urban designers to find out the important placemaking strategies to achieve livability. The purpose is to find some local dimensions suitable for the environment of Erbil city and its commercial streets by evaluating the livability of Eskan Street. The results of each of the Framework and the questionnaire were analyzed by the SPSS statistical program, and the results were as follows:

3.2.1. Practical Framework Results

The research explained the mechanism of the Framework through which it attempts to reach the most accurate steps and strategies for generating placemaking. Commercial streets include many activities usually associated with city streets, and meet people's needs. the basic dimensions were disassembled into secondary ones and then into factors and sub-factors, then through the concept of possible value linked with each factor, Eskan street is assessed, which is classified as a placemaking strategy. The data was analyzed to identify the outcomes that resulted from the Framework.

3.2.1.1. Sociability Results

The social dimension includes three basic factors, which in turn included a group of secondary factors. The first factor is social design and Activities, which included the following secondary factors (Density, Diversity, Functionality), and its result was (2.50), the second is the Quality of the Street, including (Visibility, Furniture Availability & Maintenance, and satisfaction) appeared in a lower rate (2.25). The highest rate was for the Economic factor, which included, (Economic Satisfaction and Adaptability), with a ratio of (2.60).

From the foregoing, the economic factor is the most influential among this group followed by social design and activities in the second place, while the quality of the street was the least significant, Figure 41.

From the results of the secondary factors, it turns out that functionality was the most important among the others, in terms of functional diversity and ease of movement within the various activities. In second place is adaptability, the ability of the street to adapt to people's needs, whether by changing the seating places or the type of formal services and informal in particular. Figure 42.

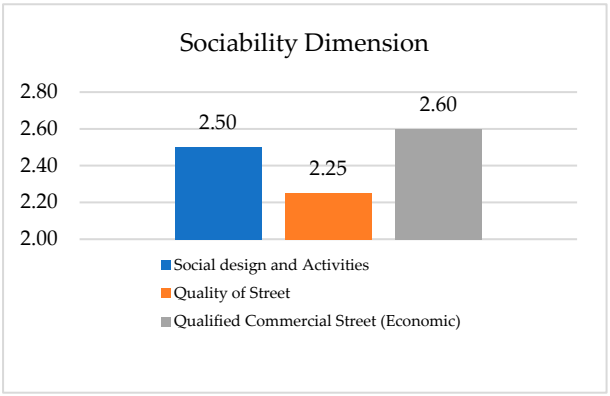

Figure 41. Sociability Dimensions

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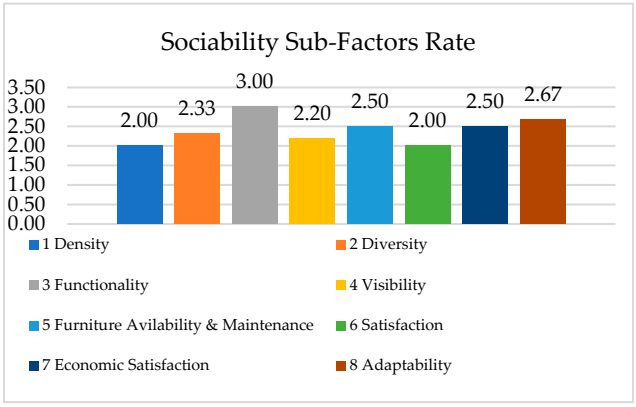

Figure 42. Sociability Sub-Factors

3.2.1.2. Physical Setting Results

The physical setting revolves around several secondary dimensions, namely the Architectural and Design Dimension, Access and Linkages Dimensions, and Environmental Dimension, and then to sub-divisions; (Building Design Street Design, Architectural Design, Accessibility, Walkability, Spatial Characteristics, Climate Comfort), which in turn is associated with several factors and secondary factors: (Human Scale, Edge Compatibility, Morphological, (Building direction, Building length), Inclusiveness, Connectivity, Unity, Physical Characteristics, Enclosure, Architectural Style, urban context, Legibility, Proximity & Transitivity, Clarity, Movement Patterns, Continuity, Spatial Layout (Patterns), Spatial Configuration, Spatial-Temporal, climate protection, and Greenery convenience). Figure 43 shows that the most influential factors among the group were walkability with a rate of (3.00), and street design in addition to spatial characteristics with a rate of (2.62). The most influential secondary factors were each of the inclusiveness: in terms of ease of movement and use of street places and accessibility. Unity is the most appreciated, as the unification of the height and the coordination of the width of the sidewalks and their continuity are among the specifications that appeared clearly in the street space. The same applies to legibility, connectivity of blocks and buildings facades, continuity of the sidewalks, and diversity of uses.

As for the secondary factors, the highest within the group was for each (inclusiveness, unity, legibility, movement patterns, and continuity with the rate (3.00), was the most valued among the group. followed in order of importance; connectivity, spatial layout, and the spatial temporal factors with a rate of (2.75). The lowest percentage factors were the architectural style (1.00), as people in such streets search for comfort, safety, diversity, and local food more than attractive building, attractive activities are more valued than other aspects, Figure 44.

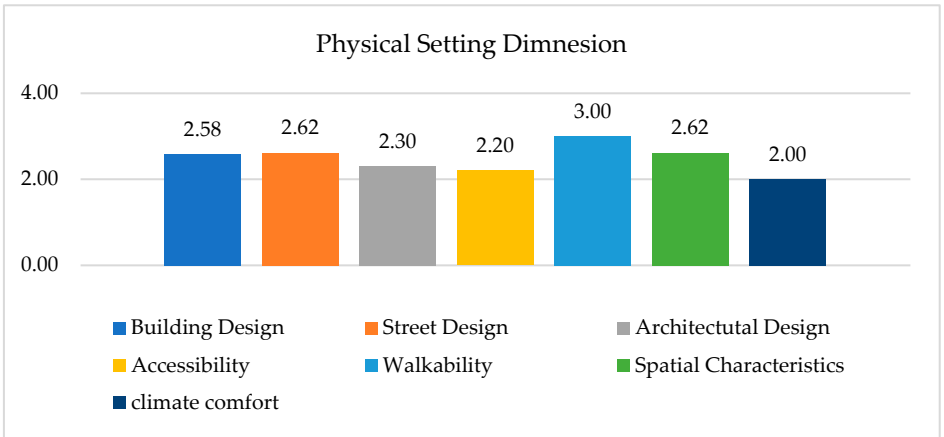

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Figure 43. Physical setting dimensions results

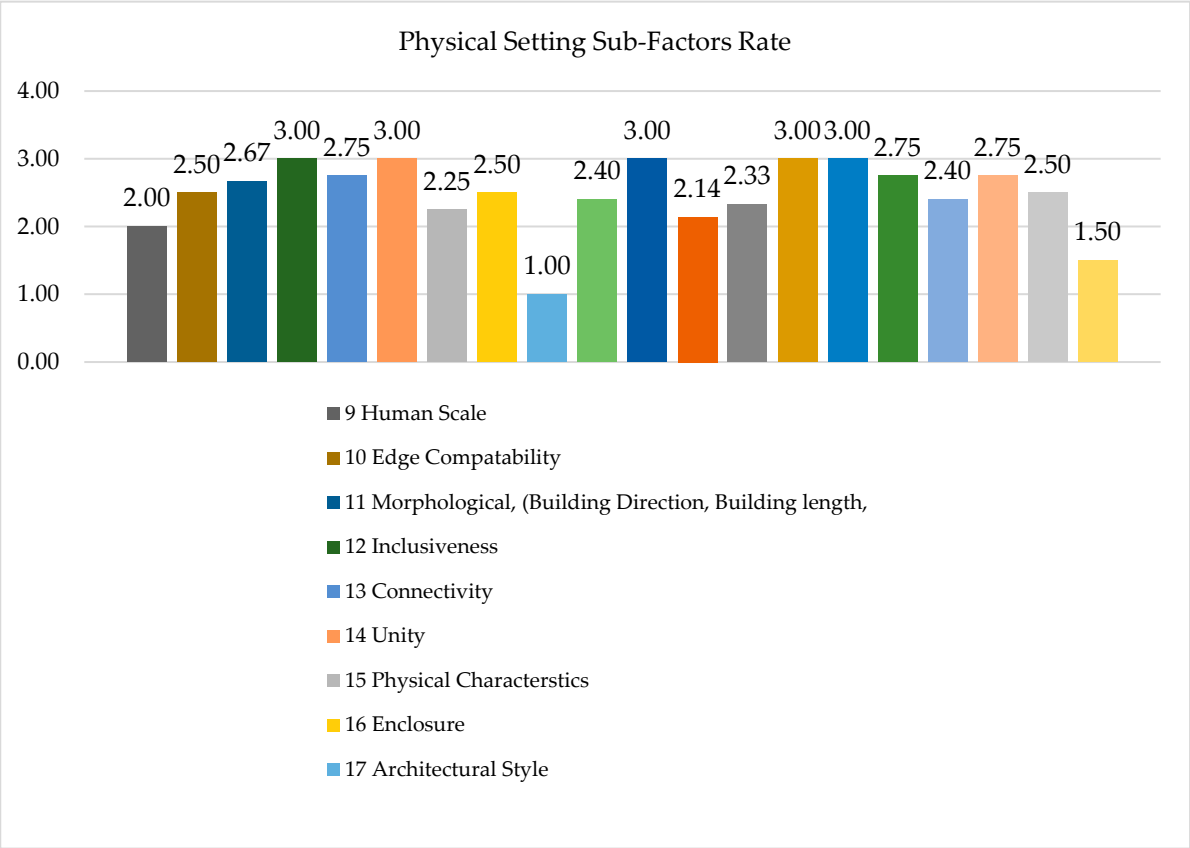

Figure 44. Physical setting sub-factors results

3.2.1.3. Imageability Results

The Imageability dimension included two secondary dimensions, which are images and sense of place. The main factors included: (Memory, Safety, Comfort, and Qualified Street). The latter included secondary factors: (Attractiveness, Locality, and identity, Place Attachment, Separation, Speed, Physical Comfort, Social Comfort, Unified Sense of Place, Social Bonding, and Sense of Belonging). In Figure 45, it is clear that (qualified Street) is the highest among the group in terms of holding a cultural event in the street, the attractiveness of the whole atmosphere, and the type of activities people desire as an entertainment function. The second in ranking is for safety, as too many points helped raise the quality of the place. It is the limited width of the street that did not exceed (20 m), in addition to the consistency between the width and height of the street and the buildings.

Consistency and proportionality relation between street width and building height will encourage the slow movement of cars, in turn, encourage the safe movement of pedestrians. This will increase comfort in the street, [32].

From the comparison of the secondary factors, it was noted that three of the group dominated: place attachment, unified sense of place, and sense of belonging, with a ratio (2.67). while in the second level each of, separation, speed, and social comfort with the rate (2.50). other secondary factors varied between (2.40-2.33), Figure 46. The importance of these secondary factors appears as they explain the human connection to the street and the desire to walk and use the various activities that meet people's needs. In addition, the street meets many cultural events. People support the continuity of social diversity in the street and have some kind of commitment to its spaces.

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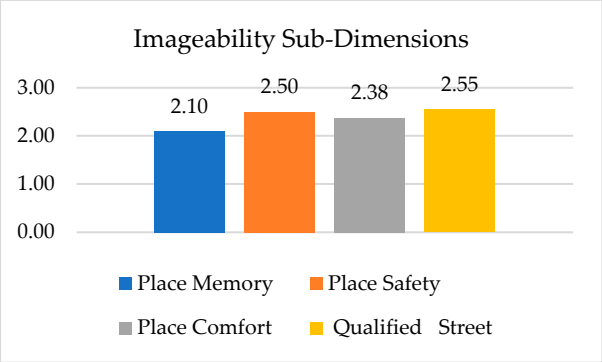

Figure 45. Imageability Dimensions Rate

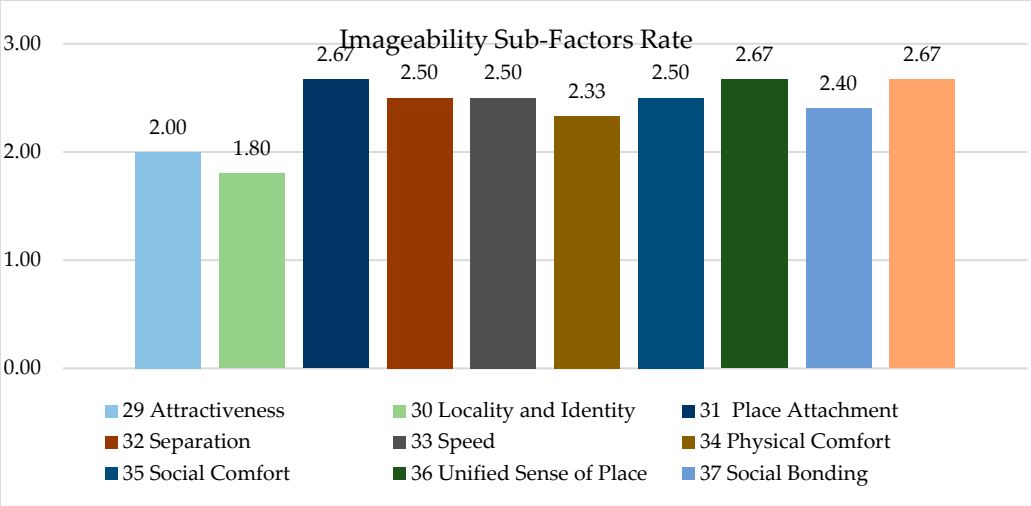

Figure 46. Imageability Sub-Factors Rate.

3.2.2. Questionnaire Results

Building the questionnaire list was based on the following points:

- The questionnaire was directed to architects and urban designers as the research aims to reach systematic strategies and detailed steps for placemaking.
- (100) lists were distributed to architects, only (62) were received, (and 7) contained inconsistent answers (where the researchers added six pairs of verification questions if the answers were different for more than three pairs, the questionnaire will be canceled).
- The Questionnaire consisted of two main parts. The first presents a group of general questions about age and architectural specialization, as well as their opinion on a comparison between seven commercial streets.
- The second part included two main aspects of the research, the placemaking (which included questions regarding the three basic pillars identified by the research, physical setting, sociability, and imageability), as well as questions related to livability, Appendix (C), shows the Questionnaire list.
- The questionnaire list was created in the same way as the basic components of the checklist (the practical framework), and with the same approach, as well as the outputs of the field survey, in sequence, conforming to the dimensions and basic factors.
- The research took this format to easily compare both approaches. By comparing the averages of the results of the questionnaire regarding main and secondary dimensions, and factors, the most influencing dimensions are comfort and safety, along with the economic factor, accessibility, and walkability. Figure 47, Each of the physical dimensions of the street in terms of sidewalks width

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and the availability of furniture, activities, and their diversity, and the formation of a beautiful image, were among the most influential that came in second place. These are regarded as the most important steps in activating livability.

- Among the important things that the research noticed, which appeared more clearly in the pilot study, people were asked about the reason for choosing this commercial street, and the reasons as mentioned previously in this research, land use diversity, variety of restaurants, and plenty of cafeterias, being a comfortable street as the car movement is limited, in addition to the existence of a mall on the street which contains many activities, services, and various shops, in addition to entertainment services for children.
- Females' participant showed their desire to roam the street which is not totally possible to use by women at all times, as it is considered a (male street) more than a female one (although there is no objection to using the female gender), since the quality of food in restaurants and cafeterias and the gathering of young people, especially in soccer watch periods.
- Therefore, this point must be taken into consideration when aiming to develop the street, as most women want to use the street. It is noted that there are a large number of women users of the mall more than men and at different times.

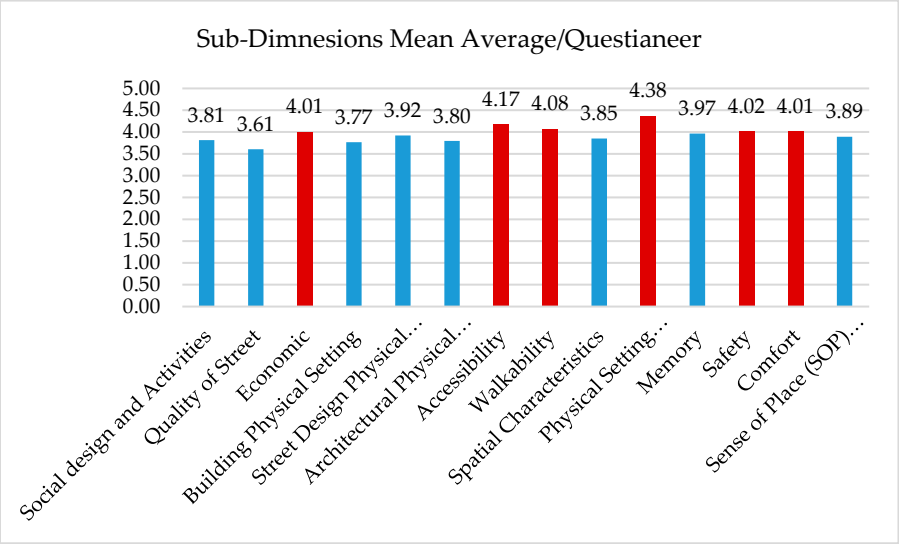

Figure 47. Sub-Dimensions Average (Mean) For the Questionnaire.

The comparison between the two methods was made on two levels:

- The first is to compare the secondary dimensions to find out the differences between the two sides and the importance according to the different points of view.
- The second was at the level of comparison of the three basic dimensions.

In general, the two methods showed consistency and convergence in results, as shown in Table 5.

- And by comparing the averages and despite the close consistency between the results, it is clear that the physical aspect was the highest among the group in both methods, with (3.99) and (4.07) for the questionnaire and the practical framework, followed by the imageability aspect by (3.97) and (3.85).
- And the last dimension in the ranking is for the sociability dimension of (3.81) and (3.50).
- Figures 48 and 49 show that comparing the three basic dimensions of both research methods, the balance between the dimensions is clear and no significant differences appear.

Table 5. Comparing the mean average of both (questionnaire and checklist).

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Sub-Dimensions	Mean-questionnaire.	Dimensions	Dimensions Percentage	Mean-Checklist	Dimensions	Dimensions Percentage
Social design and Activities	3.81	Sociability	3.81	3.50	Sociability	3.68
Quality of Street	3.61			3.40		
Economic	4.01			4.14		
Building Design	3.77	Physical Setting	3.99	4.50	Physical Setting	4.07
Street Design	3.92			3.80		
Architectural Design	3.80			3.70		
Accessibility	4.17			3.70		
Walkability	4.08			4.50		
Spatial Characteristics	3.85					
Environmental	4.38			4.40		
Memory	3.97	Imageability	3.97	3.80	Imageability	3.85
Safety	4.02			3.80		
Comfort	4.01			3.90		
Sense of Place	3.89			3.90		

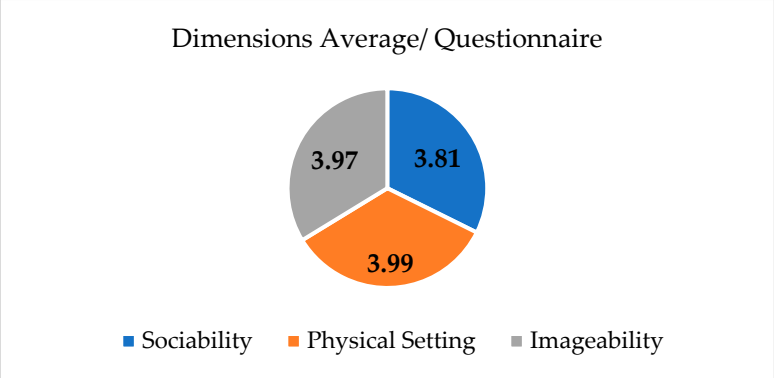

Figure 48. The main dimensions for the questionnaire.

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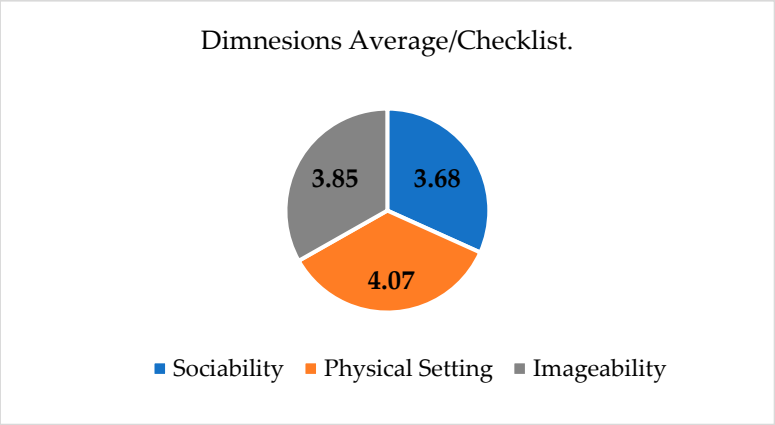

Figure 49. The main dimensions of the questionnaire

As a comparison between the averages of both methods questionnaires and the practical Framework, it can be noted that the results are consistent regarding the secondary dimensions and factors, indicating the importance of the mentioned factors in activating placemaking. By comparing the secondary dimensions of each of the questionnaires and the practical framework, a kind of consistency was found between the dimensions in both methods. In the questionnaire results each of environment, accessibility, walkability, safety, comfort, and economic, were the highest rates among the group. As for the practical framework (checklist), building design, walkability, environment, and economics were the highest rates. And in comparison, both methods praised the importance of economic, walkability, and environmental, which they regarded as the basic aspects of placemaking strategies, having a significant impact on raising street livability.

Safety and comfort, along with a sense of place, are also important dimensions that came in second place in terms of importance (although not much difference), both methods acclaimed the importance of its actual presence within the street space due to its great role in supporting livability, Figure 50. In general, each dimension, whether it appears at a high or medium rate, has a significant impact on the performance of placemaking strategies. And the more accurate the application, the more visible the symbiosis.

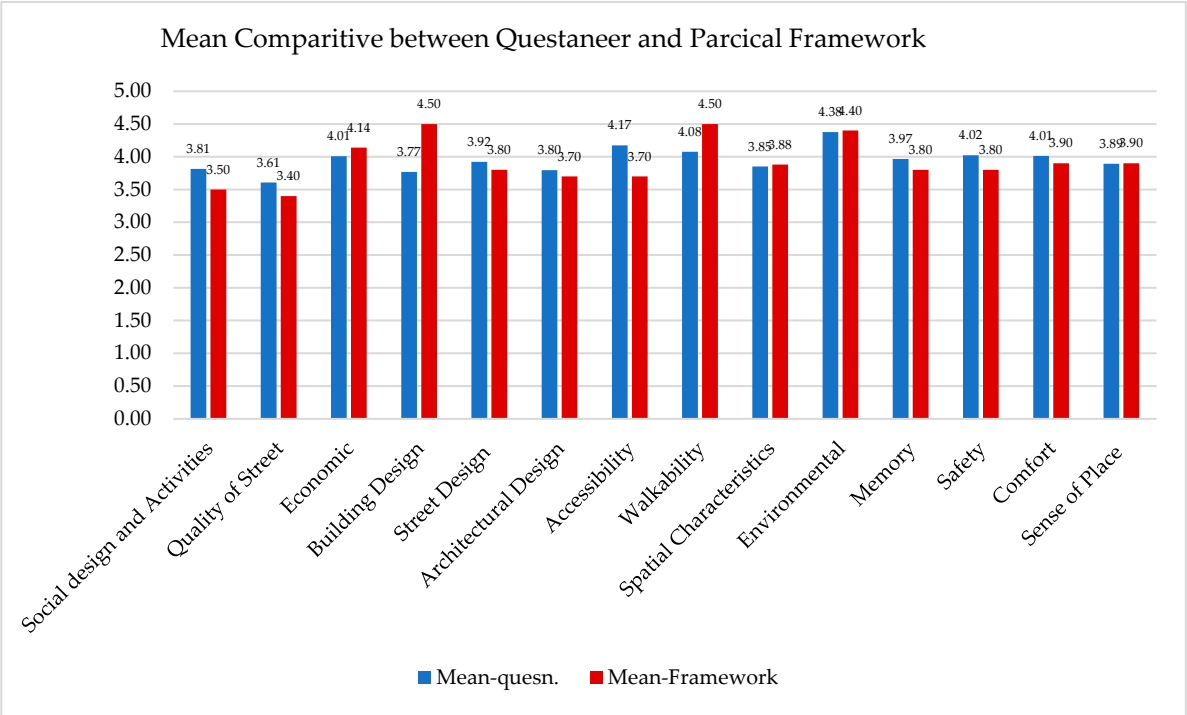

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Figure 50. Sub-Dimensions Comparative

The Practical Framework was evaluated with three stages (excellent, fair, and poor) to stand on the level of Eskan street in its application of the placemaking strategy. By comparing the results, it is noticed that the street applied strategies percentage with excellent results (58.6%). The average percentage with fair results (27.8%), and for the very poor (13.5%). This displays that the street includes some specifications that are in line with what is required for placemaking in terms of inclusiveness in the steps. The street commits many details, design features, and spatial dimensions that are commensurate with the human scale, all of which encourage people to use and return to the street many times. Figure 51. Figure 52 shows the methods and results.

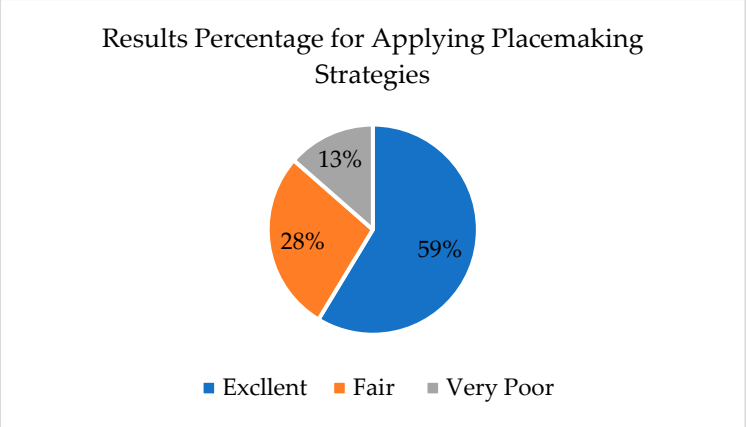

Figure 51. Placemaking Strategies Applied Percentages in Eskan Street

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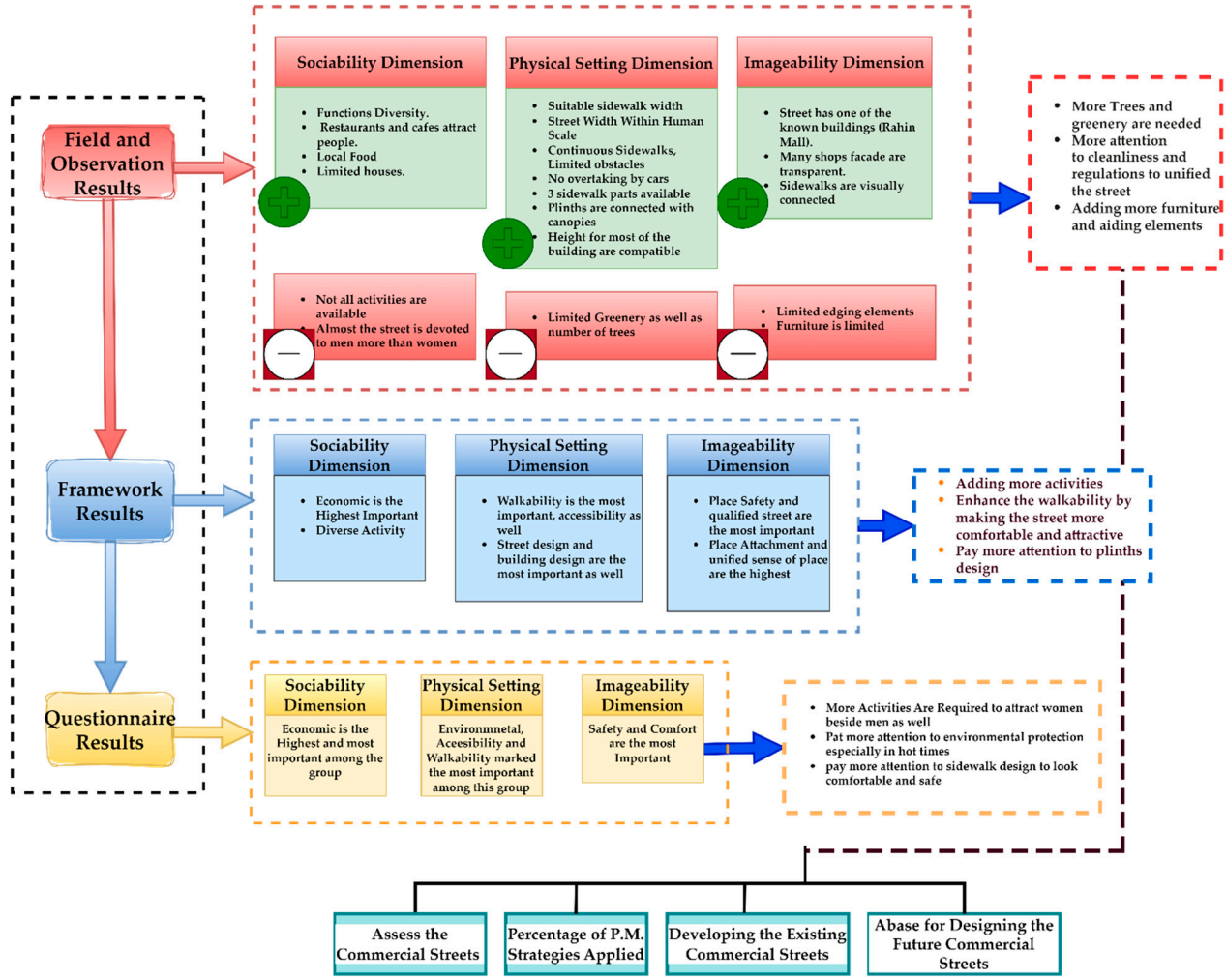

Figure 52. Methods adopted and results.

3.3. Discussion and Conclusion

The process of placemaking steps must be followed by municipalities, architects, and urban designers in cooperation with people as well. It is an inclusive and participatory process, each dimension or factor whether main or secondary has an impact on activating placemaking strategies. By comparing the averages of the dimensions, it is noted that the three dimensions are essential in supporting livability.

The most important dimension in the group is the (physical setting). Among its secondary dimensions with the highest ratio are; (Street Design, Architectural Design, Accessibility, Walkability, Spatial Characteristics, and Environmental). Imageability dimension in the second stage. The higher secondary dimensions are for each safety and comfort. People praised the importance of safety in the street and preventing cars from overtaking sidewalks. Ease of transition between the two sides in addition to comfort when using the street. The last dimension is sociability.

The research presented a theoretical inductive study for several literary references that dealt with the idea of eliciting livability through placemaking strategies. An expanded comprehensive list was extracted to evaluate commercial streets in terms of the level of their placemaking application, down to the most accurate factors with a direct impact on each step. From the Framework, it is possible to determine the shortage in the commercial street and which of P.M. steps are weak or not available, to work on activating and developing the weak steps.

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By comparing the applied models and theorists' opinions regarding the place and its theories, it was found that the place is a phenomenon of space. The basic dimensions of the place were clear and defined by both sides, as many contributions and studies were made that suggest frameworks for the development of the place. Few of these studies are directed towards the development of the commercial street into a livable place, not just a shopping road. Several researchers have discussed an individual and specific aspect of livability effects, without specifying the details of its assessment through possible values. Others did not link placemaking strategies as essential steps to structure livability. Although the previous studies built the basis of the theoretical and practical framework for this research, from which the three basic dimensions were formed. However, the intellectual and evaluative depth of this foundation was in the secondary dimensions and factors that were reconfigured within the practical framework to form a comprehensive checklist, and one of the first studies that assess all design details of the commercial street and the percentage of its application of placemaking strategies. Thus, this study has filled the gap in the field of assessing and developing commercial streets as livable places.

The list was applied to one of the vital commercial streets in Erbil (Eskan Street), and application percentages were determined according to placemaking strategies and which dimension had the strongest impact on the group. The final results showed consistency and balance between the three dimensions. This is what most theorists referred to when they mentioned that making a place is comprehensive.

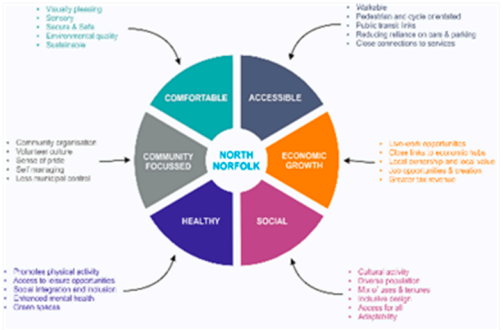
Appendix A

 doi:10.20944/preprints202303.0408.v1

Model No.	Models (Group 1)	Models Dimensions	The Added Dimensions	The Used Dimensions
1		Sociability Uses and Activities Access and Linkages Comfort and Images	Main only	√ PPS Dimensions
2		Sociability Uses and Activities Access and Linkages Comfort Images	Main only	√ PPS Dimensions
3		Sociability Uses and Activities Access and Linkages Comfort and Images	Main only	√ PPS Dimensions
The Shared Dimensions in this Group		The (PPS) Dimensions: Sociability, Uses, and Activities, Access and Linkages, Comfort and Images		
	Dimensions specified by (PPS)		Added Dimensions	

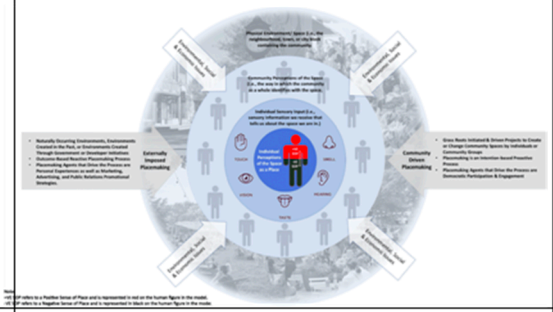
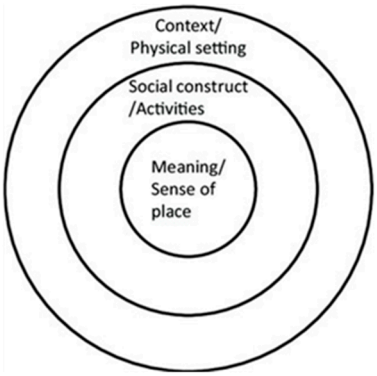
Appendix: A1. First Group Models

 doi:10.20944/preprints202303.0408.v1

Model No.	Models (Group 2)	Models Dimensions	The Added Dimensions	The Used Dimensions
4		Sociability	Main	√ PPS Dimensions
		Uses and Activities		
		Access and Linkages		
		Comfort and Images		
		Site Interpretation	√	✗
		Context and Conservation	√	✗
5		Comfortable	Main	√ PPS Dimensions
		Accessible		
		Social		
		Economic Growth	√	√
		Healthy	√	✗
		Community Focused	√	✗
6		Sociability	Main	√ PPS Dimensions
		Uses and Activities		
		Access and Linkages		
		Comfort and Images		
		Climatic Adaption	√	✗
The Shared Dimensions in this Group		The (PPS) Dimensions: Sociability, Uses, and Activities, Access and Linkages, Comfort and Images		
	Dimensions specified by (PPS)		Added Dimensions	

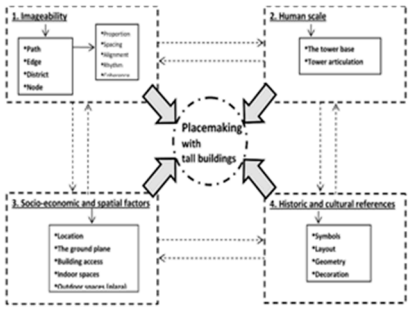
Appendix: A2. Second Group Models

 doi:10.20944/preprints202303.0408.v1

Model No.	Models (Group 3)	Models Dimensions	The Added Dimensions	The Used Dimensions
7		Social	Main	√
		Environmental	√	√
		Economic Issues	√	√
		Sense of Place	√	√
8		Social	Main	√ PPS Dimensions
		Activities		
		Physical Setting		
		Context	√	√
		Meaning	√	✗
		Sense of Place	√	√
9		Social and Community	Main	√
		Commercial	√	√
		Environmental and Sustainability Economic	√ √	✗ √
The Shared Dimensions in this Group		The (PPS) Dimensions: Sociability, Environment, Economic Issues, Sense of Place		
	Dimensions specified by (PPS)		Added Dimensions	

Appendix: A3. Third Group Models

 doi:10.20944/preprints202303.0408.v1

Model No.	Models (Group 4)	Models Dimensions		The Added Dimensions	The Used Dimensions
10		Site	Efficiency	√	√
			Distinctiveness	√	✗
			Layout	√	✗
			Public Realm	√	✗
		Neighborhood Design	Context	√	✗
			Connections	√	√
			Inclusivity	√	√
			Variety	√	√
		Home	Adaptability	√	√
			Privacy and Amenity	√	✗
			Parking	√	√
			Detailed Design	√	√
11		Imageability		Main	√
		Human Scale		√	√
		Socio-Economic and Spatial Factors		√	√ (Individual)
		Historic and Cultural Reference		√	✗
12		Design		√	√
		Promotion		√	✗
		Organization		√	✗
		Economic Vitality		√	√
13		Open Space and Landscape		√	✗
		Movement		Main	√
		Buildings		√	√
The Shared Dimensions in this Group		The (PPS) Dimensions: Sociability, Economic and Commercial, Design, Movement			
	Dimensions specified by (PPS)		Added Dimensions		

Appendix: A4. Fourth Group Models

Placemaking Models Review, (P.M. Groups). Source: Author

Appendix B

 doi:10.20944/preprints202303.0408.v1

Sociability Dimension (Sociability and Diverse Activity Dimension), (1)

Factors	Sub-Factors		possible value	Selections	Rate
Social design and Activities, (1-1)	Density	1	pedestrian and vehicle flow and density	High	Excellent
				moderate	Fair
				Low	Very Poor
		2	time functions activation	both times are activated	Excellent
				at night more than a day	Fair
				A specific time of a day	Very Poor
	Diversity	3	people meeting	available along street spaces	Excellent
				available in different locations	Fair
				not available	Very Poor
		4	concentration of activities	along the frontage side	Excellent
				segmented but still enhancing passing	Fair
				segmented and doesn't enhance passing by	Very Poor
		5	functions in Street	Suitable for all ages and divers able	Excellent
				Suitable for men only,	Fair
				Not suitable for children, and limited diversity	Very Poor
		6	availability	along the streetscape	Excellent
				few parts of the street (gardens)	Fair
				not available	Very Poor
		7	Restaurants and café availability	most are cafes and restaurants	Excellent
				in parts of the street (some only)	Fair
				café or restaurants are very rare	Very Poor
		8	different shops types	diverse functions (huge diversity)	Excellent
				Moderate Diversity	Fair
				limited functions diversity	Very Poor
	Functionality	9	street generates a sense of safety	yes	Excellent
				somehow	Fair
				No	Very Poor
		10	street suitability for shopping	convenient, identified as Crowded Street	Excellent
				average crowding	Fair
				inconvenient, Bare Street	Very Poor
		11	street functions and gathering spaces	available with local gathering places	Excellent
				monotonous not divers able	Fair
				functions with no gathering places	Very Poor
		12		available at most parts of the street	Excellent

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			function facilitates communication and interaction	few not available	Fair Very Poor
Quality of Street (1-2)	Visibility	1	commercial street accessibility within the city	Clear and accessible	Excellent
				Clear access, but crowded	Fair
				Complicated access	Very Poor
		2	Formal Crossing Points	Available and clear for Pedestrian	Excellent
				available but no indicator for it or maintained	Fair
				No available crossing points	Very Poor
		3	sidewalks relation	connected along the street	Excellent
				separated into segments but still connected visually	Fair
				not connected and segmented	Very Poor
		4	Façade Transparency (in & out Connection)	Excellent Connection and Clear	Excellent
				Some parts only are Connected	Fair
				weak connection	Very Poor
		5	street visibility	visible, clear gives a whole approach	Excellent
				visible with some obstacles	Fair
				weak visibility	Very Poor
	Furniture Availability & Maintenance	6	street furniture such as (seating, and rubbish bins)	available and in a good condition	Excellent
				very limited or not functioning well	Fair
				not available	Very Poor
		7	Street and sidewalks maintenance and street, as well cleanness	Well-maintained and clean	Excellent
				weak maintained but clean	Fair
				not maintained nor clean	Very Poor
		8	Majority of shop lights, and Street lighting	Compatible with buildings and streets, both are available	Excellent
				Only shops lighting is active	Fair
				No integration with street lighting, nor available	Very Poor
		9	Movable shops and vendors	attached to the shop's elevation	Excellent
				detached added to the façade	Fair
				rare or not available	Very Poor
	Satisfaction	10	Street edges within sidewalks	definite and clear	Excellent
				Some parts of the street have certain edges	Fair
				Blurred and undefined edges	Very Poor
		11	Green Availability	more than (50%) of the street and Sidewalks area	Excellent

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				(25%-50%) from the street area	Fair
				(2%-25%) not available or very limited	Very Poor
			Crossing between	clear and available	Excellent
		12		available but not clear with no signs	Fair
				not available	Very Poor
Qualified Commercial Street (Economic), (1-3)	Economic Satisfaction		Time Users Expand	One Hour	Excellent
		1		Two Hours	Fair
				Less than half an hour	Very Poor
			Local Retails	Available Along Street	Excellent
		2		Some Retail with Local Shops	Fair
				No local Shops are Available	Very Poor
	Adaptability		informal shopping for more people attraction	available in different parts of the street	Excellent
		3		mixed with other activities	Fair
				not available	Very Poor
			A mixture of formal and informal shopping	both are available	Excellent
		4		only formal	Fair
				informal only	Very Poor
			Moveable shops and vendors	available	Excellent
		5		in a few shops only	Fair
				not available	Very Poor

Physical Setting Dimension, (2)

Sub-Dimension	Factors	Sub-Factors		possible value	Selections	Rate
Architectural and Design (2-1)	Building Design, (2-1-1)	Human Scale	1	Building Scale	compatible with human Scale	Excellent
					in some parts of the street only	Fair
					not compatible with human scale	Very Poor
			2	Street proportion, (width to buildings height)	1:1 relation	Excellent
					Width >Height	Fair
					Width <Height	Very Poor
			3	Rows of Trees	Available along the streetscape and the middle part	Excellent
					in the middle part only	Fair
					very rare or No Rows of Trees	Very Poor
			4		5-10 entrances	Excellent

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Edge Compatibility		Number of Entrances at each Segment for each (100) m or each segment	4-2 entrances	Fair
			<2 entrances	Very Poor
	5	Building As a façade	Forms one Connected Surface	Excellent
			Connected with Different Heights	Fair
			Segmented not Connected	Very Poor
Morphological, (Building Direction, Building length,	6	shops entrances direction to sidewalks	direct connection to the sidewalk	Excellent
			through corridor	Fair
			few steps in front mostly	Very Poor
	7	building Height	>= 2 stories	Excellent
			4-6 Stories	Fair
			more than 7	Very Poor
	8	Building's direction with the street	parallel with the street	Excellent
			perpendicular	Fair
			diagonal	Very Poor
Inclusiveness	9	places are useable and accessible	easy access and useable	Excellent
			moderate accessibility and useability	Fair
			difficult to access or use	Very Poor
	10	Activates That happened, (sitting, gathering, standing & talking)	Various and enjoyable	Excellent
			in some parts of the street only	Fair
			very limited or not available	Very Poor
	11	Safe and Secure Environment	easy to walk and move	Excellent
			some cars pass on the sidewalk, not too much safe	Fair
			many cars pass on sidewalks	Very Poor
	12	Temporary Elements added to Permanent Building	Available in Restaurants Cafes and other shops (mostly)	Excellent
			in some clothing shops and markets	Fair
			no added elements or very limited	Very Poor

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Architectural and Design (2-1)	Street Design, (2-1-2)	Connectivity	1	Street connection With Building	directly connected (no barriers) with wide spaces — Excellent
					Barriers available (trees and furniture) — Fair
					weak connection, or very limited space — Very Poor
			2	building connections with sidewalks	connected through the Frontage zone — Excellent
					connected through the pedestrian zone — Fair
					connected through the furnishing zone — Very Poor
			3	parts of the street	Seen with no Obstacles or limited — Excellent
					Various obstacles block the view — Fair
					obstacles and building shape harms pedestrian — Very Poor
			4	building linking together	Continuously connected — Excellent
					partial bonding — Fair
					separated or segmented — Very Poor
		Unity	5	Height Unity	Same Building Height (almost) — Excellent
					Different Heights, — Fair
					some buildings extend the limited diversity — Very Poor
			6	Materials and Colors	Same for all Building — Excellent
					groups have the same materials — Fair
					Different Materials and colors — Very Poor
			7	Building Elements	Aligned to the main axis — Excellent
					Different alignment axis — Fair
					No definite Alignment — Very Poor
		Physical Characteristics	8	The presence of special needs equipment in the street	available within the street design — Excellent
					available but not standardized — Fair
					not available — Very Poor
			9	Number of street lanes	only one — Excellent

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					two lanes	Fair
					more than two	Very Poor
				sidewalks width compatible for walking	>=5 meters, or accommodate 4 persons and more	Excellent
			10		2-4 meters, or accommodates 2-4 persons	Fair
					<2 meters, or less than 2 persons	Very Poor
				Sidewalks contain three design parts, (Furnishing zone, Pedestrian zone, and Frontage Zone)	contains all the three main zones	Excellent
			11		contains both Furnishing and Pedestrian zone or frontage with pedestrian-only	Fair
					sidewalk in some parts of the street disappeared	Very Poor
		Enclosure		Height & Width Relation (between Street Width and Building Height)	vertical elements are proportionately related to the width (somehow compatible)	Excellent
			12		The height of some buildings is not compatible with the most heights	Fair
					Width more than Height	Very Poor
				Building Elevation	connected & continues	Excellent
			13		segmented into short groups	Fair
					Segmented with dead spaces	Very Poor
Architectural and Design (2-1)	Architectural Design, (2-1-3)	Architectural Style	1	Buildings architectural features	most own architectural features	Excellent
					some only	Fair
					No Architectural Feature	Very Poor
				Shops Arch. Theme	function and Arch. Theme matches	Excellent
			2		Function and Arch. The approach appears in some shops	Fair
					No Matching Theme	Very Poor
		Urban Context	3	Buildings Integration with the urban context	Connects to physical surroundings	Excellent
					Some Parts only	Fair
					Contrasted	Very Poor
				Street patterns	Accommodate Both	Excellent
			4		Accommodates Pedestrian Movement more	Fair

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				Accommodates Cars movement more than Pedestrian Movement	Very Poor
			Building Form	reflects the function	Excellent
		5		reflects Different Function	Fair
				No Reflection	Very Poor
			network of routes and spaces	Clear Connected No Dead Spaces	Excellent
		6		fragmented without dead spaces	Fair
				Segmented with Dead Spaces	Very Poor
			Building Respond to Site	Positively responds to orientation and walking pedestrians, (The emergence and receding of building blocks) with shading	Excellent
		7		moderate response	Fair
				weak response to the site	Very Poor
			Design inclusiveness of street buildings	active, safe, and accommodates different cultural backgrounds, affordable	Excellent
		8		moderate	Fair
				very low	Very Poor
			Building Height	almost same height	Excellent
	Legibility	9		Few differences	Fair
				Big differences in height	Very Poor
			Clear Approach	Buildings Appear As one continues Mass	Excellent
		10		Buildings are Fragmented, Still Connected Visually	Fair
				Fragmented no connection	Very Poor
			Car movement and Parking accessibility	accessible and connected	Excellent
		1		accessible but far	Fair
				not accessible, (no available parking)	Very Poor
Access and Linkages, (2-2)	Accessibility, (2-2-1)		Affordability of transport options	Private Cars and Public Transportation	Excellent
		2		Private Cars with limited public	Fair
				Private Cars only	Very Poor
			Moving From Parking Lots to Sidewalk Place	Easy Directly on street Edges and parking lots	Excellent
		3			

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				On Parking Lots only, clear and Close	Fair
				Faraway or Not Available	Very Poor
		4	The transition between the Two sides	available, clear, and well designed	Excellent
				available but not clear	Fair
				not available	Very Poor
		5	Transition Between Sidewalks segments	Walking easily and connected	Excellent
				connected with some obstacles	Fair
				very bad connection and not easy to transmit	Very Poor
		6	cyclists and people with mobility handicaps spaces	Available, well maintained	Excellent
				Available not Functioning Well	Fair
				not available	Very Poor
		7	Movement Separation Between Vehicles and Pedestrians	Separated by Different Levels and rows of trees and different pavement materials	Excellent
				Different levels only	Fair
				Weak Separation	Very Poor
	Clarity	8	Access to Shops, Accessible to eat and sit spaces	Readable & connected, correspond People Need	Excellent
				Accessed With some Obstacles	Fair
				not clear nor visible, (limited)	Very Poor
		9	Movement Between Shops	Easy to Read by Pedestrians	Excellent
				Obstacles in Movements Way	Fair
				Not Easy to Recognize	Very Poor
		10	identified access to formal shopping	obvious	Excellent
				obvious with some obstacles	Fair
				very weak access	Very Poor

Movement Patterns	1	Street Activities	Divers can Attract People to move	Excellent
			Divers, but sidewalk doesn't Encourage Walking	Fair
			Not diverse nor Easy to Walk	Very Poor
	2	pedestrian movement	Constant movement along the street	Excellent
			Intermittent, only in some places	Fair
			Low pedestrian movement	Very Poor
	3	The link between urban form and commercial streets sidewalks	legible and accessible	Excellent
			Accessed with Some Barriers	Fair
			Complicated not easy to be access	Very Poor

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Continuity Enhancing	4	Plinths edges Enhance Walking and Staying	Continuous Edge conforms to the human scale	Excellent
			Connected, With some Barriers	Fair
			Segmented, not compatible with human scale or activated functions	Very Poor
	5	Obstacles in sidewalks	free from obstacles, Continuous View	Excellent
			In some parts only	Fair
			Generator, old structures, or street lighting features distributed along the pedestrian zone	Very Poor
	6	Aesthetically Pleasing Street	Functional and architectural diversity create an aesthetic approach	Excellent
			Diversity of architectural features and elements only	Fair
			It's not aesthetically pleasing	Very Poor
	7	Frontage Zone	Well Designed Connected with Mixed Activities	Excellent
			some parts are designed	Fair
			weak design nor connected	Very Poor

Access and Linkages, (2-2)	Spatial Characteristics, (2-2-3)	Spatial Layout (Patterns)	1	Parking types and their proximity to the commercial street	different parking types (on edges, and close parking lots)	Excellent
					on edges only and designed within the street	Fair
					on edges	Very Poor
			2	the delineate Street	pavement materials, guideposts, and raised pavement markers	Excellent
					pavement materials Differ	Fair
					only raised pavement markers	Very Poor
			3	Integration Inside & Outside Shops	Open to the outside and connected	Excellent
					Not completely separated nor connected	Fair
					No Connection	Very Poor
			4	Sidewalk Hierarchy	A clear transition between street, walkway, and building	Excellent
					No furnishing zone separating street space and building or weak	Fair
					both the pedestrian zone and furnishing zone are in a weak appearance	Very Poor

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			available in the furnishing zone	Excellent
	5	location of the Resting places in space	available in the pedestrian zone	Fair
			not available or very limited	Very Poor
	6	Built Environment & Human Behavior	Meets with Pedestrian movement and needs	Excellent
			Suitable in terms of activities variety, not suitable for movement	Fair
			Does not include activities variety and is not suitable for Walking	Very Poor
Spatial Configuration	7	The demarcation between public and private zones	Clear and visible with the availability of street furniture	Excellent
			demarcation available but both are at the same level	Fair
			not clear nor visible	Very Poor
	8	Landscape Area to Street Area	25%-30%	Excellent
			15%-5%	Fair
			5% or very limited	Very Poor
	9	Landscape Type	Mixed of Trees, Grass & Flowerpots	Excellent
			Only Trees	Fair
			No Greenery	Very Poor
	10	Time Pedestrians Spend on Street	<=3 Hours	Excellent
			1-2 Hours	Fair
			>1 Hour	Very Poor
	11	Schematic approaches to reduce speed	Wide the sidewalks, with different levels and pavement.	Excellent
			Different Levels and pavements.	Fair
			no approaches to reduce speed	Very Poor
Spatial-Temporal	12	extending activities at night time	extended to 12:00 AM	Excellent
			<12:00 AM	Fair
			Max till 10:00 PM	Very Poor
	13	Functions Diversity	more people due to function diversity, more time	Excellent
			more people but not diverse functions, less time	Fair
			fewer people fewer divers, less time expending	Very Poor
Environmental Dimension (2 climate comfort	1	Shading on Sidewalks, & availability of canopies	available as a part of building and street design	Excellent
Climate protection			very limited attachment to building façade	Fair

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				No shading devices	Very Poor
		2	Sunlight in the Street (according to sun direction)	have good access to its spaces, both sides	Excellent
				one is good	Fair
				both weak	Very Poor
	Greenery Convenience	3	Green Spaces	Part of Street Design	Excellent
				Parks on Sides of Street	Fair
				No Green Spaces	Very Poor
		4	Sidewalks and street vegetation	Available in the Middle part of Sidewalks	Excellent
				in the middle only	Fair
				very limited greenery	Very Poor

Imageability Dimension, (3)

Sub-Dimension	Factors	Sub-Factors	possible value		Selections	Rate
Images (3-1)	Place Memory	Attractiveness	1	Green availability on streets and sidewalks	Available & well maintained	Excellent
					In (the middle) parts mostly	Fair
					Not available or very limited	Very Poor
			2	Street Image	Creates a positive image, comfortable, and attractive	Excellent
					Neutral Effects	Fair
					Creates a Negative image, not comfortable	Very Poor
		Locality and Identity	3	traditional and local features	Available	Excellent
					Contemporary Features with Traditional	Fair
					No Traditional Features	Very Poor
			4	historical elements	available and clear	Excellent
					Mixed with contemporary elements	Fair
					No Historical Elements	Very Poor
			5	local activities	Available and diverse	Excellent
					Few only	Fair
					No local activities	Very Poor
			6		Generates a meaning	Excellent

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			building styles and approaches	in some limited buildings	Fair
				I do not bear the meaning and sense of perception	Very Poor
		7	The Street Known	Owns a distinctive architectural character	Excellent
				Various services and activities that people need	Fair
				have distinctive landmarks or locality	Very Poor
	Place Attachment	8	Place and Person Relation	Friendly & Familiar	Excellent
				Moderate Familiarity	Fair
				weak Connection	Very Poor
		9	People in Streetscape	Familiar To walk and sit	Excellent
				walking only, no sitting available	Fair
				Not Familiar to sit or walk	Very Poor
		10	Street Environment	Reflects the People's Needs	Excellent
				Some Needs Only	Fair
				Doesn't Reflects all Peoples's Needs	Very Poor
Images (3-1)	Place Safety	Separation	1	Kerbs (edging stone or pavement raised path), bollards, Guard Railing	available	Excellent
					available but difficult to realize	Fair
					not available	Very Poor
			2	Streets and sidewalks isolated through	using levels, pavement materials, trees, and furniture	Excellent
					levels only	Fair
					weak isolation	Very Poor
			3	parking spaces	Available/ directly attached to sidewalks	Excellent
					Available, parking lots <1 km distance Separated, and attached parking	Fair
					not available	Very Poor
			4	Crossing Points	Available at a specific distance as well as clear and designed	Excellent

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				Available but not maintained nor designed	Fair
				available but barely can view	Very Poor
	Speed	5	Car Speed	35-50 km/h	Excellent
				50-70 km/h	Fair
				<70 km/h	Very Poor
		6	Car Movement	is Restricted	Excellent
				In some parts of the Street	Fair
				Not Controlled	Very Poor
Place Comfort (3-3)	Physical Comfort	1	pedestrian fencing, Trees as Physical Separation	Rows of trees and Fencing lines or other furniture, (benches or trash bin)	Excellent
				Trees only	Fair
				not available, or limited	Very Poor
		2	pedestrian traffic Light in street	available at the end edges of the street	Excellent
				available at the center of the street	Fair
				not available	Very Poor
		3	Sidewalks Pavement	accommodate walking and different activities	Excellent
				accommodate walking, not maintained	Fair
				Doesn't encourage walking	Very Poor
		4	Parking Integration	integrated, as a part of street design	Excellent
				Integrated, on sides only	Fair
				parking is not designed	Very Poor
		5	Frontage Area	Well Designed with specific Area	Excellent
				Not Clear in some Parts moderate designed	Fair
				Very Poor Designed part	Very Poor
		6	Sidewalk and seating areas	part of sidewalk furniture and cafes and restaurants	Excellent
				part of cafes and restaurants only	Fair

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				not available	Very Poor
		7	Sense of familiarity	With People and Functions	Excellent
				Moderate familiarity	Fair
				Not Familiar	Very Poor
	Social Comfort	8	Land use and Function Variety, Density	Mixed Activates, for all people, High Density	Excellent
				Limited Activities, for all People, but high Density	Fair
				Few Activities with low Density	Very Poor
Sense of Place (3-2)	Linked to Street, Identity, Qualified Street	Unified Sense of Place	1	Cultural events available in street space or on sidewalks	always available	Excellent
					some buildings or functions in street held a cultural event	Fair
					No events are available	Very Poor
			2	Street Atmosphere	attractive, accessible, and walkable	Excellent
					accessible, and walkable but not attractive	Fair
					Not Attractive and not easy to move through	Very Poor
			3	Clear Direction in street	Distinct landmarks, with diverse activities	Excellent
					Landmarks Available, With limited activities	Fair
					no clear Landmarks	Very Poor
		Social Bonding	1	Local activities and Amenities availability	Local Activities available and Values	Excellent
					mixed values, local and contemporary	Fair
					No Specific Local Value	Very Poor
			2	Possibility to Sit and Eat	Available (Public & Private)	Excellent
					Available but as a part of Restaurants and Cafes	Fair
					Not Available	Very Poor

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	3	Street Design accommodation for Movement	Accommodate Moderate Movement	Excellent
			Compatible with moderate movement, but a weak connection between the two sides	Fair
			Compatible with fast movement and weak connection with the sides	Very Poor
	4	Safe Mobility Between Sidewalks and Street	Definite Edges, Different Levels, and differences in pavement materials	Excellent
			Parking on edges or easy-to-reach and clear	Fair
			Weak mobility	Very Poor
	5	Architectural Language and Style	It includes a distinctive and unified language on most the street buildings	Excellent
			Some street buildings have a distinctive language	Fair
			It does not include any distinct language	Very Poor
Sense of Belonging	1	Building Street Connection	Support Street as a Place	Excellent
			Relation is Monotonous	Fair
			Create Negative Spaces, not connected to people	Very Poor
	2	People Connection with Place Need.	Activities Meet All People's needs	Excellent
			Some Activities (somehow meet people's needs)	Fair
			Street activities don't meet all people's needs	Very Poor
	3	People's Commitment towards the Street	Yes	Excellent
			Few People Only	Fair
			No	Very Poor

Appendix B1. The Placemaking Practical Framework (Checklist). Source Author

Appendix C

Questionnaire

Ministry of Higher Education and Scientific Research
Salahaddin University
College of Engineering

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Architectural Department

Research Title

Placemaking Strategies Enhancing the Livability of Commercial Streets in Erbil City

Dear Sir/Madam

This is a pure academic Thesis work to cover part of the requirements for obtaining a Ph.D. in Architectural Engineering at Salahalddin University, College of Engineering, Architectural Department. The study aims to assess Livability in commercial streets by activating placemaking steps, as well as how it will affect pedestrian's life in the street.

This questionnaire includes a set of questions that will be answered by Architects, Architectural Academics (Master's and Ph.D. holders), to identify the best design strategies for commercial streets regarding enhancing livability. Please read each question and each choice carefully and give an appropriate answer according to your experience and understanding of the topic. Bear in mind that, this information is purely academic.

Your cooperation and participation are very important in supporting the research and its results. Thank you for your valuable help.

Ph.D. Student; Ansam Saleh Al Hadidi

Dr. Saalahaddin Yasin

Email: Ansam.ali@su.edu.krd

Mobile: 07706518931

0=not selected

1=selected

A.	**General Information**			
A1. Academic achievement		**A1.1. Bachelor**	**A1.2 M.Sc. Degree**	**A1.3Ph.D. Degree**
A2 If you are specialized in Architecture, please specify your specialty				
A3 Age		**A3.1 24-39**	**A3.2 40-60**	**A3.3 60 and above**

B.	**This section is about checking the better street from your point of view**

0=not selected 1=selected	0=no 1=yes

- **Please tick one box or more after choosing the better street from your point of view.**

B1. Which Street/Streets from the following commercial streets you are familiar with? You can choose more than, one if you want.

Baxtiary	Eskan	Brayaty	Shorsh	MallaAfandy	Adalla	Runaky
B.1.1	B.1.2	B.1.3	B.1.4	B.1.5	B.1.6	B.1.7

B2. Select the reason/s behind your selection.

B2.1	is it accessible?	Yes	No
B2.2	good cafes and restaurants?	Yes	No
B2.3	Clothing shops (brands)?	Yes	No
B2.4	Availability of local shops?	Yes	No
B2.5	Mixed activities for all people	Yes	No
B2.6	The street has a beautiful environment	Yes	No
B2.7	Others? Please identify		

0=no 1=yes	0=not selected 1=selected

B3. Which Streets/Streets from the following are more livable from your point of view? You can choose more than one, if you want.

Baxtiary	Eskan	Brayaty	Shorsh	MallaAfandy	Adalla	Runaky
B3.1	B3.2	B3.3	B3.4	B3.5	B3.6	B3.7

B4. Select the reason/s behind your selection.

B4.1	is it accessible?	Yes	No
B4.2	good cafes and restaurants?	Yes	No
B4.3	Clothing shops (brands)?	Yes	No
B.4.4	Availability of local shops?	Yes	No
B4.5	Mixed activities for all people	Yes	No
B4.6	The street has a beautiful environment	Yes	No
B4.7	Others? Please identify		

- **Please tick the suitable answer from your point of view.**

0=not selected 1=selected

B5. Transparent shop fronts (show the insides of the shop), effects on:

B5.1	Spending more time on shop façade
B5.2	Attracting people to walk
B5.3	Doesn't attract me at all

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B6. When the number of building entrances increases:	
B6.1	It will attract people as they have more options to look, stay, and walk
B6.2	Doesn't affect them
B6.3	Confuses them

B7. The existing furniture serves its purpose on the selected streets:	
B7.1	Yes, it is available and well maintained
B7.2	Available but not functioning well
B7.3	Very limited furniture or not available

B8. The lighting in the current commercial streets sufficient, (at night):	
B8.1	Very sufficient in most street parts
B8.2	In some parts only, others are dark
B8.3	Not Sufficient at all

B9. Local activities such as, (Groceries, barbers, sewing shops, Fish and chicken, Local restaurants, and cafes) increase the livability of commercial streets:	
B9.1	Yes, very much
B9.2	Some of these activities will affect street cleanness but are still needed
B9.3	No, not important

Totally Disagree=1	**Disagree=2**	**Neutral=3**	**Agree=4**	**Totally Agree=5**

C. **Placemaking in Commercial Streets**

C1-Sociability Dimension

	No.	**Sociability parameters**	**Totally Disagree**	**Disagree**	**Neutral**	**Agree**	**Totally Agree**
C1-1: Social design and Activities	**C1.1.1**	Commercial streets are a good place to meet people.					
	C1.1.2	People's density increases when commercial streets hold diverse activities and are well distributed.					
	C1.1.3	Active streets include activities suitable for all ages and genders.					
	C1.1.4	Placing cafes and restaurant in street enhance people's interaction.					

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	C1.1.5	The availability of informal shops makes streets more useable.					
C1-2: Quality of Street	**C1.2.1**	People are attracted to visibly connected sidewalks and easily cleared building parts.					
	C1.2.2	People feel captivated by a street as inside and outside shops are visually connected and transparent.					
	C1.2.3	People's interaction with the storefronts increases as the number of entrances in each segment increases.					
	C1.2.4	Street furniture availability on sidewalks improves staying.					
	C1.25	Usually, people use and buy from clean and well-maintained streets.					
C1-3: Qualified Commercial Street (Economic)	**C1.3.1**	Lighting in streets and storefronts affects positively staying and use at night.					
	C1.3.2	Green spaces and trees, enhance staying more in street.					
	C1.3.3	Functions like bakeries and cloth shops activate the street.					
	C1.3.4	Extended activities at night effects positively the use of the streets.					
	C1.3.5	People purchase from streets with mixed uses more than others.					
	C1.3.6	Local activities enhance expending more time.					
	C1.3.7	Street adaptability for many different activities makes it an active and sociable place.					

C2-Physical Setting Dimension

items		**No.**	**C2-1: Physical Setting parameters (Architectural and Design)**	**Totally Disagree**	**Disagree**	**Neutral**	**Agree**	**Totally Agree**
C2-1: Architectural and Design	**C2-1-1: Building Physical Setting**	**C2.1.1.1**	When Building height and street width are compatible with human scale, it will create a positive enclosure.					
		C2.1.1.2	Clear delineation of building edges with sidewalks enhances pedestrian walking.					
		C2.1.1.3	Direct building entrances to sidewalks are easier to use and ease the buying process.					
		C2.1.1.4	Buildings with the same heights on both sides give a unified atmosphere and attract people.					

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		C2.1.1.5	The extra projection of the building block conflicts with street inclusiveness.				
C2-1-2: Street Design Physical Setting		**C2.1.2.1**	The number of street lanes affects connecting the two sides.				
		C2.1.2.2	Physically and visually connection of the two sides eases movement and interaction.				
		C2.1.2.3	Special needs elements and furniture increase street useability.				
		C2.1.2.4	Street sidewalks are attractive when their width accommodates 4 persons.				
		C2.1.2.5	The street is considered legible when its sidewalks contain three design parts, (Furnishing, Pedestrian, and Frontage Zone).				
		C2.1.2.6	An enclosure appears when the height of the buildings on both sides with the street width forms (1:1) proportion.				
C2-1-3: Architectural Physical setting		**C2.1.3.1**	diverse architectural styles and shop themes attract shoppers.				
		C2.1.3.2	building a connection with the urban context improves its useability.				
		C2.1.3.3	If the building materials and colors are unified, it will give a clear appearance.				
		C2.1.3.4	Unified architectural elements increase street legibility.				

items		**No.**	**C2-2: Physical Setting parameters (Access and Linkages parameters)**	**Totally Disagree**	**Disagree**	**Neutral**	**Agree**	**Totally Agree**
C2-2: Accessibility Physical Setting	**C2-2-1: Accessibility**	**C2.2.1.1**	The diversity of street transportation attracts people.					
		C2.2.1.2	Parking lots are better than parking on street edges.					
		C2.2.1.3	clear moving from parking lots to sidewalks makes the street more useable.					
		C2.2.1.4	Clarity of access to shops attracts people					
		C2.2.1.5	Clear separation between vehicles and pedestrians is useful for good accessibility					
	C2-2-2:	**C2.2.2.1**	Movement patterns and variety enhance walking.					
		C2.2.2.2	Seating on sidewalks with clear movement to shops eases walkability					

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	C2.2.2.3	The diversity in street activities enhances pedestrian walkability					
	C2.2.2.4	Sidewalks connectivity with no obstacles enhances continuity					
	C2.2.2.5	The pedestrian movement continues into the night when restaurants and cafes are the main part of street activities					
C2-2-3: Spatial Characteristics	**C2.2.3.1**	Staying in street is more vitality when building Plinths are continuous and conform to human scale.					
	C2.2.3.2	Street delineation whether by trees or fences clarifies the overall street perception.					
	C2.2.3.3	A clear transition between street sides supports the spatial organization.					
	C2.2.3.4	The availability of resting places in the frontage or furnishing zone organizes moving patterns.					
	C2.2.3.5	Landscape in a commercial street improves spatial organization.					
	C2-3: Physical Setting parameters (Environmental)		**Totally Disagree**	**Disagree**	**Neutral**	**Agree**	**Totally Agree**
C2-3: Environmental Physical Setting	**C2.3.1**	Using moveable canopies and vendors is important to protect shoppers during the daytime and enhance moving.					
	C2.3.2	The presence of shaded spaces refreshes the street environment					
	C2.3.3	Green Spaces, planting, and trees have a positive impact on comforting the environment.					
	C2.3.4	The use of paving materials that resist heat in summer and bear heavy rains in winter increases their daily street use					

C3. Imageability Dimension

items	**No.**	**Images**	**Totally Disagree**	**Disagree**	**Neutral**	**Agree**	**Totally Agree**
C3-1: Imageability **C3-1-1: Memory**	**C3.1.1.1**	The availability of well-maintained greenery is important for attracting pedestrians.					
	C3.1.1.2	sufficient lighting on sidewalks creates a positive image for the street at night.					
	C3.1.1.3	Memorizing architectural styles in the street creates a positive image.					

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	C3.1.1.4	Images memory will increase as the street contains a traditional style.
	C3.1.1.5	Local restaurants, local food carts, and activities activate a positive image and attract shoppers.
	C3.1.1.6	A sense of identity will be generated when historical elements are added to the building facade.
	C3.1.1.7	People are attached to commercial buildings with aesthetic characteristics.
C3-1-2: Safety	**C3.1.2.1**	Pedestrians feel safe and protected when the edge between the street and the sidewalks is clearly defined.
	C3.1.2.2	Ease of communication between pedestrians and cars by providing adequate protection will attract people and create a positive image.
	C3.1.2.3	Clear crossing points and traffic lights are essential in safe streets.
	C3.1.2.4	Availability of Kerbs (edging stone or pavement raised path), bollards, and Guard Railings, different colors or levels as separation, is important to feel safe in the pedestrian zone.
	C3.1.2.5	Reducing speed either by dumper ramp or changing materials, changing or adding features generates a sense of safety.
C3-1-3: Comfort	**C3.1.3.1**	You would feel comfortable when Parking is close to shops and easy to reach.
	C3.1.3.2	Pavement material quality is an essential element for accommodating walking and different activities.
	C3.1.3.3	Physical separation such as trees and fences are significant elements in comforting people.
	C3.1.3.4	Sidewalks with suitable widths encourage walking and feeling comfortable.
	C3.1.3.5	People are attracted to active well-designed frontage areas with sitting areas and diverse activities.
	C3.1.3.6	Quality of maintenance and cleanness has a great impact on creating comfort place.
	C3.1.3.7	The presence of cyclists refreshes the commercial street.

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items	No.	C3-2: Sense of Place (SOP) parameters	Totally Disagree	Disagree	Neutral	Agree	Totally Agree
C3-2: Linked to Street, Identity, Qualified Street	C3.2.1	The feeling of belonging to the street increases when the general atmosphere is attractive and walkable.					
	C3.2.2	Cultural events available on the streets improve the sense of place.					
	C3.2.3	The proportional relation between street width and building height creates a complete canyon and a unified sense of place.					
	C3.2.4	Well-known street landmarks create mental images and generate a sense of place.					
	C3.2.5	When the street owns local amenities and value, it will improve social relations.					
	C3.2.6	The possibility to sit and eat is one of the needed characteristics in enhancing social bonding.					
	C3.2.7	A sense of belonging will raise when streets include a unified architectural language.					
	C3.2.8	Integration of activities, functional diversity, and pedestrian density gives a sense of belonging.					
	C3.2.9	Moderate movement for cars enhances the feeling of a sense of belonging.					

D. **Livability in Commercial Streets**

This section assessing Livability in commercial streets will ease the relationship between the two parts, (placemaking and livability).

No.	D. Livability	Totally Disagree	Disagree	Neutral	Agree	Totally Agree
D1	Diverse activities in commercial streets enhance the creation of a livable place.					
D2	Restaurants and cafes are an essential part of livable commercial streets.					
D3	There is a good feeling of everyday life on Erbil's Commercial Streets.					
D4	Livability in commercial streets will rises when it holds a mix of formal and informal activities.					
D5	Livable streets are obtainable when the frontage zone is active with amenities and accommodates mixed uses.					
D6	When street design accommodates the movement of both cars and pedestrians more livable it will be.					
D7	The more the width of the sidewalk the more livable streets.					

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D8	Connecting street to urban contexts increases livability performance.
D9	The unified architectural style in street makes it more livable.
D10	Commercial streets are more livable when they are accessible.
D11	movement patterns and variety enhance walking and livability.
D12	Streets would be more livable when their link to the urban form is legible.
D13	Planting, trees, landscaping availability, and street furniture, have a positive impact on creating livable streets.
D14	When a commercial street generates a sense of safety, it will attract people and be more livable.
D15	Reducing and controlling car speed will raise livability on commercial streets.
D16	A clean and well-maintained street is more livable and useable.
D17	Negative, unused, or neglected spaces will lower the street's livability.

Appendix C: The Questionnaire List. Source: Author

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