The Impact of Public Space's Physical Characteristics On Sense of Place in Erbil City. Commercial Streets as A Case Study

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Abstract: The public space has become an important part of our everyday life. People might experience a flash of emotion for a place as a consequence of social contact in a setting, which is known as the sense of place. The street is one of the public spaces that encompass the urban scope. Streets serve numerous services, including providing a sense of place in communities and reflecting the character of cities via their physical qualities. The research looks at the relationship between the physical features of a commercial streets and the sense of place. For the purpose of this study, three case studies were undertaken, using face-to-face interview that included rating tasks of the various physical characteristics of the sense of place serving as the data collecting method. The SPSS statistical analysis program was used to examine survey questionnaire data.

Keywords: Public Space, Commercial Streets, Physical Characteristics, Sense of Place

Introduction

A public place is a place that is used by many different kinds of people for their daily activities (Stefania, et al., 2020) The everyday lives of city dwellers are thought to be greatly influenced by public areas (Lynch, 1960), (Jacobs, 1961) (Gehl, 2001), (Aly & Aly, 2021). The socio-cultural significance of cities may be significantly enhanced, satisfied, and protected through public places (S. Schmidt & J. Ne´meth, 2010). According to Lynch (1981), the degree to which the purpose, human needs, and activities are preserved and encouraged by the physical architecture of the place is what defines a good or successful public space (Lynch, 1981). Furthermore, when people's physiological, leisure, and entertainment demands are met, a public space becomes a place, which is referred to as the sense of place (A. A. Ezzat & Y. Nafez, 2005), (D. Maguid, et al., 2019). Scholars are continually interested in exploring the idea of designing vibrant streets and reclaiming them as public spaces (Carmona, 2010). Furthermore, streets are perceived as places for civic and public social life, as well as their roles in expressing the character and sense of place of cities (Jacobs, 1961), (J. Gehl & L. Gemzoe, 2004), (Musaab, et al., 2017). Thus, the formation of a sense of place in the streets is regarded as one of the most powerful factors that might help the establishment of effective urban settings (Hu & Chen, 2008), (Carmona, 2010). If there is a sense of place in the area, it becomes livelier, and people are more likely to return and visit (Aly & Aly, 2021). Thus, a sense of place may be seen as a catalyst for transforming spaces into places (Falahat, 2006). As a result, urban designers, architects, and planners should pay greater attention to the quality and design of public places in order to improve the sense of place (Najafi & Bin Mohd Shariff, 2011), (Musaab, et al., 2017).

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The present condition of unmanaged urban growth, the development of new technology in contemporary cultures, and changes in people's lifestyles have generated meaningless and insignificant places, leading to a sense of 'placelessness.' (Najafi & Bin Mohd Shariff, 2011). In the previous three decades, emigration from the countryside and rural regions has resulted in a tremendous rise in Erbil's population and urbanization, as well as fast spatial expansion. Following the shifting geopolitical environment of post-war Iraq, Erbil's expanding autonomous status as the capital of the northern region of Kurdistan since 2003 has been a major driver of urban growth and sociopolitical transition. (Ismail, et al., 2015). Despite the necessity of having a strong sense of place in the streets, the link between sense of place and urban design qualities has received little attention (Hu & Chen, 2008). This gap in the literature is also found in research on the setting of Erbil, Kurdistan, which supports the necessity to expand knowledge on this topic. As a result, the purpose of this research was to identify the urban Design physical attributes that might possibly contribute to the creation of a good of place in Erbil's streets.

2. Literature Review

2.1 The Concept of Place and Sense of Place

There are several place definitions, but in general, the term "place," in contrast to "space," signifies a strong emotive connection between a person and a certain location. (Sime, 1986). According to Rapoport, spaces contain meanings and signals that individuals perceive and decode depending on their experiences, roles, motives and expectations (Rapoport, 1990). A place is more than simply an object; it is a component of a greater whole that is perceived via the real experience of meaningful activities, and the experience is sensed via all of the senses (sight, smell, hearing, touch, and taste), and it is a whole sensuous experience (Shamai, 1991). Norberg-Schulz described a place as the outcome of space along with character; he emphasized that the existential objective of architecture is to transform a space into a place. As a result, a deliberate effort should be made to find the meanings that are present in the surroundings (Norberg-Schulz, 1985). He also pointed to the importance of architecture in contributing physical aspects to space that supports user habitation as well as their physical and mental well-being. As a result, architecture should not only consider the meanings, but also the physical features of the place (Sime, 1986). As a phenomenologist, (Relph, 1976) described the place as "fusions of human and natural order" stating that "places are the important priority of our immediate perceptions of the world". Relph also stated that space can be as little as a room or as large as a continent.

To express the idea of the Sense of Place, phenomenologists developed terms like “topophilia”, “character of place” and “spirit of place”. Tuan coined the word Topophilia, which means “love of place”, to describe the amazing bonds that exist between individuals and their physical surroundings (Tuan, 1977). Topophilia, according to Tuan, is a strong and powerful connection between individuals and places. According to Relph , sense of place, or the capacity to identify places and their identities, may be generated and developed via long-term interactions between users and places (Relph, 1976). The phrase "sense of place" refers to a pattern of mental images that develop as a result of a person's contact response to a place (Steele, 1981). As a result, one of the factors required to establish an energetic, livable and sustainable city is a sense of place (Stefania, et al., 2020). A sense of place is the expression of a person's thoughts, emotions, mental impressions, and affections as a consequence of a certain area's distinctive identity. Furthermore, sense of place is an emotional attachment and mental perception to an area that may transform a space into a place (Relph, 1976). In brief, a sense of place is generated as a result of a direct interaction between the individual, the place, the historical

importance of the place, and the environmental characteristics around the place (Hashemnezhad, et al., 2012). Steele noted in his book, “The Sense of Place”, that two factors play a significant role in the formation of a sense of place which are the “person” and the “place” itself (Steele, 1981). The creation of one's sense of place has no limitations or boundaries, and it frequently incorporates a variety of circumstances that unintentionally change an individual's attitude while in that area.

2.1.1 Person

The person as the subject who develops the mental perception is the factor that provides a sense of place. This viewpoint is developed by the individual's interaction with the place, which includes the frequency of interaction with the place, the length of time spent in the area, the awareness of pattern around the environment, and the setting's uniqueness (Steele, 1981).

2.1.2 Place

The setting of the place itself is the second component that gives a sense of place. Place refers to the subject's surrounding environment at a particular time. The link between the individual and the place creates a sense of place in the setting. Both a positive and negative reciprocal interaction between the subject and the environment may evoke strong emotions in the s subject’s perception (Steele, 1981).

2.2 Components of Sense of Place

Many philosophical ideas have been established in recent years on frameworks or factors influencing sense of place. In early theoretical literature, sense of place was characterized as "genius loci" (Aly & Aly, 2021). This idea asserted that a SOP is just connected to and impacted by the physical aspects of the space, and that the environment or settings of a space are observed and experienced in the same way by all users of the place. (Aly & Aly, 2021). According to contemporary positivistic theory, SOP is a multidimensional human reaction to physical settings that is formed as a result of acquired meaning (Beidler, Virginia). The three primary factors of sense of place, according to "John Punter's" concept, are the physical factor, the social activity factor, and the image and meaning factor (see Fig 1) (Punter, 1991). Punter's concept is extremely similar to Canter's model of place components (Canter, 1977). As a result, the design of a space should include not only the physical setting of the space, but also the requirements of people and their expectations toward the place, communication patterns with the place, "qualities of activities," people's attendance in the place, and "social interactions" (Falahat, 2006). Furthermore, place is a blend of physical and social features, but having a distinct area that is dense with meanings is what the sense of place is all about (Punter, 1991).

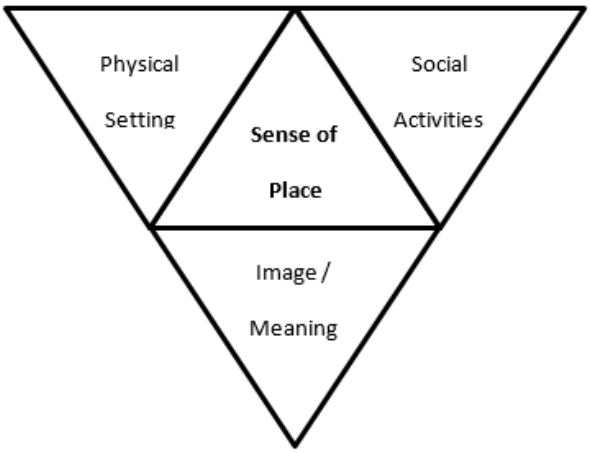


Figure 1: Factors of sense of place Adapted from (Relph, 1976), (Punter, 1991), (Canter, 1977), (Carmona, 2010)

2.3 Previous Research

(Erkılıç, et al., 2021) attempted to investigate sense of place components and determine its factors, within this context, the first section of the essay asks how a sense of place may be defined and what elements might help to define its perception. In the second section, Kuzguncuk, one of Istanbul's most historic and livable neighborhoods, is explored as the research's case study. The author investigates several views on sense of place and lists them chronologically. The author discovered patterns of agreement among various researchers on their picture of places and methods of assessing this image. As a result, a sense of place can be defined as a notion comprised of three interconnected components: a distinct landscape with physical qualities, a pattern of social activities, and a collection of personal and shared meanings. The tables generated as a result of the holistic examination of the acquired data using the Likert Scale in this context reveal that the neighborhood is largely characterized by physical qualities and personal and shared meanings for Kuzguncuk inhabitants, due to their fear and worry about change.

(Aly & Aly, 2021) The research examines the relationship between urban design qualities and a street's sense of place. For the purpose of this study, a case study was undertaken, and a survey questionnaire with rating tasks of the various urban design features and dimensions of the sense of place of Baghdad street in Cairo, Egypt was used to collect data. The article assesses sense of place based on the literature-derived aspects of sense of place, which are space dependence, space attachment, and place identification. The acquired data were analyzed using the SPSS statistical tool. This study indicates that building a successful or excellent street that is well-designed in terms of physical and social elements is essential for encouraging people to use the outside environment and enhancing a sense of place. Furthermore, the research demonstrates that the feeling of place is subjective and largely dependent on human perception.

(Stefania, et al., 2020) The goal of this research is to identify public space criteria and variables that might contribute to the creation of a more livable urban space by enhancing the sense of place by means of a classification analysis of plazas. The author asks, which criteria is ideal for improving Glodok's main issue? and how the plaza's diversity may improve Glodok's sense of place? The findings of this research provide eight requirements for a plaza with a strong sense of place that will make a

city more livable: visual image, roadway, identity, size, activity, comfort, sociability and accessibility. Based on those parameters, a case study of Glodok in West Jakarta will be examined. The criteria with the greatest variables of priority in order are “sociability”, “activity”, “identification”, and “street”, based on the average number of variables of priority for each specification. These four requirements serve as the foundation for creating a plaza with a strong sense of place.

(Musaab, et al., 2017) The study's goal is to provide a theoretical framework for the physical characteristics of commercial streets' functions in establishing a sense of place in city centers. The author states that the physical qualities of streets, such as landscape and building elements, contribute not only to the accessibility and legibility of the street, but also to the provision of a pleasant, safe, visible, and oriented atmosphere on the street. The research’s Findings shows that physical characteristics in streets include physical appearance, location, landscape elements, and the quality of views, all of which play diverse roles in recognition, accessibility, legibility, comfort, safety and visibility.

(Ghoomi, et al., 2015) The goal of this research is to analyze the possibility of evaluating and investigating the components of sense of place in residential neighborhoods and to develop a methodology to accomplish this. There was the creation of a theoretical framework. As a result, the components were examined using a survey and quantitative approach, as well as a questionnaire filled out by 60 inhabitants of the “Kan” and “Baharan” neighborhoods using the Multistage Cluster sampling method. On a Likert scale, the components of sense of place in two traditional “Kan” and contemporary “Baharan” neighborhoods were ranked. Finally, the study compares and evaluates the components in order to determine their strengths and weaknesses. According to averages, the first "meaning components," second "social and activities components," and third "physical and aesthetic components" obtained better grades in the traditional neighborhood. Regarding the modern neighborhood, first "physical and aesthetic components," second "meaning components," and third "social and activities components" obtained better grades. (Table 1) summarizes the previous studies.

Table 1*:* previous research about variables of physical characteristics of sense of place

Researcher(s)	Year	variables related to physical Factors
Erkılıç, et al	2021	Built form, Permeability, Landscape, Furniture, Scale, Intensity, Landmarks, Public realm
Aly & Aly	2021	Safety, charm, history, attractiveness, spirituality, cleanliness, enclosure and human scale, stability, visual diversity, building conditions, environmental comfort, identity, transparency and lighting. Readability, walkability, reliability, continuity, parking spaces, accessibility and connectedness
Stefania, et al	2020	Green, Façade, Ornament, Material, Area, Size, Capacity, Safe, Clean, Green, Street Furniture
Musaab, et al	2017	Location: connectivity, accessibility. Appearance Feature: Size, Hight,Architectural features, Color, Age, material, location, façade and roof form. Lighting at night, Security officers, Trees, walkways, traffic environment, presence of pedestrians along

		the street, crime and robbery level. Signs, traffic light, shaded sidewalks, sitting areas, suitable pavement to walk on, beautiful views, parking area, presence of public transportation and facilities.
Ghoomi, et al	2015	The physical form's quality (size, type and area of residence) The physical component's quality, objective Landscape quality and the Quality of access in the neighborhood

2.4 Research Problem

Despite the significant importance of presence of high sense of place in streets, the relationship between sense of place and the urban design qualities is not widely tackled (Hu & Chen, 2008) (Aly & Aly, 2021). This gap in the literature is also present with reference to studies on the context of Erbil, kurditstan, which justifies the need to increase the knowledge on this field. Therefore, this study sought to identify the urban design physical qualities that can potentially contribute in creating a positive sense of place in streets in Erbil.

3. Research Questions

1. Is there a significant variance of users' satisfaction with the indicators of Sense of place in the streets of Erbil's city?
2. Is there a significant difference between achieved Sense of place physical indicators in Erbil city streets based on the selected different case studies?
3. Is there significant correlation between Physical indicators of Sense of place in Erbil City's selected streets?

3.1 Research Hypothesis

1. There a significant difference of participant's satisfaction with the indicators of Sense of place in the streets of Erbil's city.
2. There a significant difference between achieved Sense of place physical indicators in Erbil city streets based on the selected different case studies.
3. There significant correlation between the Physical indicators of Sense of place in Erbil City's selected streets.

4. Research Methodology

This study focused on the physical characteristics of commercial streets. The data collection and analysis of this paper are based on the analysis of a survey questionnaire that was undertaken by users of Bakhtyari, Dream city and Iskan Streets. A total of 239 questionnaire forms were filled out in the mentioned studied areas during a face-to-face interview. After that, the collected information or data was transformed into numeric outcomes and then, by using SPSS software the data was converted into readable analysis that is easy to understand.

5. The Study's Scope

The study's scope encompasses three variables from the physical characteristics which are Physical Appearance, Street amenities and Street Comfortability and their impacts on Sense of place through the design characteristics of Erbil city. Moreover, this study will discuss this issue in Erbil city's streets as a case study.

6. Case Studies

Erbil city has a circular/radial urban form, and there are 5 main streets that goes around the citadel or the City center, the nearest street to the city center is 30m the second one is 60m then 40 m after that 100m and finally 120m. see (FIG 2 and 3).Three case studies has been selected for the study, the first street is Iskan, which is located in Area 1,between 30m and 60m, the second one is Bakhtyari, which is located in Area 2, between 60m and 40m and the third street Dream city is located in Area 3, between 40m and 100m. these three streets from three locations were chosen by employing random cluster sampling . (See FIG 4) and (Table 2).

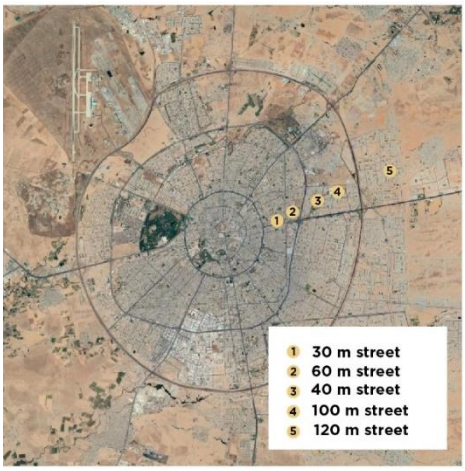


Figure 2: Distribution of the five main streets in Erbil

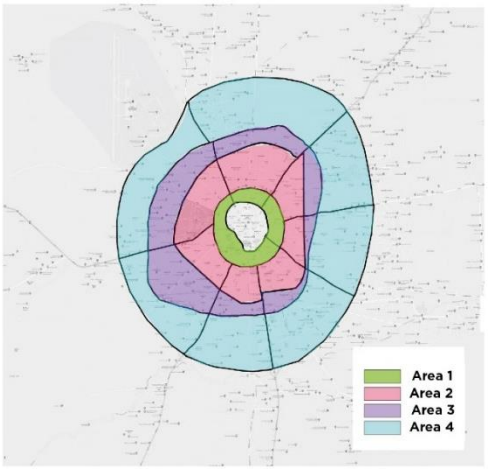


Figure 3: Distribution of the Areas between the main streets.

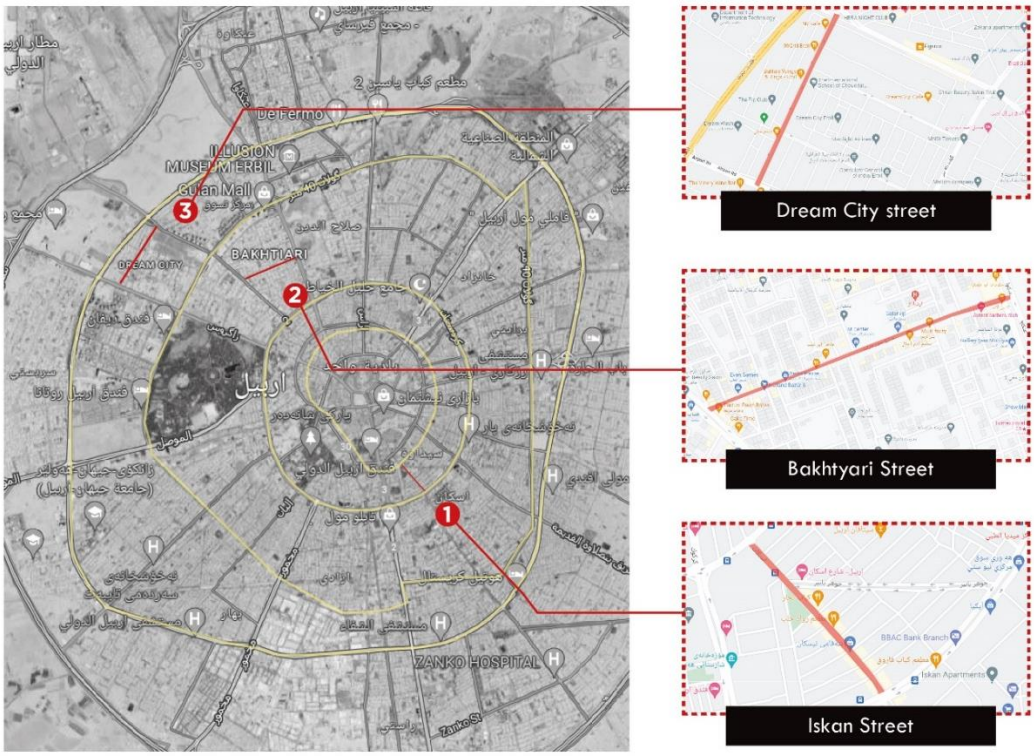
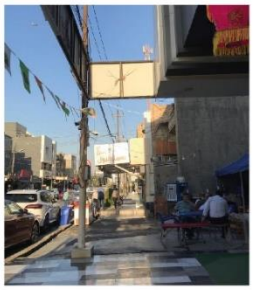
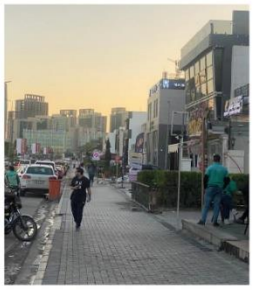


Figure 4: Location of the three case studies : Iskan street, Bakhtyari street and Dream city street

Table 2 case study streets (Iskan , Bakhtyari and Dream City)

Selected Street Information	Pictures of the selected streets	
Name : Iskan Street Location : Area 1		
Name : Bakhtyari Street Location : Area 2		
Name : Dream City Street Location : Area 3		

7. Outcomes and Discussions

The research analyzes the acquired data using both an objective technique employing checklist per each analyzed street and a subjective one using face-to-face interviews. The first part shows the findings of each case study's spatial analysis, while the second part concentrates on the results of a face-to-face interview.

7.1 Results and Analysis of the Spatial Analysis

For the objective evaluation of the examined sense of place indicators, namely Physical Appearance, Street Amenities, and Street Comfortability, a check list was utilized. The researcher uses one check list for each commercial street and fills it out to get the final score for each sub indicator. The average score of each indicator is then calculated by averaging the sub-indicator scores for each indicator. (See Appendix 1)

7.1.1 Analysis and Discussion of Physical Appearance Indicator.

To analyze the physical appearance of each studied commercial street, the researcher conducted the average mean score for the related sub indicators (A1 to A6) to present the final scoring value that represents this indicator as shown in FIG (5).

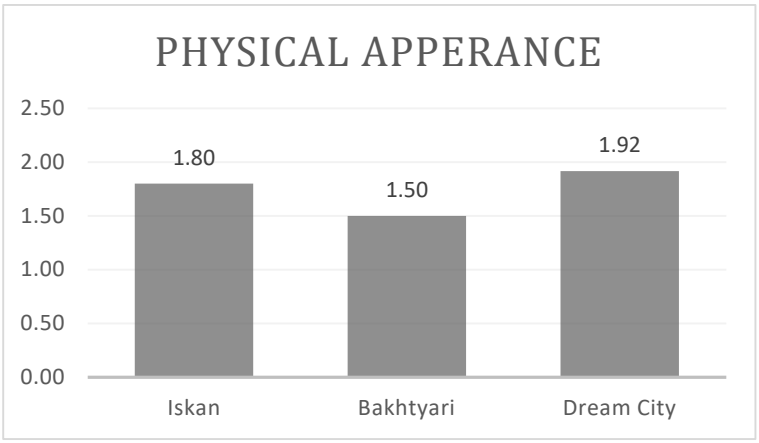


Figure 5*:* Average scoring value of Physical appearance indicator for the studied commercial streets

Commercial streets with higher scoring mean value have a better physical appearance and supposed to have a stronger sense of place. The average scoring value for the selected streets were as the following: Iskan street. (1.80), Bakhtyari street. (1.50) and Dream City street. (1.92).

The results reveal that the highest average scoring value is recorded for Dream City street. This result relates to the street design characteristics that are related to the physical appearance, such as the street width, the variety of used materials for the building façades and The architectural style of the buildings. Bakhtyari recorded the minimum scoring value of the physical appearance. This result relates to the design characteristics that are related to Physical Appearance indicators, such as the width of street and sidewalk. despite the fact that Bakhtyari sidewalk width is less than the other two streets, majority of the shop owner bring their staff outside their shops which make the width smaller.

7.1.2 Analysis and Discussion of Street Amenities Indicator.

The scoring value of the sub indicators (B1 to B5) was used to calculate the average scoring value of Street amenities of the selected commercial streets as shown in FIG (6)

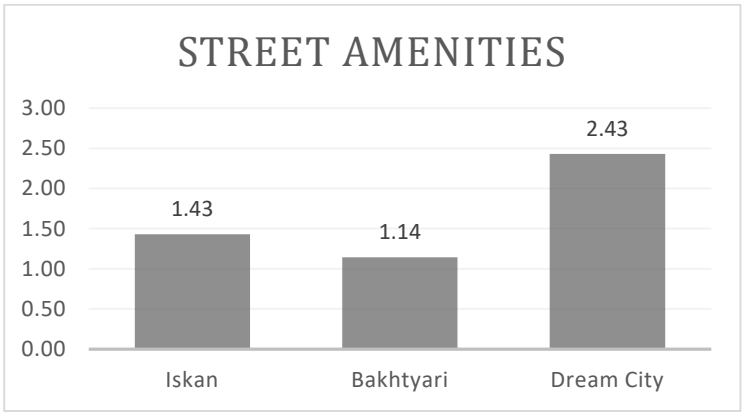


Figure 6: Average scoring value of Street Amenities for the selected commercial streets

Commercial streets with highest scoring mean of street amenities means that the street is more appealing and visitor-friendly. Through comparison amongst the three commercial streets, the highest scoring value (2.43) is founded in Dream City Street as. it has most of the street amenities including Availability of Seating, greenery, water fountains and Artworks, as well as a good space for care

parking. While the minimum scoring mean value (1.14) is founded in Bakhtyari street as it has the lease street amenities like low availability of seating place, and greenery as well as car parking problems.

7.1.3 Analysis and Discussion of Street Comfortability Indicator.

The scoring value of the sub indicators (C1 to C6) was used to calculate the average scoring value of Street comfortability of the selected commercial streets as shown in FIG (7).

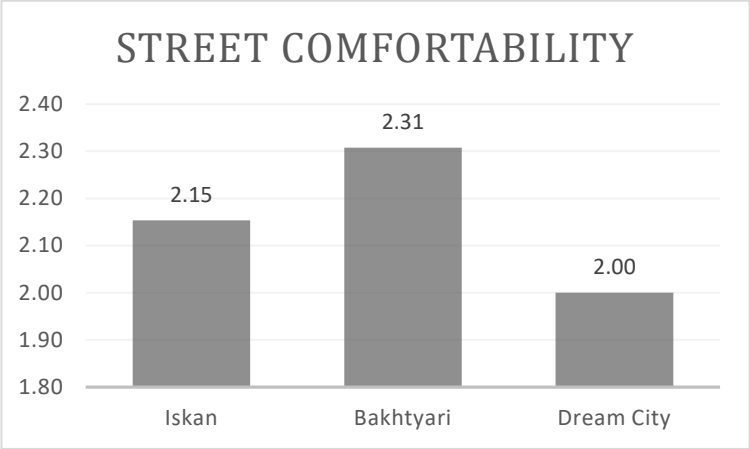


Figure 7: Average scoring value of the street Comfortability indicator for the selected streets

The average scoring value for the selected streets were as the following: Iskan street. (2.15), Bakhtyari street. (2.31) and Dream City st. (2.00).

Commercial streets with highest scoring mean of street comfortability means that the street is clean and safe and the visitor feels comfortable Bing in the street. The results reveal that the highest average scoring value is recorded for Bakhtiari street (2.31) This result relates to the street design characteristics that are related to the street comfortability, such as the degree of enclosure and cleanliness, sidewalk condition and safety are satisfiable. The minimum scoring value is recorded for Dream City (2.00), this is due to the little enclosure of dream city street and sidewalks had some cracks.

7.2 Result and Analysis of the Face-To-Face Interview Survey

A random sample of respondents is used to produce more consistent and exact results without taking into account the needs and perceptions of any specific group of individuals. The aim of the face-to-face interview is to identify the opinion of the participant about the role of the streets characterizes on the sense of place. The questionnaire survey was filled through an interview with the participants in 3 different streets, then a total of 239 respondents collected.

The collected data converted into numeric results and analyzed by using the statistical package for the social science software SPSS. The interview analysis divided into four parts: the first part included the descriptive analysis of demographic background of the respondents, the second part of the analysis based on participant's experience with the streets. While the third part included one sample t-test for comparing the mean of research variables. The fourth part investigates the correlation between the research variables.

7.2.1 Descriptive Data Analysis Results

This type of statistical analysis contains frequencies, means and standard deviations. It is used to decrease massive amounts of row data and then convert these data into readable statistics. In this study the results of the Descriptive data analysis are divided into two parts:

7.2.2 Analyzing Interviewee's Socio-Demographic Background

It is the 1st part of the questionnaire survey (Table 3), in which the frequency distribution of the demographic profiles of the visitors is shown, indicates that 109 (45.6%) of the participants were in Iskan, 70 (29.3%) in Bakhtyari and 60 (25.1%) in Dream city. Also 201 (84.1%) of the participants are male, and 38 (15.9%) are female. Of the participants, 144 (60.3%) are 18-29 years old, 60 (25.1%) are 30-40 years old, 15 (6.3%) are 41-50 years old, 20 (8.4%) are over 50. Of them, 7 (2.9%) are non-educated, 36 (15.1) are primary school graduates, 72 (30.1%) are high school graduates, 105 (43.9%) are university graduates, and 19 (7.9%) had postgraduate education. Of them, 8 (3.3%) have been living in Erbil for 0-1 year, 27 (11.3%) for 1-10 years, 71 (29.7%) for 11-20 years, 71 (29.7%) for 21-30 years, 35(14.6) for 31-40, and 27 (11.3%) for more than 40 years. Of the participants, 95 (39.7%) are unemployed, 40 (16.7%) are self-employed, 33 (13.8%) are Governmental employees, and 71 (29.7%) are private sector employees.

Table 3: Demographic characteristics of the participants

Variable		N	%
Name of Street	Iskan	109	45.6%
	Bakhtyari	70	29.3%
	Dream City	60	25.1%
Gender	male	201	84.1%
	female	38	15.9%
Age	18-29	144	60.3%
	30-40	60	25.1%
	41-50	15	6.3%
	>50	20	8.4%
Educational Status	None	7	2.9%
	Primary school graduate	36	15.1%
	High school graduate	72	30.1%
	University graduate	105	43.9%
	post graduate	19	7.9%
Years lived in Erbil	0-1	8	3.3%
	1-10	27	11.3%
	11-20	71	29.7%
	21-30	71	29.7%
	31-40	35	14.6%
	>40	27	11.3%
Work status	Unemployed	95	39.7%
	Self-employed	40	16.7%
	Governmental employee	33	13.8%

	Private sector employee	71	29.7%

7.2.3 Analyzing Respondents' Experience with the Streets

It is the second part of the questionnaire survey which contains questions about the respondents' experience with the streets in Erbil. When the answers given to the questions related to (how often do they visit the street), the majority of residents, 103 (43.1%) stated that they go every day. Of the participants, 81 (33.9%) stated that they go weekly, 43 (18.0%) said they go monthly, and 12 (5.0%) indicated that they go yearly. Of the participants, 37 (15.5%) marked the way of visiting the street by "walking", 27 (11.3%) by "motorcycle", 2 (0.8%) by "bicycle", 5 (2.1%) by "Bus", 27 (11.3%) by "Taxi", and 141 (59.0%) by their own cars. According to the answers to the question addressed on for what reason the participant come to this street, here the participant can choose multiple answers. of the participants, 45 (14.8%) stated that because the street is near their home, 32 (10.5%) for shopping, 88 (28.9%) for eating, 120 (39.5%) for Leisure. Of the participants, 19 (6.3%) stated for other reasons. And regarding the answers to the question When participants mostly visit the street, of the participants, 11 (4.4%) stated that they visit the street during mornings, 12(4.8%) during Noon, 56 (22.2%) during Afternoon, and the majority of the participants 173 (98.7%) marked during evenings. See (Table 4).

Table 4: Respondents' experience with the Streets

	Responses	N	%
How often do you come to this street?	Every day	103	43.1%
	Weekly	81	33.9%
	Monthly	43	18.0%
	Yearly	12	5.0%
By what means did you come here?	Walking	37	15.5%
	motorcycle	27	11.3%
	bicycle	2	0.8%
	bus	5	2.1%
	Taxi	27	11.3%
	My own car	141	59.0%
For what reason do you come to this street?	Near home	45	14.8%
	shopping	32	10.5%
	Eating	88	28.9%
	Leisure	120	39.5%
	Other	19	6.3%
When do you mostly visit here?	Mornings	11	4.4%
	noon	12	4.8%
	Afternoon	56	22.2%
	Evening	173	68.7%

7.3 Analyzing the Significant Difference in Users' Satisfaction Levels On the Sense of Place Indicators in The Streets of Erbil City.

The third part of the questionnaire is based on (a five-point Likert scale), to compare the satisfaction degrees of the participants about the studied sense of place indicators in the studies streets by using a

questionnaire survey as shown in (Table 5). Accordingly, the maximum mean value is recorded for the sense of place indicator namely, street comfortability is 4.47 and 0.67 for the standard deviation. While the minimum mean value is for the street amenities which is 3.88 and 0.64 for the standard deviation. Additionally, the mean soccer of Physical Appearance is 4.33 and 0.60 for the standard deviation.

Table 5: Percentage of User's level of agreement on Physical Factors variables in Erbil city.

Variables	N	Mean	Std. Deviation	Rate of Agreement
Physical Appearance	239	4.33	0.60	86.68%
Street Amenities	239	3.88	0.64	77.70%
Street Comfortability	239	4.47	0.67	89.40%

According to the findings of a one-sample t-test, there is a highly significant difference between the levels of satisfaction of respondents across all the studied streets on sense of place indicators. (Table6) shows the result of the t-test which are (34.14, 21.17, and 33.75) of $p<0.05$. Hence, the first research hypothesis is accepted that states (There a significant difference of participant's satisfaction with the Physical indicators of Sense of place in the streets of Erbil's city).

Table 6: One Sample t- test of "User's level of satisfaction on Physical Factors Variables of sense of place in Erbil city

One-Sample Test				
Variables	N	Mean	t-test	Sig. (2-tailed)
Physical Appearance	239	4.33	34.14	0.000
Street Amenities	239	3.88	21.17	0.000
Street Comfortability	239	4.47	33.75	0.000

7.4 Investigating the Difference Between the Achieved Sop in Erbil City Streets

Analyzing the Sense of place difference between the studied streets in Erbil city was done by using One-Way ANOVA test to a sense of place indicator. The results of the ANOVA test were ($F = 18.41$) at the significant level of $p< 0.05$ accordingly sense of place at streets has a statically significant difference, so the second hypothesis that states (There a significant difference between achieved Sense of place physical indicators in Erbil city streets based on the selected different case studies) validity is proven. See (Table 7) and (FIG 8).

Table 7: One Way ANOVA"test to Sense of place difference in the streets in all studied areas

	Name of Street	N	Mean	Std. Deviation	F- Test	P - value
SOP in streets	Iskan	109	4.2877	0.67445	18.41	0
	Bakhtyari	70	3.8929	0.35543		
	Dream City	60	4.4048	0.31792		
	Total	239	4.2014	0.55672		
*Significant at level p<0.05						

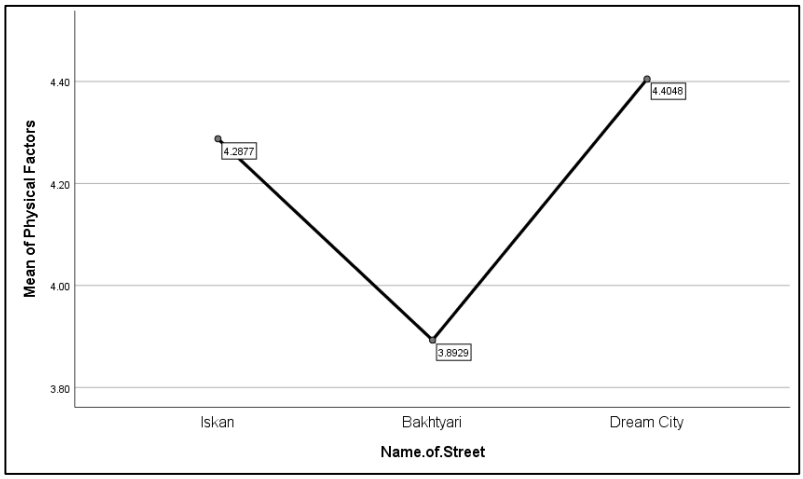


Figure 8: One Way ANOVA"test to Sense of place difference in the streets in all studied areas

7.5 Analyzing Appearance, Street Amenities, and Street Comfortability Factors Correlation in Erbil City's Streets.

Through using analysis of Sperman's rho Correlation to the outcomes of the Sense of place indicator, as shown in Table (8), it was possible to analyze the relationship between the examined street's sense of place indicators in Erbil City. Calculating each indicator's value of significance was based on the values of Sperman's rho Correlation. As a consequence, the Sperman's rho Correlation value between Physical Appearance and Street Amenities is (0.582**), and between Physical appearance and Street Comfortability is (0. 656**), and. P-value also equal in both relationships, p = 0.000 at the significant level, p<0.05. Sperman's rho Correlation value between Street Amenities and Street comfortability is (0.623**) and p-value =0.000 at the significant level, p<0.05. According to the findings, there is a strong correlation between sense of place indicators, thus the 3rd hypothesis that states (There significant correlation between the physical indicators of Sense of place in Erbil City's selected streets) is accepted.

Table 8: Correlation between sense of place variables

Correlations					
Spearman's rho	Variables	Method	Physical Appearance	Street Amenities	Street Comfortability
	Physical Appearance	Correlation Coefficient	1.000	.582**	.656**
		Sig. (2-tailed)		0.000	0.000
	Street Amenities	Correlation Coefficient	.582**	1.000	.623**
		Sig. (2-tailed)	0.000		0.000
	Street Comfortability	Correlation Coefficient	.656**	.623**	1.000
		Sig. (2-tailed)	0.000	0.000	

8. Conclusion and Limitations

The purpose of this research was to investigate the key physical components of urban design attributes that might possibly contribute to the creation of a positive sense of place in commercial streets. The

research also attempted to define space, place, and sense of place, as well as to comprehend urban design physical elements and their consequences for sense of place in Erbil's context using three case studies (Iskan Street, Bakhtyari Street and Dream City Street. Data was collected through a survey questionnaire.

Findings indicate that from the three physical indicators namely (Physical Appearance, Street amenity, and Street comfortability). In general Street comfortability recorded the highest mean, which indicates that participants are satisfied regarding the street comfortability indicators. But street amenities recorded the lowest, and this indicates that in general commercial streets in Erbil has problems regarding parking spaces and greenery.

From the case studies, although Iskan street has a higher number of visitors yet Dream City Street has the highest mean regarding the sense of place indicators, while Bakhtyari recorded the lowest. This indicates that sense of place is subjective, and it depends mainly on human’s perception.

Finally, a few limitations of this study are discussed in order to offer a better possibility for future research. For improved reliability and validity, it may be good in future study to perform a more extensive survey questionnaire and field observations to understand people's perspectives on the topics researched. Furthermore, the sample size might be enlarged to improve the validity and generalizability of the results. A comparison with streets in other countries might also be done to uncover probable cultural similarities in the experience of sense of place.

Appendix 1: Study checklist for scoring the streets physical Characteristics

Street Name :

Segment Number :

Date

A. Physical Appearance

A1. Building Height

1 - 3 Floors	1
4 - 6 Floors	2
7 - 9 Floors	3

A2. Street width

8.0m	1
10m	2
12m	3
15m	4
20m	5
25m	6
30m	7
40m	8

A3. Sidewalk width

2.0m – 2.50m	1
3.0m – 3.50	2
4.0m – 4.50m	3
5.0m -5.50 m	4
6.0m <	5

A4.1 - Sidewalk material

Ceramic	1
ornamental cement	1
paving blocks	1
Dirt or Sand	0

A4.2 - facade material

Marble	1
Stone	1
Glass	1
Alucobond	1
Brick	1
Polystyrene foam	1
plaster	1

A5- Architectural style

Traditional	1
Transitional	1
modern	1

A6- Age *

First Era	1
Second Era	1
Third Era	1

B. Street Amenities

B1. Availability of car parking

None	0
Low	1
Medium	2
High	3

B2. Availability of street lighting

None	0
Low	1
Medium	2
High	3

B3. Availability of seating

None	0
Low	1
Medium	2
High	3

B4 Natural Features

B4.1 Availability of trees

None	0
Low	1
Medium	2
High	3

B4.2 Availability of planters

None	0
Low	1
Medium	2
High	3

B4.3 Availability of water features

None	0
Low	1
Medium	2
High	3

B5. Availability of Artworks

None	0
Low	1
Medium	2
High	3

C. Street Comfortability

C1. Degree of vandalism

Low	3
Medium	2
High	1

C2. Degree of enclosure

Little or no enclosure	1
Some enclosure	2
Highly enclosed	3

C3. Cleanliness

C3.1 - Overall cleanliness

Poor	1
Fair	2
Good	3

C3.2 Availability of Garbage Cans

None	0
Low	1
Medium	2
High	3

C3.3 Frequency of Garbage collection

None	0
Low	1
Medium	2
High	3

C4.1 Sidewalk condition

Poor	1
Fair	2
Good	3

C4.2 road condition

Poor	1
Fair	2
Good	3

C5. Safety

C5.1 Availability of street crossing

None	0
1 to 2	1
3 to 4	2
4 <	3

C5.2availability of street pumps

None	0
1 to 2	1
3 to 4	2
4 <	3

C5.3 availability of traffic light

Yes	1
No	0

C5.4 sidewalks are (even and slip resistance surfaces)

Yes	2
Somewhat	1
No	0

C5.5 Availability of security cameras

None	0
Low	1
Medium	2
High	3

C6 Availability of bad smell

None	0
Low	1
Medium	2
High	3

* Age sub indicator scale is is specific to this study and for it's purposes. The scale can not be generalized to another study.

Appendix 2: Interview list

Part 1: Demographic characteristics of the participants			
1.1 Gender			
Male		Female	
1.2 Age			
18-29	30-40	41-50	50<
1.3 Educational status			
Primary school graduate		High school graduate	
University graduate		Post-graduate	
1.4 Years lived in Erbil			
0-1	1-10	11-20	
21-30	31- 40	40 <	
1.5 Work status			
Unemployed	Self-employed	Governmental employee	Private sector employee
Part 2: participants' experience with the Streets:			
2.1 How often do you come to this street?			
Every day	weekly	monthly	Yearly
2.2 By what means did you come here?			
Walking	motorcycle	bicycle	
bus	Taxi	My own car	
2.3 For what reason do you come to this street?			
Near to home	Eating	Shopping	Leisure
Other:			
2.4 When do you mostly visit here?			
Mornings	Noon	After noon	Evening

Kindly select one of the five choices below

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SD	D	N	A	SA
1	2	3	4	5

Part 3: Physical Characteristics of the street

No	1- Appearance	SD	D	N	A	SA
1	The height of the buildings is satisfiable					
2	The street width is good					
3	The sidewalk width is satisfiable					
4	The sidewalk material is good					
5	The design of the buildings and the façade is attractive					

6	The façade materials are beautiful					
No	2- Street Amenities	SD	D	N	A	SA
7	There is enough parking space here					
8	There is sufficient lighting in the street					
9	There are enough places to sit on the street					
10	There is plenty of greenery here					
11	The plants here are beautiful and enjoyable and make me feel relaxed					
12	The available plants here encourage people to visit the street					
No	3- Street Comfortability	SD	D	N	A	SA
13	The level of cleanliness of the street is satisfiable					
14	Sidewalk condition is satisfiable, there are no slopes, no cracks or holes					
15	Road condition is satisfiable. There are no cracks or holes.					
16	It is easy to walk on the sidewalk even for elderly people					
17	There is no bad smell in the street					
18	At night I can walk safely here					
19	There are activities here that make me feel safe					
20	The availability of security cameras gives me sense of safety					

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