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A STRATEGIC APPROACH FOR LIVABILITY IMPROVEMENT IN THE HISTORICAL QUARTER OF GAZİANTEP

Lina KANBAR

Master's Thesis

Supervisor

Prof. Dr. Aykut KARAMAN

İstanbul, 2024

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The thesis titled A STRATEGIC APPROACH FOR LIVABILITY IMPROVEMENT IN THE HISTORICAL QUARTER OF GAZİANTEP prepared by LINA KANBAR and submitted on 16/01/2024 has been **accepted unanimously** for the degree of Master of Science in Architecture.

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I hereby declare that this thesis meets all format and submission requirements for a Master`s thesis.

I hereby declare that all information/data presented in this graduation project has been obtained in full accordance with academic rules and ethical conduct. I also declare all unoriginal materials and conclusions have been cited in the text and all references mentioned in the Reference List have been cited in the text, and vice versa as required by the abovementioned rules and conduct.

Lina KANBAR

Signature

DEDICATION

I would thank Allah for this opportunity and gift.

I would thank Republic of TÜRKİYE and especially Gaziantep city, I felt that it can be considered the least thing to do in return for its favor to me.

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My best friend Milda, thank you for being beside me in tough times, beautiful times and achieving this dream as well.

To the absents who their presence would soften the long road hardness…

To my country Syria, to Palestine and Gaza inhabitants, to every one raise hands for praying…

ABSTRACT

A STRATEGIC APPROACH FOR LIVABILITY IMPROVEMENT IN THE HISTORICAL QUARTER OF GAZİANTEP

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City's identity can be represented by architecture and historical heritage, it is where we can recognize how the city's founders have established and lived. Through the years and according to the continuous development, the architectural heritage of Gaziantep historical quarter had lost its capability to serve current modern life requirements and became unliveable. The thesis argues that, the livability with its comprehensive meaning varies according to cultures, living circumstances, time, economic, social life, and environment. Many efforts were produced to conserve architectural heritage and make it as possible kept up with modern life demands, although these efforts the historical quarters' environment still not enough to be lived in. In some cases, these restored parts were hiding behind them many dilapidated and unauthorized buildings, which represented duality in value and livability. This study aims to eliminate this duality and improve the livability by evaluating the livability environmental criteria of the historical quarters of Gaziantep city according to common indicators in the literature review and previous studies, by observation and questionnaires, which aim to take in consideration people's experiences in living within these quarters and spot the light on the important urban indicators of livability environmental dimension. The results of this evaluation will contribute to determine whether these quarters require radical new urban plan or rehabilitation and restoration plans are enough to fill the gap with present time living needs.

Keywords: Livability, Physical Environment, Historical Heritage, Urban Tissue, Gaziantep.

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ABBREVIATIONS

GG	:	Gaziantep Governorship
GP	:	Gaziantep Population
GGPDED	:	Gaziantep Governorship Provincial Disaster and Emergency Directorate
MMG	:	Metropolitan Municipality of Gaziantep
WCED	:	World Commission on Environment and Development

1. INTRODUCTION

The city is a fundamental entity with its own identity and capacity to respond to the desires and requirements of its inhabitants, as well as influence its surrounding territory. The historical heritage of the city can be considered as the heart of it, as similar importance of the human's heart, or physically the object core. In many cases around the world, the cities' core was considered where their heritage exists. During the decades the urban development was in-evitable and the life requirements have changed, but at the same time, the plans and processes which were made by organizations in order to keep on and conserving cities' heritage can't be underestimated.

The historical quarters contribute at the first place in representing the city's image and identity. Everard and Pickard, [1] mention that "the built heritage provides us with a sense of place and personal identity, and a source of pride, which is of greater importance than its real estate value.".

The city's cultural and historical heritage attract several groups of people according to their interests, their role, and their aspirations. In some countries the economic income depends on the historical districts and attracting the tourists. In most cases city and its historical heritage is represented by the handmade crafts, traditional restaurants, hotels with the city's houses character, and many aspects which deals with the city's cultural heritage.

Throughout history, many of these quarters around the world went through different conditions like natural disasters, and domestic and international disputes which caused devastation to some parts of these quarters besides the physical destruction and the traditional causes of decay. On the other hand, the modernization and urbanism movements influenced all parts of the world and the humans longing to improve the reality which they live and following the rapid global urbanism movements caused rapid growth on the city's level in several domains (like the industrial, educational, architectural, infrastructural and many domains) as well as affecting on the city expansion. As a result, the habitants preferred to move to the urban districts and leave the historical quarters. Many of the city's original inhabitants with good and medium income transfer their dwellings from these quarters to neighborhoods with more urban character where they can find more public facilities, better

infrastructure, and better living circumstances which keep abreast with the development in many life's domains, and more opportunities.

This desertion beside the decision makers' ignorance caused a negative impact on the historical quarters. These ignored parts reflected a poor environment of these parts of the city with the deficiency of facilities, bad infrastructure, and the absence of interest in the built environment and the manifestations of urban life. These factors contributed to losing the real value of these districts and they became a safe haven for the people with low income and poor immigrants. The crime rate in these districts has increased and the safety factor was mostly absent in these districts.

The governments and decision-makers in the cities started to show the importance of the historical heritage of the cities and their important role in representing the identity of the cities. They employed their efforts in the conservation and restorations of the city's built heritage.

In most of cases within the historical quarters, there are limited decisions where the exhausted historical buildings will be demolished for economic reasons or the other approach of revitalize these quarters which means besides the heritage preservation, the economic and industrial output of the city will be enhanced [2].

The restored parts of the historical quarters were mainly used in order to attract tourists in several ways of representing the city's cultural heritage, but many parts were neglected and kept in their poor situation causing fragmentation in the economical, social, and environmental aspects of the city. This kind of fragmentation in the society and society separation, especially in terms of urban dwelling, has created changes in the reputation of the historical district and these quarters are not attracting people "to live" there anymore.

Livability as a basic meaning can be as the ability of living. Through the scholars studies the varying in the livability concerned factors was noticeable because of its main dependence on the human's experiences of living which indeed globally as well as historically is different. The livability of place generally measured by different factors but it is mainly concerned with the quality of life [3].

According to Pacione [4] the livability was defined as function associated with behavior of the interaction between environmental and personal features.

Scholars through their studies clarified about the basic livability dimensions, according to the National Research Council [5], there are three basic dimensions which are (environmental, economical, and social dimensions) [5]. Lynch [6] had considered that there are five dimensions of performance: “vitality, sense, fit, access and control” by answering his question that he asked” What makes a good city?”.

On the other hand, Okulicz-Kozaryn [7] considered that the better understanding of livability can be simplified by stating three distinguished concepts for the quality of life “normative, objective, and subjective” and emphasizing on the importance of removing the overlaps between them.

Additionally, the National Research Council explained about how the livability has common points with the sustainability according to the Bruntland Commission’s definition of sustainability, and how the livability is similar with sustainability in the idea of community capability of meeting the present life requirements without impairing the ability of future generations in meeting their own living requirements [5], [8].

The historical quarters are the parts of the city which under the threaten of obsolescence and natural disasters, but through the time, losing their value is another important issue to be taken in consideration. The restoration and conservation efforts for the built heritage can give the sense of giving life again for the built environment but the “livability” and the ability of achieving the livability is an important issue as well. It contributes to the important role of the city heritage which represents the city’s identity and the nature of the city’s core.

1.1 STATEMENT OF THE PROBLEM

Some parts of the historical area of Gaziantep are suffering from several problems like: The absence of urban features in many districts, ignoring physical situation of some dilapidated buildings, transportation traffic problem, car parking problem, lack of facilities, the huge disparity between buildings within adjacent districts or within the same districts in terms of conservative applications to one with ignoring the others causing in inequality even on the social levels. Some of the problems can be explained more below:

1.1.1 Land Use

In some ignored areas of the historical district, the absence of simple urban feature is noticeable like the absence of paved pedestrian paths and absence of public spaces for social interaction, low built environmental standards like dilapidated exterior physical situation of buildings in some parts, the ignorance of architectural design standards for instance, facades unsuitable materials and design in some parts, which eliminate the sense of the function of these places, but mainly the main functions of the land use problems:

Residential area: some houses were not demolished and kept on their residential function but they are in weak structural situation, with lack in infrastructure, low architectural design features, and lack of facilities.

Commercial area: some areas are serving the commercial function which doesn't need the good structural situation, aesthetical appearance, having good infrastructure or enough facilities.

1.1.2 Transportation

According to the fabric of the historical quarter, the narrow streets, organic texture and streets with closed ends, there is heavy traffic problem, and low traffic safety standards like absence of paved sidewalks, the narrow dimensions of streets in some parts which affect on the walkability's safety. On the other hand, there is accessibility problem, for instance, there are few numbers of bus stations as public transportation which can't serve the internal parts of the studied area and inclindness of some parts which affect on the walkability. The stakeholders tried to solve these problems by reorienting some streets, but still having traffic and accessibility problem within such a fabric. There are problems related to the transportation like car parking problem, transforming goods, long trip transporting, and vehicular accessibility.

1.1.3 Pollution

Environmental pollution can be attributed to different heating systems in winter which causes air pollution and emissions of close industrial factories, visual pollution for instance, inappropriate facades which architecturally don't fit the historical pattern, writings and

drawings on walls in some districts and unsuitable advertisement boards which have negative impact on the historical pattern, noise pollution according to different functions which are adjacent to residential buildings.

1.1.4 Fragmentation in The Society

The poor built environment with the cheap prices contributed to make these districts haven for people with low income, poor immigrant with different cultures and people with criminal tendencies.

So, by visiting the touristic parts of the historical districts their important role on the city level could be recognized but on the other side and adjacently to this rooter historical built heritage sorrowful side with bad living circumstances will be distinguished.

So, from this duality in the situation, within the city's core, this research has started in order to improve the living circumstances, determining the problems in the environment, which had critical impact on the livability, as accurate as possible, by giving the chance to the society to participate in measuring how livable these districts are and how livable they can be, beside considering the value of the architectural heritage of city's core and meditating the ability to keep its main features of this quarter through the recommended improvement strategy, in addition to the theoretical part of the study and the literature previous studies in this domain.

1.2 THE REASON OF STUDYING THIS PROBLEM

Gaziantep city went through rapid development especially through the last decade, the industrial progress was noticeable which led to growth on several levels, the immigrence movements played role on the city growth as well. The rapid increasement of population lead to the rapid and not well-planned city expansion on the western and southern part of the city. The impact of the previous facts was not able to be ignored because of its impact on two main levels:

1.2.1 On The Historical District Level

a. House for renting not as property: Giving attention to the buildings related to the touristic areas with ignoring other areas lead to keep these buildings impoverished situation, most of

them currently used as a cheap renting shelter for the people with low-income or people with a criminal tendency to stay in.

b. Safety problem: Though the value of this part of the city, but this value has been lost in some parts because of reputation and the absence of safety's comprehensive meaning as social safety related to crimes rates , and environmental safety related to the weakness in architectural and urban features which don't serve modern life demands like the absence of paved pedestrian paths and the buildings' poor structure which affected on the citizens feeling of safety against environmental disasters.

c. Transportation traffic: The city's historical quarter became more difficult to be accessed during specific times within the working hours especially at the end of work hour, with long time trip to reach some parts of that area.

d. Car parking problem: Although the efforts to produce cheap car parking areas, but according to the increasement in the car number and increasement demand on the located functions within the historical district people are facing difficulties to find place for their vehicles.

1.2.2 On The City Level

City's Rapid Growth**:** Rapid and not well-planned growth occurred especially in the last decade, it can be considered as polycentric expansion, connecting the city core or center (historical district) with the others centers but the futuristic vision is ambiguous. On the other hand, the constant change on the social, environmental, and economical conditions will have negative impact on the historical districts more than the new urban areas.

The main aim of choosing this problem is to find the potential in the existing historical district and encourage the people and decision makers to see that potential in these ignored districts rather than the rapid polycentric city expansion, the land value and importance became crucial not only on the sustainable urban development level but also on economical, historical and environmental level, the land value is increasing, so rather than producing more project and neglecting these parts it is important to see the potential within this quarter, Gaziantep city historical expansion and development map showed that it started from the core which was the around Gaziantep castle. Seeing the potential in these districts, increasing

the livability, improving the living circumstance and encouraging the people to return to the city's core with appropriate sustainable urban solutions, would contribute in the city's flourishing and as a starting point from the core.

1.3 RESEARCH OBJECTIVES

a. Determining the livability's Environmental indicators and the important indicators for the citizens, on the other hand, giving them the chance to participate in determining the aspects of the livability environmental problems in order to provide accurate suggestions to enhance the livability level.
b. Through the literature studies that link between Livability, Historic preservation and sustainability issues will be examined which will pave the way for this case study to provide approaches on the urban heritage level for now and maybe for the next studies.
c. Providing a broad vision about the important role of the historical quarters, how they represent the city's core, and how the environmental indicators could be employed in specific ways with respecting the architectural and urban heritage main features.

1.4 RESEARCH QUESTIONS:

This research fundamental question is:

a. What is the level of livability environmental dimension in the historical quarters of Gaziantep city?

   In order to answer this fundamental question through this study other sub-questions should be answered like
b. What is the livability?
c. What are the dimensions and criteria of livability? What is the importance of Environmental criteria in livability evaluation?
d. How the livability can be quantified to be assessed?
e. What is the linkage between livability (environmental dimension in particular) and historic preservation?

1.5 RESEARCH METHODOLOGY

This research will use multi research strategy, kind of mixed method which is a combination of quantitative and qualitative processes of analysis. As First stage of the research Qualitative method will be used in order to examine the livability and its related criteria through the previous studies especially the ones related Environmental dimension, the induced results will be used in order to make the appropriate questions to make interviews and questionnaires with the city's inhabitants in addition to the observation for the case study area, the Second stage will be Mixed of Qualitative and Quantitative method.

1.5.1 Qualitative Method

The qualitative method will be used to evaluate the traditional urban area performing by observation, direct observation for this area have been made through architectural and urban analysis. Through the survey participants were declaring about some problems which they were suffering the most, so this method can be considered as Contextual inquiry.

1.5.2 Quantitative Method:

A survey and questionnaire have been made with the studied area's inhabitants; they were asked about the induced livability environmental indicators which related to their experience in living within the studied area. The deduced results will contribute to determine the important livability environmental indicators for area inhabitants which the decision makers should be more concerned with.

The accurate determination of the problem by interacting with the concerned people who experienced the livability and measuring important factors of livability that would give the appropriate orientation to find the proper sustainable urban solution for these districts.

1.6 LIMITATION OF THE STUDY

Since the historical quarters' poor environmental condition as the dominant feature of this part of the city, the scope of this study was containing only the environmental dimension of livability as discussed in Chapter-2 considering it as critical issue to be studied. Normally, parks and green areas are contained in the range of public spaces, but according to the literature and in this study, they were considered as separate parameter of livability's

environmental dimension. In Chapter-3, to determine livability level 16 indicators were only observed, 22 indicators were relying on survey and 13 indicators of them were relying on both of survey and observation, to evaluate these 13 indicators it was relied on the surveys' dominant final results. This mixed method was used according to the nature of these indicators which directly related to the determination of measuring method, the available data for some indicators, inhabitants' capability in evaluating some indicators rather than others, and to provide intelligible results and vision about the studied area's urban livability level.

The survey included only the historical quarter inhabitants considering their experience in living within this quarter with its different criteria. Through data collection process the data were limited and there is marginalized district which named as *Düğmeci* even inhabitants weren't familiar with its name, it was more known as *Karagöz,* which made imperfection in the results related to them. Through questionnaire the inhabitants' educational level was an obstacle in conveying the definite meaning of questions and their answers were based on their way of perceiving the meaning. There is limitation in the available data, so, within Chapter-3, in the Visual Character the observation was made according on the available data on the official website of Ministry of Environment and Urbanization Gaziantep Provincial Directorate and the protected historical buildings evaluation was made according to Gaziantep Protection Application and Inspection Offices which they weren't available and it wasn't clarified about the intersection between both evaluations, so, it was considered that the obtained results weren't containing the protected historical buildings, this can be contained in the damage evaluation which was used in observing the parameter of Environmental Safety (Natural Hazards) which was based partially on these datas as well.

There is a proposed conservation plan containing wide part of our studied area, numerous buildings, which are contained in this map had been conserved while other buildings still under the conservation process or haven't been conserved yet, during the observation process, even though the livability indicators within the studied area were analyzed evenly and abstractly from the historical observation perspective, but the range for livability improvement recommendation was narrowed according to this proposed plan beside the value of the architectural heritage.

2. LIVABILITY

2.1 LIVABILITY LINGUISTIC MEANING

The term “Livability” as a noun literally means “the property of being livable” [9], also it was defined as “suitability for human living,” and as an adjectival meaning “fit or suitable or acceptable to live in or with”, it can be clarified as well as “can be lived” [10]. According to Cambridge [11] “Liveability” and in the US it is written “Livability” has the meaning of “the degree to which a place is suitable or good for living in:”. The “Liveability” as a noun came from the verb “live” which has according to Cambridge dictionary the synonyms like in Table 2.1:

Table 2.1: “Live” Verb Meaning According To Cambridge Dictionary Source [11].

Verb	**Synonyms**	**Meaning**
live	Be alive	(To continue) to be alive or have life
live in, at, etc.	Have a home	to have your home somewhere
live	Spend life	to spend your life in a particular way
live	Stay alive	to stay alive, especially by getting enough money to pay for food, a place to stay, clothing, etc.
live	Continue	(Of things that are not alive) to exist or continue to exist
live	Interesting life	to have an interesting life

By contemplating and examining the global changes through the decades, the meaning of “living” has been changed as well, if we meditate about “live” in the stone ages, it can have the meaning of *surviving* from the predators, the climate conditions, and the ability to find food and shelter. “live” in the epidemics ages can have the meaning of healing and stay alive, for the immigrants “live” can have the meaning of adapt with the new situation, for the people who are under the siege of war “live” can be for them finding safe place. “live” can be finding food and to stay alive for the countries which are suffering from famines. On the other hand, “live” for the rich people can have the meaning of enjoying life pleasures and leisure time, while “live” for the people with low income can mean the ability to provide

basic life requirements like (water, food, shelter). We can notice that the synonyms can be changed by different factors, which are first class related to the Human (with all the related condition to him), they will be explained deeply through this chapter.

The term “livability” emerged in the 1950s and 1960 through EBS (Environment-Behavior Studies) researchers’ studies which were mainly about how people are using and perceiving cities indeed. Architecture, urban design, and urban planning on the one hand, and social and behavioral sciences on the other hand, were combined together through these studies. They aimed to utilize the information in order to provide guidelines and recommendations. These studies' results in the 1980s and early 1990s led to the popularity of the livability concept which was mainly represented through the planners’ studies about the urban transitions within the cities from the decline of urban centers to rapidly rising suburban regions [12]. The popularity of livability term has increased through the time and by the rising of ranking surveys for the most livable cities around the world for instance, Mercer Worldwide Quality of Living Survey, and the report of World's Most Livable Cities. These ranking systems and many similar till nowadays are providing annual results using several measuring systems in order to rate the livability within the cities. These systems will be explained as well through this chapter.

2.2 LIVABILITY DEFINITION

Livability is a vast concept which could be defined on different ranges, many scholars since this term has emerged tried to provide livability definition from their point of view. According to Van Kamp [13], in general livability indicates to the opinions on the quality of life in any human formed living environment. The “livability” as a term is defined as people’s satisfaction with the social and physical conditions which surrounded by [14], [15], as well as their interactions with the environment which they are surrounded by [15], [16].

In addition, the National Research Council [5] clarified that the livability concept points out to the range which the attributes of a specific place can, as they interact with one another and with other places’ activities, satisfy inhabitants through fulfilling their economic, social, and cultural demands, as well as enhancing their health and well-being, and conserve natural resources and ecosystem functions.

As it has stated, livability refers to the quality of life based on which people experience the ability to maintain and protect others. Each city or town's context and texture should be taken into account while determining the concept and criteria for livability [17]–[19].

Considering the social, economic, physical, and psychological health of inhabitants within the urban system is sort of fulfilling the livability. Equality, justice, security, participation, movement and empowerment are basic principles which augment the livability concept.

In other words, we can define livability as, the ability to satisfy the "human" needs (psychological, and physical needs) to *live*, taking into consideration the linked principles with these needs like (equity, justice, security, freedom, participation, etc,..) in order to provide a healthy environment with its tangible and intangible properties creating the appropriate conditions for the human to maintain and augment humanity well-being, and improving the quality of life to adapt with the living circumstances which are changeable by the time and by the geographical location.

2.3 LIVABILITY AND RELATED CONCEPTS

Through the scholars' studies, the livability as a concept was linked with other concepts which are related to the human who is considered as the most important organism, whom most of the studies, evolvements, protecting and sustaining processes are turning around him. The term "livability" is often mentioned with certain linkage with (a) well-being (b) standard of living (c) happiness, and (d) Quality of Life in discussions [20], [21]. On the other hand, the livability considerably linked with the sustainability, through the National Research Council [5] study it was defined similarly to the sustainability by meeting peoples' needs taking in consideration the future generations. As well as, Ruth, & Franklin [21] have emphasized through their study about the relation between the sustainability and livability and how they emerged adjacently and their interchangeable relation. Through the following parts the relation between livability, Quality of Life, and Sustainability will be explained with more details.

2.3.1 Livability and Quality of Life

The quality of life contained the livability concept, they were mostly used reciprocally through the studies. The quality of life origin meaning returns to Plato, when he expressed

‘a good life’ concept, stating that living in harmony contributes increasing the happiness and strong feelings. Aristotle, produced the concept of objective and subjective indicators of a good or happy life, as he debated that behaviors, sensations, and beliefs didn’t create a perfect measurement of a delighted life [22].

In 1945, Abraham Maslow developed the ’good life’ concept, according to Maslow the humans have five essential needs including physiological, psychological, and self-fulfillment needs [23], [24].

McNulty et al. mentioned the livability important role and the relation between the economical success of the city with the quality of life within it. It was emphasized on the importance of livability elements in the economic growth and city development. So, increasing the livability should be critical target in the cities’ development strategies [25].

As it was mentioned the livability and the quality of life were mostly paired together so as VanZerr & Seskin [26] has stated “Livability” is the availability and quality of utilities found in both the built and natural environments while “Quality of life” is the user experience of those utilities and any related health benefits.

Dasgupta and Weale, [27] mentioned about the two types of measures of quality of life: the first is the reflection of well-being essentials, and the other, the people’s accessibility to the determinants of well-being.

Quality of life can be defined as an “overall level of wellbeing and fulfillment that people enjoy from a combination of their social, economic and community environment and their physical and material conditions” [28].

Okulicz-Kozaryn [7] through his study he focused on the peoples’ perception (satisfaction) while ranking the *livability* more than the ranking results indeed, through the study he made an investigation comparing Mercer “livability” ranking results with the real situation and peoples’ satisfaction, he found that the ranking is misrepresenting the real situation, so, he considered a good way to understand and evaluate the “livability” by examining the three apparent concepts for the “quality of life” : subjective, objective, and normative. If we would explain them separately, the ‘Normative quality of life’ points out list of things which philosophers and specialists had viewed as a ‘good life’, while ‘Objective quality of life’

refers to world objective qualities (not self-reported), for instance, Per Capita Gross Domestic Product (PCGDP) which is a measure of country's economic output, it is mainly used to determine the country's growth and to analyze the standard of living within it [7], [29]. Additionally, the Subjective quality of life provides measures for (self-reported) qualities, for instance, measuring happiness, satisfaction of people by questionnaire and surveys. We can't ignore the relation between these three concepts, and the overlap between the normative and the objective resulting the 'livability' as in the Figure 2.1

Okulicz-Kozaryn [7] emphasized through his study that the livability rankings providing results of measuring the 'standard of living', not the 'quality of life'.

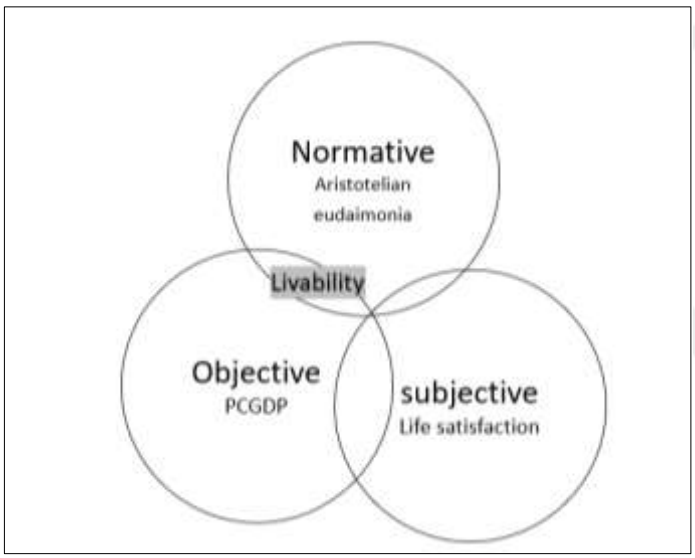

Figure 2.1: Livability Linkage To Normative, Objective and Subjective Qualities Of Life [7].

So, we can imagine the Quality of life, initially by the availability of facilities (transportation, educational centers, etc,…) or as it was mentioned the *objective qualities*, but by examining the peoples' satisfaction we can see varying in the results, so not only the presence of the tangible or objective qualities is important , the people experiences and how they are perceiving them (*subjective qualities*) became important indeed, and the easy to access to these facilities became crucial as well, by the time and human longing for evolvement and growth on the individual and city's level, so the quality of life became not only the availability of facilities and users satisfaction, or in other words fulfilling the life standards, it became the longing for improving the life standards to fulfill the well-being and giving opportunity to enlarge the circle around the quality of life to contain more luxury and more

leisure. Through the studies and the analytical thought, it became important to recognize the difference between needs fulfillment and go on the path of ‘having more and more’ which is the human nature of desires fulfillment.

So, basically the quality of life as in the Figure 2.2 consists of:

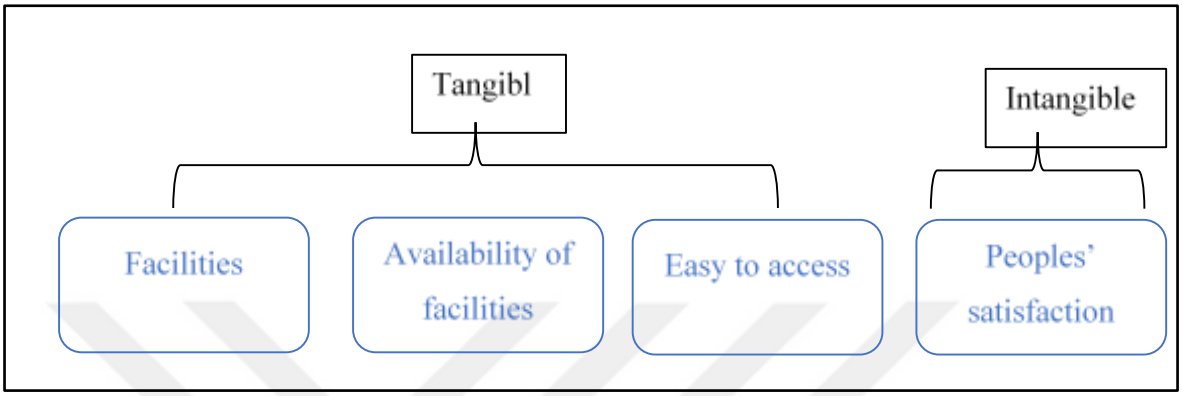

Figure 2.2: Quality Of Life Primitive Elements.

Through many scholars' studies, as was mentioned, the livability concept, the quality of life, quality of place, and sustainability were discussed together, and it was emphasized on having similarities in meanings and common notions between all of them which mainly concentrates on the relation between the individuals and the environment. In the Figure 2.3 as Shafer et al. [30] explained through their study, they explained about the intersection between the three basic parts of previous concepts which are (environment, economics, community).

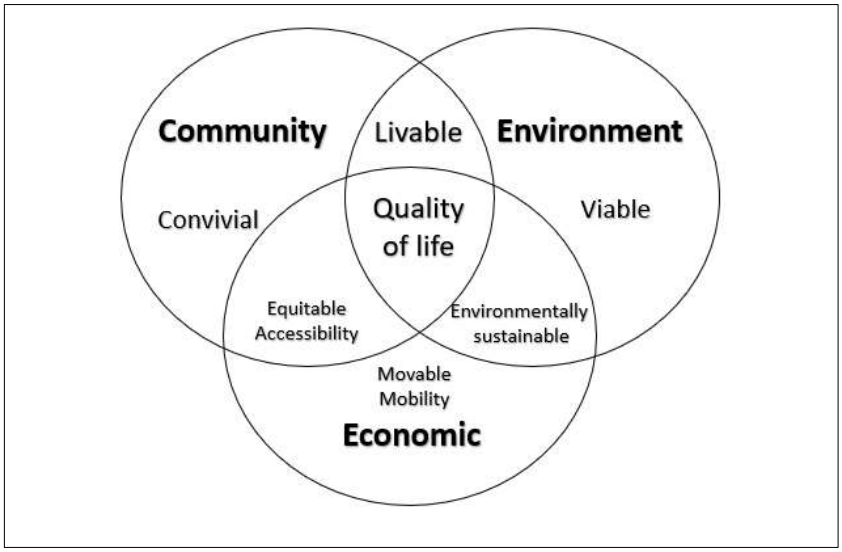

Figure 2.3: A Conceptual Paradigm Of Factors Which Contribute To Community's Quality Of Life From A Human Ecological Perspective [30].

The linguistic definition of the environment is the set of physical, chemical, and biological elements (such as climate, soil, and living things) that influence on an organism or an ecological community and eventually define its form and existence, in addition it was defined as the overall of social and cultural conditions that have impact on peoples and communities' life [10]. On the other hand, the definition of the community was stated as the total of specified individuals who have common history or common social, economic, and political aspirations and interests [10]. The economics was concerned or based on goods' and services' production, distribution, and consumption [10]. We can realize the livability is located in the overlap between the community and the environment, while the quality of life is located in the overlap between the three sections according to Shafer et al. [30]. Considering the time factor, the sustainability takes into consideration the *future* more than the livability and quality of life which mostly considers the "*here and now*" [13]. Through Van Kamp et al. [13] study it was stated about the quality of life elements, which are mainly linked to health and the daily living environment. As in the Figure 2.4

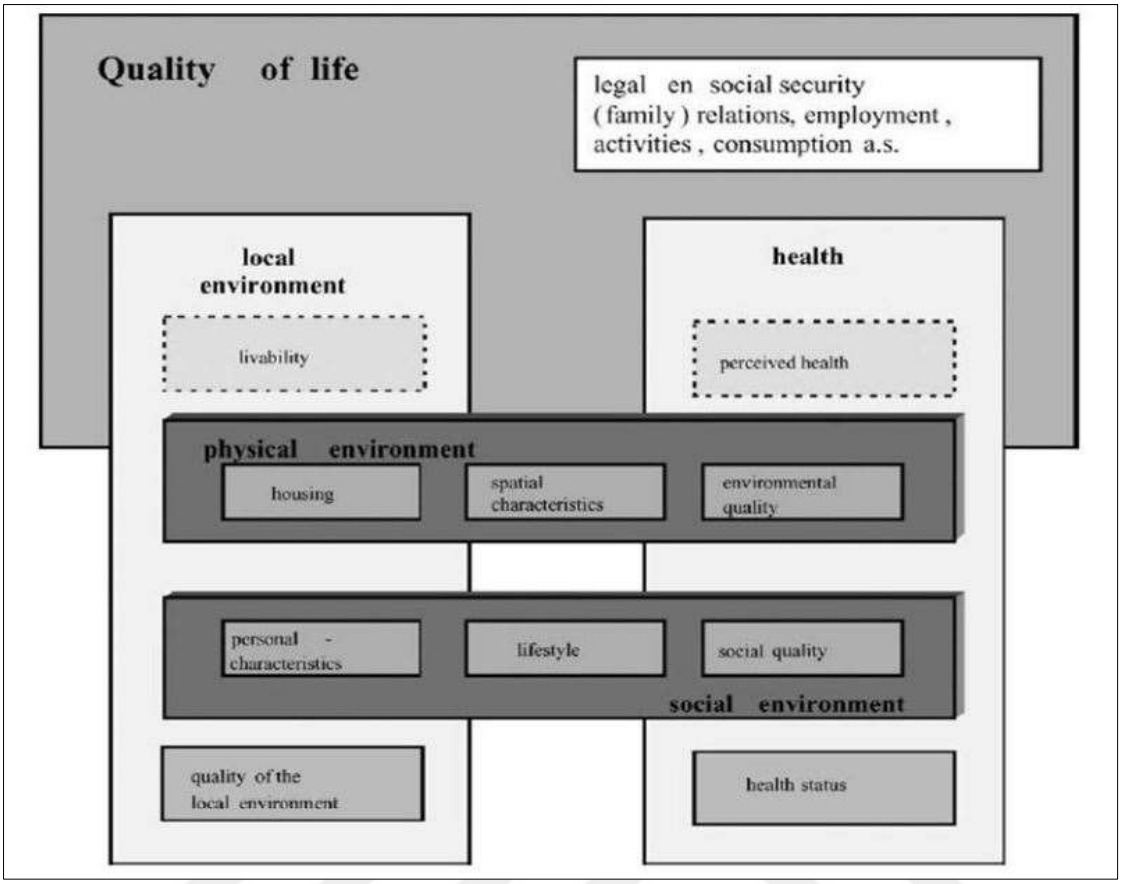

Figure 2.4: Scheme Of The Basic Elements Of Quality-Of-Life, Health And The Daily Living Environment [31].

On the other hand, and as Figure 2.5 the quality of life consist of several elements, which were basically stated as physical environment, health, natural resources, goods and services, community development, personal development and security. The linkage between quality of life and personal characteristics and also similitudeness between these elements and livability are apparent. These resemblances were indicated as security, physical environment, community development and health.

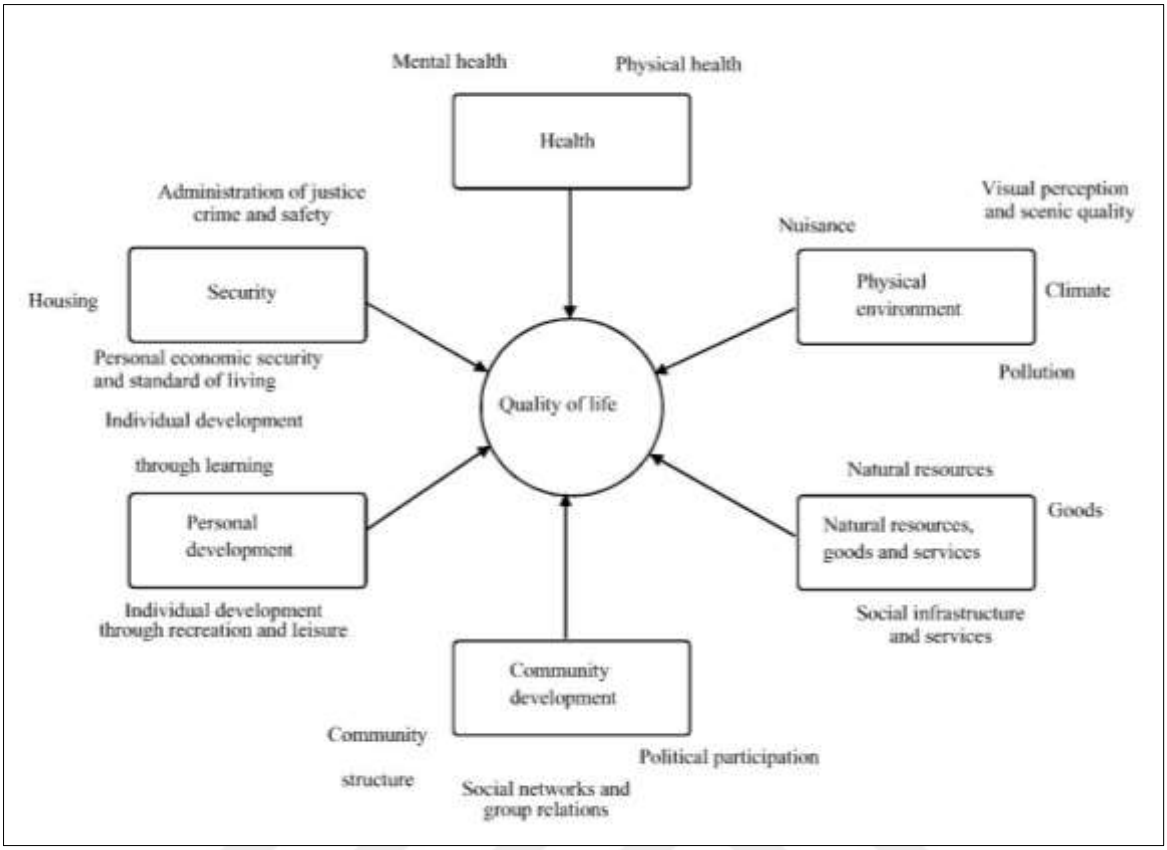

Figure 2.5: Quality Of Life Elements [13].

2.3.2 Livability and Sustainability

Sustainability with its brief meaning is being concerned with future generations and taking actions to guarantee the efficiency and sufficiency of current sources for these generations. It was indicated to the sustainable development aims of satisfying the present time needs with considering the ability to satisfy future generations' needs. [8], [12], [32]. On the one hand, most studies emphasized on the sustainability comprehensive dimensions which aim to protect humanity and our planet, for instance as it was stated by Ahmed et al., studies were concerned with greenhouse gas emissions, sources consumption, and electricity using rates with neglecting the inhabitants' satisfaction of sustainable procedures which have an impact on their living experiences. On the other hand, livability studies consider the social factors with similar importance to economic and environmental factors [12]. So, "*livability can be perceived as a critical component of sustainability*" [12]. In Figure 2.6 it was shown how the livability is important component of sustainability especially considering the human needs and satisfaction.

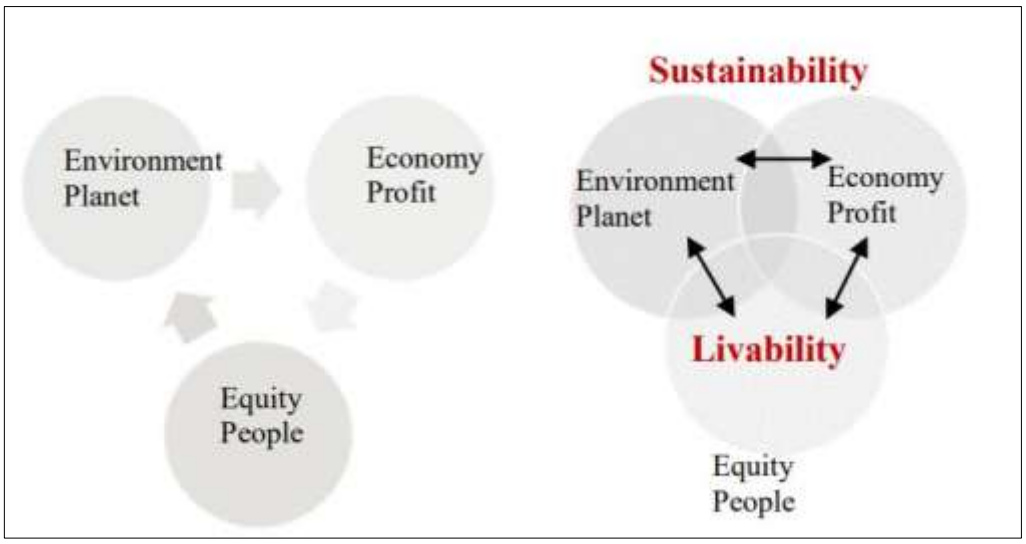

Figure 2.6: The Livability As Crucial Part Of Sustainability [33].

2.4 LIVABILITY INDEXING SYSTEMS

Numerous indices and ranking systems were developed in order to cover several aspects of the "Most Livable City" criteria, some were to cover criteria on the local level while others were on the international level. On the international level the most remarkable indexing systems are:

a- Mercer Quality of Living Index: Among the most prevalent and frequently cited indexing systems, the indexing was created to assist multinational companies in selecting wage structures for their employees when relocating them to a different city. Its range in evaluating living condition is 438 cities around the world [20].

b- The Global Liveability Index: This index is regarded as a crucial guiding tool as Mercer in urban planning issues. It was evolved by the Economist Intelligence Unit (EIU) for expatriates and investors, it examines the living conditions of 140 cities around the world, it provides the challenges which may meet when moving to one of these cities [33], [20].
c- Monocle Quality of Life Survey: This indexing system was created to help people planning their holidays destinations [20]. In other words it was less concerned with per capita GDP and more concerned on easy of traveling to international destinations. The domain of this indexing system covers 203 cities around the world [33].

The three organizations' ratings are calculated via both qualitative as well as quantitative methodologies, the qualitative ranking is relied on the findings of their in-house experienced

nation analysts and field correspondents in each city. On the other hand, the quantitative variables, the rating is determined depending on the relative performance of a location using external data sources or points. The points are then added up and weighted to produce a final score [33]. In Table 2.2 these indicators and sub-indicators of these indexing systems are presented.

Table 2.2: Economist Intelligence Unit, Mercer, Monocle Indexing Systems' Indicators and Sub-indicators [33].

Indexing system	Indicators	Sub-indicators
Economist Intelligence Unit (Global Liveability Index)	Stability	- incidence of petty crime - incidence of violent crime - terror threat - military conflict threat - civil unrest/conflict threat
	Culture and environment	-humidity/temperature - travelers ' discomfort of climate - level of depravity -social or religious restrictions -level of censorship -sporting availability -cultural availability -food and drink -consumer goods and services
	Healthcare	-availability of private healthcare -quality of private healthcare - availability of over-the-counter drugs -quality of public healthcare -availability of public healthcare -general healthcare indicators
	Education	-availability of private education -quality of private education -public education indicators
	Infrastructure	-quality of road network -quality of public transport -quality of international links -availability of good quality housing -quality of energy provision -quality of water provision -quality of telecommunications
	Spatial characteristics	-green areas, -sprawl -natural assets, -cultural assets -connectivity, -isolation -pollution

Table 2.2: Economist Intelligence Unit, Mercer, Monocle Indexing Systems' Indicators and Sub-Indicators [33] "Table Continued".

Mercer (Quality of Living Index)	Political and social environment	-relationship with other countries -internal stability -crime -law enforcement -ease of entry & exit
	Economic environment	-currency exchange regulations -banking services
	Socio-cultural environment	-media and censorship -limitation on personal freedom
	Public services and transport	-electricity -water availability -telephone -mail -public transport -traffic congestion -airport
	Recreation	-variety of restaurants -theatrical & musical -performances -cinemas -sports & leisure activities
	Consumer goods	-meat & fish -fruits & vegetables -daily consumption items -alcoholic beverages -automobiles

Some scholars through their studies have argued some issues related to the efficiency of indexing systems in terms of collecting data and the reliability of the induced results, in addition, the livability indicators and the dissimilarity in ratings although the overlaps between these indicators. For instance, Okulicz-Kozaryn [7] through his study by comparing Mercer city ranking (objective quality of life) and people's satisfaction (subjective quality of life) he found weakness in the relation between them, and he spot the light on the importance of what people are perceiving, and he mentioned that the livability indexing systems" measure standard of living, not the quality of life.".

Khalil [34] mentioned about the similarity between Mercer and EIU, many indicators are overlapping but the dissimilarity in weighting these indicators resulting different city's ranking, Vancouver was given as an example, it has gained the 3rd rank in Mercer and 6th in EIU. In the EIU index, weights are allocated evenly among the various indicators, on the other hand, Mercer has given importance in weighting to political environment, followed by medical services and public transport.

Gawlak et al. [35] have examined aging societies, and it was stated that most of the ratings miss to account for the demographic parts within these societies.

Cramer-Greenbaum [36] has stated that both Mercer and EIU index systems though their produced ratings were not concerned with the cost of living, Mercer provides Cost of living reports for 760, USD while their annual livability ranking is provided for free, EIU index as

well provided their 2018 Cost of Living report for 995, USD while the livability ranking was for free. in addition, in both systems evaluation of wages and bonus pay have been separated.

It is noteworthy to mention that it is difficult to determine *The Most Livable City* fairly, considering the indicators' weightings, their role in people's lives, each culture's priorities, on the other hand, some indicators were marginalized in terms of considering them crucial variable in determining the livability of the city, in addition, many scholars mentioned the difficulty to satisfy human needs and determine their degree in perceiving and satisfactions. So, although there are numerous indexing systems which they weren't mentioned above, there is no indexing system is capable to cover all livability criteria, and that didn't affect on the importance of these rating systems' role to employ the urban planners, decision-makers and responsible institutes to improve city's livability according to these limited criteria.

2.5 LIVABILITY DIMENSIONS AND INDICATORS

Many scholars through their studies tried to find a way to measure livability or find reasons behind peoples' preferring to live in one place rather than another, in some parts it was a matter of trying to quantify these reasons, and in other parts they couldn't. If we think initially, we can recognize tangible and intangible reasons or factors. For example, on the local level, if a family is looking for a house, they would take into consideration, the house's district infrastructure, the neighborhood accessibility, transportation utilities, schools, and many other aspects, on the other hand, while looking process they would consider the district's reputation, the nature of the community and their behavior, the safety, and many other intangible aspects.

These reasons or factors were named as "dimensions" and each dimension branches to give a set of "indicators". The varying in the number of dimensions was noticeable through the scholars' studies, but it was varying according to each community character, the cultures, the location, and the conditions [13], [37]. Leby & Hashim [38] through their study tried to show the varying in the dimensions' numbers according to the previous scholars' studies, considering on the first hand, the differences in the studies objectives, on the other hand, the common way of expressing the human understanding and experience of livability. Five key dimensions were stated on Omuta [39] study which, was about the livability and quality of life, through Holt-Jensen [40] study which was for improving the deprived neighborhoods,

four dimensions were stated. Heylen [42] stated four dimensions and the study was to observe the livability in Flanders and the Netherlands. Visser et al. [41] were four as well, and the study was to provide their leverage on the house worth in the Netherlands. and ODPM "Office of the Deputy Prime Minister" [43] stated four dimensions which was to provide statement about the livability of cities in England . On the Table 2.3 the dimensions were expressed namely [38].

Table 2.3: Liveability Dimensions Defined In the Selected Studies [38].

Omuta (1988) [39]	Holt-Jensen (2001) [40]	Visser et al (2005) [41]	Heylen (2006) [42]	ODPM (2006) [43]
Employment	Asthetics of living Environment	Housing	Dwelling	Environment quality
Housing	Personal	Social environment	Social environment	Physical environment
Amenity	Social relations	Physical environment	Physical environment	Functional environment
Educational	Functional	Functional	Safety	Safety
Nuisance				
Socio-economic				

Leby, & Hashim [38] through their study which, was mainly focusing on the dimensions and indicators and their impact on the habitants evaluating of livability, considered four main common dimensions which are" social, physical, functional and safe.". Lynch [6] provided five key dimensions "vitality, sense, fit, access and control." Which were an answer about his question of the contributed factors on the *good city*. Balsas [44] was concerned about the livability within the urban centers, he added to Lynch's dimensions the "viability".

The National Research Council [5] mentioned that there are three key dimensions of livability which are" the economy, social well-being, and the environment". Akbari et al. [45] through their study about the livability in the distressed areas in Isfahan

city depended on the same three key dimensions which are “economy, society, and the environment”.

Benita et al. [46] were more concerned with the spatial, geographical issues while measuring the livability in the dense urban areas in Singapore, they depended on eight dimensions which are “Public transport, Infrastructure, Community facilities, Open space and public space, Healthcare, Culture and environment, Education, Employment”.

Zhan et al. [47] studied the urban livability, how the people are perceiving the quality of the urban environment and the relation between urban livability dimensions and the overall satisfaction. The dimensions which were used through the study are: “urban security, the convenience of public facilities, the natural environment, the sociocultural environment, convenient transportation, and environmental health”.

Timmer & Seymoar [17] through their study about the livability in Vancouver and how they tried mainly to find the linkage between livability and sustainability, they clarified about the factors which influence both and examined the *Initiatives* which can be taken in consideration, expressing long term plans and visions to be taken in the improving process then sum up with focusing on three key words: livability, sustainability, and resiliency and the linkage between them and the actions which could be taken within Vancouver. In addition, they mentioned important aspects which are in direct relation to the livability but they depended on the main dimensions which are “social, economic, ecological, and cultural dimension”.

The scope of our study will contain the Environmental dimension in particular considering it as the main dimension which contains the other two dimensions. It will be explained deeply with its related indicators, how they influence different aspects of measuring the livability, how the scholars induced them to play a role in measuring the livability, the social well-being and the economy ‘s indicators will be mentioned briefly as well, in order to build a general understanding about the livability dimensions’ approach.

2.5.1 The Environmental Dimension

We can consider the environment as the medium which contain all tangible and intangible dimensions (social and economic) and several life activities and elements. The environment

is an essential infrastructure which produce the natural resources, like clean air and water, food for residents [5].

It can be represented in the ability to access to the green areas and parks [17]. Additionally, the quality of these parks and green areas is an important issue to be considered. We can't ignore their impact on the inhabitants' emotions and perception and how they influence on the inhabitants' satisfaction [38].

On the other hand, the surrounding environment can be represented by the built environment which was made as a result of human activities and living requirements, [48]. So, the quality of the built environment would be taken in consideration as an important issue.

2.5.2 Economic Dimension

The economic dimension can be represented by the jobs, inhabitants' income, the ability to get food, clothing, and shelter, the ability to have a fair chance in educational and healthcare domains, utilizing the environmental resources sufficiently in order to satisfy the present and the future's requirements [5].

Considering the important role of income on people's life, it was emphasized on the employment role which contributes directly to the people's satisfaction, and providing them the opportunities to improve their quality of life, giving them the chance to participate in specific social activities, providing them the sense of achievement, so they can be psychologically be satisfied with utilizing their efforts and the thing they can "get from" and "give to" [38].

2.5.3 The Social Well-Being Dimension

In order to simplify the idea of the *Social Dimension* we can consider the society as a number of individuals, then these individuals create groups of people within a specific environment, the net of relations between the individuals within one group and the relations between the groups within the society, the nature of these relations and how we are judging them, the human behavior, the relations impact on the individual and on the society, the progress in the relations and their influence on the society's future and on the environment would give us simple image about the social dimension.

The social well-being basically depends on the *justice*, and the equity in distribution of economic and natural resources on a social and spatial scale, the individuals' freedom and the equity in the opportunities were mentioned as critical aspects as well [5].

On the other hand, scholars concentrated on the community life and social interactions, the way of behaving between the neighbors, their relationships, a districts inhabitants' perception and feeling about place which is mainly linked with the satisfaction [38].

"Access to affordable housing is a key component of a livable city" in terms of preserving the cohesive social fabric and avoiding the fragmentation between society members on the neighborhood and city levels. Since it was emphasized that the city's livability is where its strength will be found within the interactions of individuals from "different perspectives and backgrounds", so, providing affordable places to live in, several housing options with different appropriate pricing, was considered an effective way to welcome people with different income levels [17].

The safety in some cases was considered as an independent dimension, while in other studies was contained within the social dimension, but it plays an important role on the inhabitants' perception of the livability of place, the safety is crucial need for human. "Everyone desires to live in a crime-free and safe neighborhood." [38].

2.6 THE ENVIRONMENTAL DIMENSION AND RELATED INDICATORS

Scholars through their studies mentioned many factors under the title of *environmental dimension*, the common factors which are linked to the subject of our study and suitable to the neighborhood scale were mainly highlighted and explained. Essential dimensions of livability have tendency to be transformed to "more specific set of indicators that can be used for evaluation." [5]. In other words, dimensions branch to the indicators which can provide the right means to track the livability and quantify aspects which provide measurable results of livability. The environment contains the natural and the man-made components which were mainly to improve people's life and fulfil their needs. Both of them will be explained separately in order to reach to the important parameters and indicators of the environmental dimension.

2.6.1 The Built Environment's Quality

The created environment by human was made to satisfy the human needs and life's requirements, as well as, to provide comfort life, and protection from different conditions (like weather conditions), resulting a built environment with suitable context which donate to the total quality of the environment [48]. A specific environment is formed by the human behavior and interaction as well [5]. That will lead, as a natural result, to shape the environment in a way that serve people's behavior and relations. The quality of an environment is an outcome of its creating components' quality, which have their own characteristics and partial quality [13].

On the other hand, designing and planning livable residential place is a result of considering the relation of different elements which are forming the residential built environment and influencing the human performance. They are namely:" Density of built form, roads, green and open space, cleanliness, safety, noise and convenience, etc…" [49]. It was briefly represented in the Figure 2.7 through the conceptual range of built-environment and livability, it was demonstrated how the social and economic factors along with time and technology are related to people's lifestyle. The livability is in relation with the built environment and space, each of livability elements are in relation with the built environment parameters and a sequence with indicators.

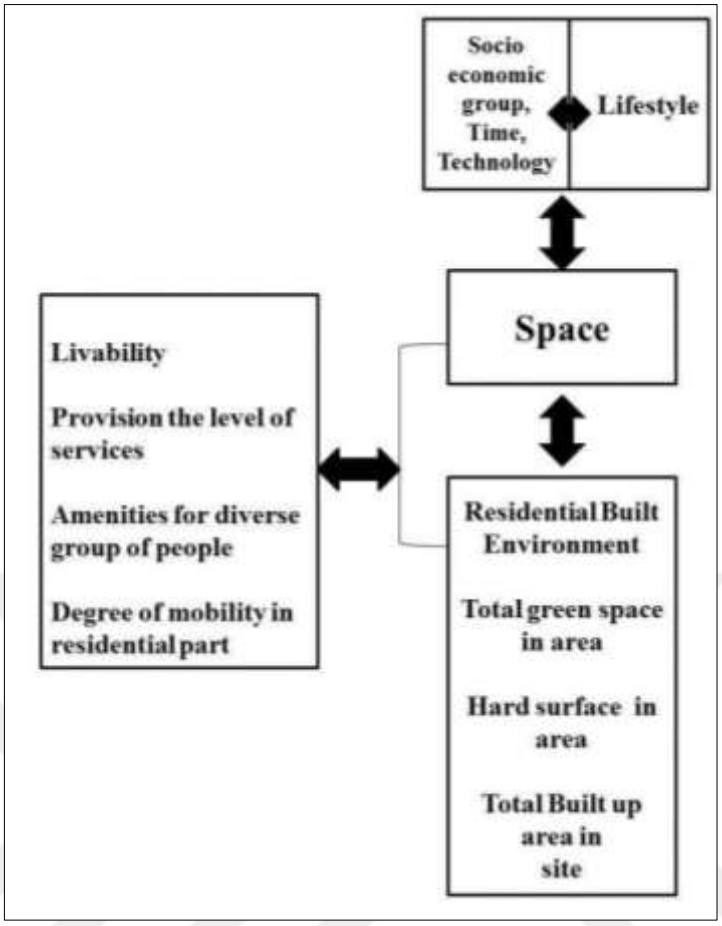

Figure 2.7: Conceptual Range Of Residential Built-environment And Livability [49].

The crucial livability factors which are related to the built environment differ from place to place and as it was mentioned according to the situation and the conditions, for instance, in the small cities it is important to have well designed transportation network, but in the metropolitan it can be considered as priority with considering vehicles capacity, the accessibility to the different parts, traveling time and distances, and many related issues, on the other hand, the modernity and technological development factors are essential nowadays. So, the importance or the weight of specific factor is dissimilar from a place to another, and in some cases within the same city some factors vary from the neighborhood level to the city level. The main parameters of the environmental dimension and were mostly common through studies are: the visual character of the built environment, density (population and buildings), parks and green areas, public spaces, streets and pedestrian paths, pollution resources and pollution freedom. [5], [17], [49]. Beside the mentioned parameters, it is noteworthy the safety, affordability, and beauty [25]. As factors which came from social and economical dimensions but they have their impact on the environmental parameters.

2.6.1.1 Visual character

Evaluating the built environment quality can be achieved firstly by examining the appearance, the aesthetical perception of it, in other words its visual character. As it was examined in the *Quality of life and livability* part, the physical environment is an important element, the visual perception and the scenic quality were considered as contributed part [13]. The sense of beauty can be considered as a human psychological need, in order to improve people's daily performance, and eliminate the negativity which can be gained through life streams. "Cities with beautiful, human-scale architecture and accessible public arrangements provide the inhabitants with a sense of security and well-being." [17]. As a result, the visual and aesthetical character of the built environment contribute in improving or detracting the livability. Losing the aesthetical sense (in particular, within areas with historical heritage) will cause losing this heritage value and identity, this built environment character will fade consequently, which will impact on the vitality of this built environment or in other word the livability, [50]. It is important to recognize the factors which are affecting the visual character of the built environment, the ones which influencing the aesthetical perception of people about this environment, and highlight the appropriate indicators in terms of their contribution and the weight of this contribution on measuring the livability. These factors are stated in Table 2.4.

Table 2.4: Visual Character Indicators.

Indicators of visual character
Buildings materials, colors, textures.
Peoples' beauty perception
Buildings physical situation
Buildings' Facades harmony

2.6.1.2 Density

The term of *Density* illustrates the relationship between specific physical area and the number of people who live in or use the area, on the other hand it should be recognized the difference between density and crowding (for instance, in housing studies, measuring the

population is the number of people per room or per bed room, so in these cases the families with several children would provide more density) [51]. Our case study, mainly and simply will be focusing on the population number per m2. Additionally, the ratio of built up area to the total area can be taken in consideration, whether a neighborhood was growing up or out, the tissue of a specific district can provide a pre-recognition of the district, and many studies highlighted the role of density on the people satisfaction, and in some cases the outcomes referred to choosing people for high density environment as long as they are satisfied in terms of other living factors "people trade off elements of their environment against each other for overall neighborhood satisfaction" [52]. However, 'density is an objective, quantitative, and neutral term'. neutral means it is difficult to recognize whether the density outcome levels are positive or negative [53]. The neighborhood density can lead to recognize connectivity, accessibility, walkability as main factors of livable cities which will be explained more through this chapter. The *Density* indicators according to the scope of our study are stated in Table 2.5.

Table 2.5: Density Indicators.

Indicators of Density
Proportion of total built-up area to site area
Proportion of population density to the total area

2.6.1.3 Public spaces

The public space can be described as the part of land which is located among private properties, these public spaces in the urban areas were considered as the streets, parks and green areas, high ways and other spaces which are open and able to be accessed from public [54]. The public spaces contribute in increasing the interaction between the society members which leads to increasing of humans' well-being. They can improve the social, economic and environmental values in terms of livability improvement. Public spaces quality have an influence on the surrounding, and in representing the attention they are getting from the decision makers in terms of achieving improvements which will influence other domains as it was mentioned, the public spaces with high quality are able to attract people, improve their performance in terms of living, working, studying, etc…, give the sense of safety and

welcoming, represent the city's level of care about livability several aspects, On the contrary, the low quality ones, reflect the ignorance of improving these aspects, increase the rate of crime and vandalism, and provide negative impact on the surroundings[55]. On the other hand, the people tendency of choosing specific public space represents the *livability* significantly [56]. Lennard and Lennard [57] stated about the critical role of public spaces in the cities' livability establishment considering the centralized public space as the hearth. According to the previous statements about the range of public spaces and their importance for livability, in this study Parks and green areas were considered as a separate parameter and wasn't within the public spaces range considering them as an important urban indicator in the perspective of urban livability and sustainability. Through the literature many studies were made in order to specialize the public spaces attributes with their positive and negative impact to employ them properly through the process of quality of life improvement, it is difficult to consider specific dimensions of public spaces' quality and generalize them, through our study we used the ones which were examined in providing the linkage between the quality of public spaces and quality of life and it was appropriate terms of dealing with our study scope. According to the given, the main factors of public spaces quality were related to the Condition/maintenance, Design, User, and Function. By examine more details and analyzing their details with the dimensions of quality of life we can recognize kind of intersection between these two domains within the urban designing process. According to the quality of public space mainly the (safety, maintenance, comfort) were considered and in the quality of life (feelings of safety, health and social well-being) were considered as well, which gave the chance for public spaces quality measurement [55]. In our study, using these indicators was employed to reach the livability measurement. In the Table 2.6 the features of quality public spaces as it was stated by Beck [55].

Table 2.6: Characteristics Of Quality Of Public Space [55].

Type of characteristics of quality of public space	**Characteristic**
Condition maintenance	Robust
	Adaptable
Design	Well-designed
	Legible
	Has a sense of enclosure
User	Healthy
	Has space for social interaction
	Fulfilling
	Relaxing
Function	Community resource
	Vital and viable
	Functional

2.6.1.4 Parks and green areas

Parks and green areas are elements of the public realm which mainly represents the exterior places [25] or exterior living environment. The nature contributes in reducing the stress which we face through our daily life especially in workplaces, improving students' performance, increasing the community cohesiveness. [58]. In other words, it has a positive influence on physical and psychological human well-being. So, the human is in constant need for nature. Through urban development, and in order to enhance physical and psychological health in addition to the urban livability, The United Nations' New Urban Agenda focused attention on making and sustaining well-linked and well-circulated urban green space networks [59]. There are many factors or indicators which influence the green areas and the peoples' perception and experience of them. Some of urban green space indicators are the design of these spaces (especially on the local level), the quietness,

however, as an opposite situation, the crowdedness which could be caused by the attractive attribute a space which can have a negative impact on livability evaluation, the accessibility to urban green spaces is a critical indicator that people with the nearest open public space have a better chance of walking. [60].

Table 2.7: Green Areas Indicators.

Indicators of green areas
Ratio of parks and green areas to total surfaces
Green area to built-up surface density

2.6.1.5 Streets and pedestrian paths

Streetscapes (especially urban districts) contain vehicular and non-vehicular sides which they are road, pedestrian path, street furniture, vegetation, and open spaces [25]. The livability is influenced with the streets character which is defined by the previous elements, the streets design has impact on attracting inhabitants with their different age groups (for instance, playing areas for children, appropriate for elderly to go out of their homes and do normal daily activities).

The relation of the functions in the ground floor of the buildings and the streets is important issue to be considered, in some cases the streets dimensions can affect on defining the streets safety in terms of vehicles speed, and traffic issues. Quite streets contribute to make inhabitants develop meaningful relationships more than the busier streets [61]. On the other hand, streets provide the sense of welcoming to the destination. Additionally, the walkability represents how pedestrian friendly the built environment is. it is an essential factor to assess the attributes of an area [62].

It is noteworthy that, the street's quality had an impact on determining the houses' prices as properties or rent [63], this issue branches to determine the inhabitants according to their incomes and how much they can afford whether for rent or owning houses. On the other hand, it has an impact on different aspects which related to the quality of life which is synonym of livability.

Table 2.8: Streets And Pedestrian Paths Indicators.

Indicators of Streets and Pedestrian Paths
Streets design and physical situation quality
Pedestrian sidewalk and walkability
Streets furniture
Streets safety
Ground floor functions' impact on the streets' busyness

2.6.1.6 Accessibility

The accessibility was considered as crucial factor which has direct influence on the livability. It was emphasized that "livability is a spatial and temporal phenomenon.". In many cases, scholars considered that the amenities and resources are likely to be more available to the people who are closer to them more than the others [5]. However, it should be taken into consideration that the ability to reach these kinds of amenities and resources is more important, which is the brief meaning of accessibility. According to Scott [64] accessibility relies on the *potential* or on *outcome*. The potential mainly is the attempting to quantify places or people's ability to interact with other groups of peoples and places [5]. Through the attempt to measure the accessibility, the differences between the mobility and accessibility should be recognized.

Mobility-based measure is simply the attempt of quantification of mobility or the physical ease of movement within a given environment. That includes travel times or distance, it is one component of the accessibility which is broader concept of traveling which contain "the opportunities at travel destinations and the general costs (social, economic, political, psychological) of reaching those destinations" [65]. As it was stated above, the accessibility is crucial factor of many indicators (public spaces, parks and green areas) which have direct positive impact on the livability improvement. Since our study is about the livability, so the accessibility indicators were taken in the perspective of measuring the livability. The indicators were chosen as Yeang [66] had produced them in order to make attractive, lively, safe and interesting places. Walking, cycling, public transportation, streets and traffic, parking and servicing.

Table 2.9: Accessibility Parameters And Indicators.

Parameters of accessibility	Indicators of accessibility
Non-vehicular Accessibility	Walking
	Cycling
	Safety of Non-vehicular accessibility
Vehicular Accessibility	Public transportation
	Cars accessibility
Accessing duration	Traveling time
Parking and servicing.	Availability of car parking areas
	Spread of car parking

2.6.1.7 Pollution

Health was considered as crucial factor which has direct impact on the livability [67]. As it was examined above about the linkage and the nature of relations between livability and sustainability which provided a brief idea about the importance of the clean environment on livability improvements. the general sanitation situation, different pollution resources (garbage, noise, air, water) have impact on the built environment and livability situation. if pollution environment was dominant attribute of the city people tendency to spend their leisure time in the open spaces will be less, because of the pollution impact on their health [68]. On the other hand, the built environment has an impact on inhabitants' quality of life, by discouraging littering in the public areas and encouraging people to collect wastes [49].

Table 2.10: Pollution's Indicators.

Indicators of Pollution
General health condition
Garbage collection
Proximity noise generating activities

2.6.1.8 Levels of derelict and vacant land

On the city level, and according to the urban development and cities' rapid expansion, the lands became more precious, this value the land varies according to several factors, it depends on its location according to the city, how accessible it is, the social value of it, and its futuristic value according to the development and planning processes [25]. As a primitive description from the urban perspective, lands can be defined as built or unbuilt lands, Pagano and Bowman [69] stated that vacant land can be private or public property unutilized or under-utilized land involving abandoned land, land containing desolate buildings and structures, small or irregularly shaped parcels, land with physical restriction for instance, intense inclindness, land prone to floods, etc. Mhatre [70] categorized five patterns of vacant lands as:

a. Remnant parcels, which are small or misshapen in size
b. Parcels with physical limitations, for instance, parcels with located on slopes or in hazardous zones which limits their futuristic development.
c. Corporate reserve parcels, these were kept for keep for future planning and development.
d. Land held for speculative purposes.
e. Institutional reserve parcels, and they been kept for future development of that function. [70], [71].

Brown-Luthango et al. [71] have argued about the positive and negative impacts of vacant lands. Vacant land could attract anti-social behavior like crime and delinquency. The presence of huge number of vacant lands refers to city's insufficient urban management system, on the other, vacant lands can provide opportunities in terms of revitalizing some urban areas, these revitalizing programs with new functional uses has positive impact not only on the city's urban level but also on the economic level. In Table 2.11 the indicators of Indicators of Vacant and Derelict Land are presented, firstly, the ratio of empty area to built-up area, the second, ratio of vacant buildings to total number of buildings.

Table 2.11: Indicators of Vacant And Derelict Land.

Indicators of vacant and derelict land
Proportion of empty area to built-up area
Proportion of vacant buildings to total number of buildings

2.6.1.9 Environmental safety (natural hazards)

Feeling safe is an innate human need according to Maslow's hierarchy of needs, the nature of urban environments could enhance individuals' safety feelings, especially against natural hazards which differs around countries, natural hazards can be earthquakes, landslide, hail, flooding, etc... the short-term impact of such hazards can be represented not only in the evacuation of influenced area, but also in the migration movements, the need for temporary shelters, and the unemployment problems, etc... on the other hand, the long term impact can be positive impact, like enhancing and assessing the cities' urban development, Satir et al. [72] through their study about Van city and by comparing the predicted urban development without Van 2011 earthquake and after, they proved that the actual city's urban development has gone faster after the earthquake more than the predicted Gis map.

Jome'epour et al. [73] through their study about the livability in the rural areas focused on the environmental dimension and they showed that the livability has influenced with natural hazards like earthquakes, flood and drought.

Table 2.12: Indicator of Environmental Safety (Natural Hazards)

Indicator of Environmental Safety (Natural Hazards):
Occurrence of natural hazards such as flood, earthquake, hail.

Table 2.13: Environmental Dimension's Parameters And Indicators.

Environmental dimension			
Parameters of built environment quality		Indicators	References
Visual character		Buildings materials, colors, textures.	[13], [17], [50]
		Peoples' beauty perception	
		Buildings physical situation	
		Buildings' Facades harmony	
Density		Total built-up area to site area	[49].
		Ratio of population density	
Public spaces	Condition maintenance	Robust	[55].
		Adaptable	
	Design	Well-designed	
		Legible	
		Has a sense of enclosure	
	User	Healthy	
		Has space for social interaction	
		Fulfilling	
		Relaxing	
	Function	Community resource	
		Vital and viable	
		Functional	
Parks and Green areas		Ratio of parks and green areas to total surfaces	[49], [60]
		Green area to built-up surface density	
Streets and Pedestrian Paths		Streets design and physical situation quality	[61], [62], [63]

Table 2.13: Environmental Dimension's Parameters And Indicators "Table Continued".

		Pedestrian sidewalk and walkability	
		Streets furniture	
		Streets safety	
		Ground floor functions' impact on the streets busyness	
Accessibility	Non-vehicular Accessibility	Walking	[65], [66]
		Cycling	
		Safety of Non-vehicular accessibility	
	Vehicular Accessibility	Public transportation	
		Cars accessibility	
	Accessing duration	Traveling time	
	Parking and servicing.	Availability of car parking areas	
		Spread of car parking	
Pollution		General health condition	[49].
		Garbage collection	
		Proximity noise generating activities	
Vacant and Derelict land		Proportion of empty area to built-up area	[25].
		Proportion of vacant buildings to total number of buildings	
Environmental Safety (Natural Hazards)		Occurrence of natural hazards such as flood, earthquake, hail.	[73].

2.7 THE ECONOMIC DIMENSION

The important role of the economic through different life aspects can't be ignored, according to European Union (EU) it was stated that the economy is a social process including people, social groups, institutions, and the government [74]. The livability and quality of life are one

of the important aspects which are related to the economy as well. Scholars through their studies indicated to the crucial role of the economy, which could be represented basically by the employment situation, the income rate and the vitality of the employment market. However, country's economic vitality has direct impact on its progress which can mean more opportunities for the individuals, more achievements on the individual level and on the country level, rising of the country, more improvements on other life aspects by the decision makers' contribution, by achieving these improvements the quality of life will be improved which means increasing the livability. It was emphasized on the critical role of the social, environmental, and sustainable economic welfare indices while assessing the quality of life regarding the economic indicators, since in some cases there was a negative correlation between the macroeconomic indicators and quality of life indicators [74], [75]. As it was mentioned before, the economic dimension can be represented apparently by the money-related issues, in Table 2.14 the most relevant indicators which were mentioned by the scholars in the perspective of livability and quality of life, the indicators are namely: 1-Employment and Quality of employment ,2- Income,3- Affordability, 4- Economic vitality, 5- Public Services and utilities.

Table 2.14: Economical Dimension Parameters And Indicators.

Economical dimension		
Parameters of Economical dimension	Indicators of Economical dimension	References
Employment	Employment/ unemployment/full-time / more than full-time/ less than full-time	[74].
Quality of employment	Wages	
	Work in general	
	The possibility to balance work, leisure and family obligations	
	prospect of qualification improvement	
	Prospect of career progress	

Table 2.14: Economical Dimension Parameters And Indicators “Table Continued”.

Employment relation to other factors of Quality of life	Satisfaction of consumption and purchase possibilities		
Affordability	Average rent price		[76].
	Population that spends 30% of their income on rent		
	Owned dwelling cost		
Vitality and Viability	Commercial output and wage		[77].
	Occupancy rates		
	variation of current usage		
Public Services and Facilities	Educational facilities	Primary and secondary schools	[78]
		Secondary vocational schools	
		Special Education Schools (blind or deaf students, schools for students with intellectual disabilities, and multidisciplinary special education schools)	
	Health facilities	General hospitals	
		Specialist hospitals	
		Clinics	
		emergency centers	
	Security facilities	Police stations, safe guards	
	Public Distribution System	Low-cost grocery shops	

2.8 THE SOCIAL WELL-BEING DIMENSION

The humans as individuals, group of people, community or nation take the first place to be satisfied by improving different aspects of livability. Different taken action are from human to the overall humanity. As it was stated, a city is not only a space with spatial boundaries provides living place. it is the place of social relations and interactions with inhabitants' different demographic features, beliefs, that would form assortment of social relations and create the social identity [79].

Through different scholars' studies and institutions efforts in terms of assessing livability, they were more concerned with general physical environmental improvements and economical revitalizations. In fact, we should be concerned as well with human and community, employing the urban design aspects and environment components to reinforce the society cohesion, and humans' relations as much as possible. On this context, the community's necessity is not only the physical containing. We can see, community shaped in the perspective of similar interests, and futuristic visions. These kinds of communities are more dominant rather the place-based ones, especially in the present time beside the internet network revolutionary presence, which facilitates the ability to consolidate people's thoughts, feelings, behaviors, and attitudes.

On the other hand, we can see how other communities were more attached to the places where they grew, the traditions which were considered as part of their identity. It can be considered that these kinds of feelings or the sense of belonging to place-based community was because of the similarity of daily routines, way of living, aspirations, traditions, memories, and simplicity of living especially for the old eras. it is difficult to generalize or limit, define or predict the human perceptions, satisfactions, or in other words, the feelings related issues, especially within the scope of livability or quality of life.

The social equity was considered as crucial factor, and according to it dimensions and indicators were formed and in continuous improvement from their first presence till nowadays. Noll,'s [80] explanation of social dimension was based on three basic factors which are " Social cohesion, Social Exclusion, Social Capital" under these titles many other indicators were stated like the sense of belonging, solidarity, individuals' participation in social activities, trust, and social interaction. Other factors were used by the scholars as a

parameter of social dimension like, Social Equity and Security [81]. Public education [45]. In Table 2.15 the indicators and parameters of Social Well-being Dimension which were mentioned by scholars are clarified, the indicators are namely: Social Cohesion, Social Interaction, Social Equity and Equality, Safety, Public Educational level.

Table 2.15: Social Well-being Dimension Parameters And Indicators.

Social Well-being Dimension:		
Parameters of social well-being	Indicators of social well-being	References
Social cohesion	Sense of belonging to (common community, identity, nation)	[80]–[82]
	Strong connection between the society members	
	Community resilience and adaptability	
	Loyalty and Solidarity	
Social interaction	Meaningful, positive relationships among people	[82], [83]
	Sociability of Society and their openness to face-to-face interactions	
	Trust in relations among inhabitants	
	Participation in social activities	
Social Equity and Equality	Equity in (educational attainment, health care)	[17], [80]
	Equity in working opportunities	
	Equity in housing affordability for different income level within the neighborhoods	
Safety	Safety of walking on the neighborhoods	[84], [85], [86]
	Safety of vulnerable society members (elderly, women, poor people)	
	General neighborhood night safety	

Table 2.16: Livability Dimensions And Indicators.

Dimensions	Parameters	**Indicators**	
Environmental dimension	Visual character	Buildings materials, colors, textures.	
		Peoples' beauty perception	
		Buildings physical situation	
		Buildings' Facades harmony	
	Density	Proportion of total built-up area to site area	
		Proportion of population density to the total area	
	Public Spaces	Condition maintenance	Robust
			Adaptable
		Design	Well-designed
			Legible
			Has a sense of enclosure
		User	Healthy
			Has space for social interaction
			Fulfilling
			Relaxing
		Function	Community resource
			Vital and viable
			Functional
	Parks and Green areas	Ratio of parks and green areas to total surfaces	
		Green area to built-up surface density	
	Streets and Pedestrian Paths	Streets design and physical situation quality	
		Pedestrian sidewalk and walkability	
		Streets furniture	
		Streets safety	
		Ground floor functions' impact on the streets' busyness	
	Accessibility	Non-vehicular Accessibility	Walking
			Cycling
			Safety of Non-vehicular accessibility
		Vehicular Accessibility	Public transportation
			Cars' accessibility
		Accessing duration	Traveling time
		Parking and servicing.	Availability of car parking areas
			Spread of car parking
	Pollution	General health condition	
		Garbage collection	
		Proximity noise generating activities	
	Levels of Derelict and Vacant Land	Proportion of vacant area to built-up area	
		Proportion of vacant buildings to total number of buildings	
	Environmental Safety (Natural Hazards):	Occurrence of natural hazards such as flood, earthquake, hail.	
Economical dimension	Employment	Employment/ unemployment/full-time / more than full-time/ less than full-time	
	Quality of employment	Wages	
		Work in general	
	Employment relation with some other factors of the Quality of life	Satisfaction of consumption and purchase possibilities	
	Affordability	Owned /rent dwelling	
		Average rent price	
		Population that spends 30% of their income on rent	

Table 2.16: Livability Dimensions And Indicators "Table Continued".

	Vitality and Viability	Commercial output and wage	
		Occupancy rates	
		variation of current usage	
	Public Services and Facilities		Primary and secondary schools
			Secondary vocational schools
			Special Education Schools (blind or deaf students, schools for students with intellectual disabilities, and multidisciplinary special education schools)
		Health facilities	General hospitals
			Specialist hospitals
			Clinics
			emergency centers
		Security facilities	Police stations, safe guards
		Public Distribution System	Low-cost grocery shops
Social Well-being Dimension:	Social cohesion	Sense of belonging to (common community, identity, nation)	
		Strong connection between the society members	
		Community resilience and adaptability	
		Loyalty and Solidarity	
	Social interaction	Sociability of Society and their openness to face-to-face interactions	
		Trust in relations among inhabitants	
		Participation in social activities	
	Social Equity and Equality	Equity in (educational attainment, health care)	
		Equity in working opportunities	
		Equity in housing affordability for different income level within the neighborhoods	
	Safety	Safety of walking on the neighborhoods	
		Safety of vulnerable society members (elderly, women, poor people)	
		General neighborhood night safety	

2.9 LIVABILITY IN THE HISTORICAL QUARTERS

The city's historical quarters represent the city's core, its essential role is not only how long these historical landmarks had stood opposed to time, but also how they reflect the identity of the city, create the aesthetic character of the city, and influence the inhabitants' sense of belonging to the great city which they are living in.

According to the rapid urban development these districts are under the threat of physical deterioration. On the other hand, these districts, according to their conditions, are not able to satisfy their inhabitants' present-time needs [87]. So, the livability level decreased in these districts. Well planned preservation process is required in order to enhance the livability with its different related aspects within these districts.

2.9.1 Historic Preservation Role for Livability

Through the literature, in most cases the preservation concept, besides maintaining the city and community's unique identity and providing a healthy physical environment and community, its dominant orientation was to enhance the economics on the neighborhood level and on the city level which will lead to the development, not only as a consequence but also as a parallel process [25], [88].

"Historic places connect us to our past, to our future and to each other... We must cherish, protect and nourish the future of our historic places" [17], [92]. These sentences can summarize the main aim of preservation process of the historical quarters of cities, the governments and concerned institutions' efforts should be oriented to augment and achieve this concept.

Timmer & Seymoar [17] stated the importance of the regional physical aesthetic and the common values on the city's history, it is the city's memory that is based on. Furthermore, the citizen's quality of life experience is directly linked to the aesthetic character of the city, like its open spaces, urban squares, streetscapes, local districts, the architecture. Overall, these components form the city's identity and lead to its essence. Previous constituents enhance citizens' sense of security and well-being. The city's aesthetic determination can be mainly occurred as well, by getting back to the essence and the city's memory and preserving the historical buildings and quarters.

2.9.2 Historic Preservation Factors and Indicators

The preservation process, superficially, is concerned with buildings' maintenance according to their basic role in representing the historical quarters. In fact, the buildings' physical and aesthetical statuses are related to economic and social situations' progress as well. Scholars through studies about preservation process, importance, and relation with quality of life's essential factors stated preservation factors and indicators which contribute in clarifying the preservation process ramifications which intersects with several indicators of livability dimensions.

Firstly, Adler [88] has emphasized on the preservation role on the communities which is affected by the healthy downtowns which are attributed to their buildings' situations, the factors which she has stated are:

2.9.2.1 Community character

Each community has its own identity which arised by the accumulation of values and life experiences as well as the city's identity which is determined by its important and well recognized buildings. Creating "sense of place", which enhance the individuals feeling of comfort, is crucial initiative and occurs by buildings preservation. It also has contribution on defining the character of the community [88].

2.9.2.2 Economic vitality

The vital economy is important on the city level and on the historical downtown level too. A healthy community is important and can be reached by generating efficient business and preserving buildings within historical quarters. Their importance according to their representative role city's valuable heritage, some small businesses are better to be grouping located in the city's downtown, and in some cases, restoring old buildings is financially better than constructing new buildings [88].

2.9.2.3 Mix of uses

Functional diversity in the historical quarters is important to augment the stability of the economy. Different functions' containment like residential apartments on the upper floors and commercial functions on the ground floors (banks, restaurants, retail shops, etc…), contribute to enhancing the district's liveliness through different day times. Public

institutions as well, have an important role in district activities, like post offices, libraries, and state offices [88].

2.9.2.4 Ownership

The ownership is an important factor in the historical quarters, since the buildings' owners have more tendency to protect their property from obsolescence rather than renters or absentee owners. These processes of buildings protections and improvements promote the economical situations and livability. In some cases, giving financial aid to the buildings' owners to help them in preserving process contributes on keeping properties owned by their descent owners and augment the livability within the community [88].

2.9.2.5 Streetscape

The historical quarters character is influenced directly by the streetscape's quality, it also contributes on "sense of place" creation and related to the district's good manifestation and community's image. Streetscape designing components like, well-designed sidewalks, appropriate streets lightening elements, street furniture, areas which enhance the social interactions and public events, buildings facades, all of these elements contribute in giving the sense of welcoming and attract different people and visitors, which lead to reach the livability [88]. In Table 2.17 the intersection points between historic preservation factors and livability dimensions will be explained.

Table 2.17: Intersection Points Between Historic Preservation Factors And Livability Dimensions.

Historical Preservation factors (Adler) [89].	Intersection with Livability dimensions-indicators
Community character	Social dimension
	Environmental dimension (Visual character)
Economic vitality	Economic dimension (Vitality and Viability)
Mix of uses	Environmental dimension (Streets and Pedestrian Paths- Ground floor functions' impact on the streets busyness)
	Economical dimension (Vitality and Viability)
Ownership	Economic dimension (Affordability)
Streetscape	Environmental dimension (Streets and Pedestrian Paths)

2.9.2.6 Historic preservation indicators

Assessing the efficiency of historic preservation processes, which their impact is not limited to improving the physical environment, was effective through the integration of its indicators into the community and processes of planning. Estimating the alteration impacts became easier, whether they have positive, negative, or balanced impacts. the preservation indicators which were mainly related to the community's experience and following the quality of life format provides clear information about the past directions, present reality and future direction. The preservation indicators were categorized into four main sets, which are explained in Table 2.18, Gauging indicators are mainly concerned with the quantity and variety of historical resources in the area and community, protecting indicators are concerned with the strategies and regulations, Enhancing indicators are related to the collaboration and incentives, and Interfacing indicators are concerned with functional issues and the usage of properties [89].

Table 2.18: Historic Preservation Indicators [90].

Indicators	Features
Gauging	Historic fabric, Districts, structures, landmarks, Assessed property value trends, Historic district/property reinvestment.
Protecting	Historic preservation element/plan integration, Design guidelines, Historic preservation survey, Historic preservation commission, Preservation ordinances.
Enhancing	Historic preservation non-profits, Neighborhood participation, Main Street program.
Interfacing	Housing affordability, Heritage/cultural interactions, Business use, Community use factors

Table 2.19: Intersection Points Between Historic Preservation Factors And Livability

Historic preservation Indicators (McLendon et.al.) [90].	Intersection with Livability dimensions-indicators
Gauging	Environmental dimension (Visual character-Public spaces- Accessibility)
Protecting	Environmental dimension (Visual character-Public spaces- Streets and Pedestrian Paths)
	Economical dimension (Vitality and Viability)
Enhancing	Environmental dimension (Visual character-Public spaces- Accessibility)
	Economical dimension (Vitality and Viability)
	Social well-being dimension (Social interaction)
Interfacing	Economical dimension (Vitality and Viability-Affordability)

2.9.3 Historic Preservation Role For Livability And Quality Of Life

"The International Making Cities Livable Movement" was instituted in 1985, one of their main targets was characteristic determination to design and preserve in the historical quarters. they have many objectives but the linked ones with the livability and quality of life are mentioned:

a. Forming neighborhood environment featured with visually cohesiveness
b. Making a native economical generating sources.
c. Maintaining variety of perspiration, culture, and yield.
d. Increasing housing affordability.
e. Creating neighborhood featured with vitality and sustainability [25], [90].

2.9.3.1 Visually cohesive neighborhoods

City's historical quarters have their distinctive and remarkable architectural style, which make them charming and cohesive for their inhabitants [25], [90]. This aspect is more concerned and measured by the visual character of the built environment.

2.9.3.2 Local economic sources

Historical quarters can provide a resource for income, with their attractive character for the tourists and visitors, which can enhance the vitality, the economy and provide jobs for people like crafts which representing cultures, in addition, this activities of shops and other different functions can increase the livability within the district. [25], [90].

2.9.3.3 Diversity and affordable housing

Preservation and restoration processes are economically an appropriate method which lead to the housing affordability and decrease housing related problems. Furthermore, existing houses preservation and restoration contributes to maintain the communities' interactions and integrations beside housing affordability [25], [90]. On the other hand, it was stated about the role of diversity in functions, ages, and buildings' sizes in the social and economical equity which are important targets needs to be reached by the preservation processes [91].

2.9.3.4 Vital and sustainable neighborhoods

Revitalizing of buildings, as a part of historic preservation, was considered better process rather than destroying them. Revitalizing improve the economic situation, raise the level of quality of life, enhance the livability. Furthermore, it improves the social interaction between community members and enhance feeling proud of belonging [25], [90].

Table 2.20: Intersection Points Between Historic Preservation Factors And Livability.

Historic Preservation Indicators (Allison & Peters) [91].	Intersection with Livability dimensions-indicators
Visually Cohesive Neighborhoods	Environmental dimension (Visual character)
	Social dimension (social cohesion)
Local Economic Sources	Economical dimension (Vitality and Viability)
Diversity and Affordable Housing	Economic dimension (Affordability)
	Social dimension (Social Equity and Equality- Social interaction)
Vital and Sustainable Neighborhoods	Economical dimension (Vitality and Viability)
	Social dimension (Social interaction- Social cohesion)

To sum up, the important role of historic preservation processes can't be underestimated, its contribution to the historical quarters' physical environment or in other words its aesthetical identity which is related to the society members' relations, perception of the city's beauty, and vitality, their satisfaction of housing, affordability, in addition, enhancing the city attractiveness which improves the economic vitality and viability, the overall of these indicators can represent the intersection with livability indicators which means enhancing the livability and quality of life. *"We must cherish, protect and nourish the future of our historic places."* [17], [92].The importance of paying attention to historic preservation which means enhancing livability is to be more concerned with the future, having a vision about the next generations' living qualities, and estimating the availability of resources, which can be achieved in some aspects by applying sustainable urban development plans and processes, leaving them the cities as a valuable legacy which give them the sense of pride, satisfaction, and desire to sustain.

2.10 EXAMPLES OF LIVABLE CITIES

For the past 10 years, annual livability assessment has been published, in Table 2.21 according to the Economist Intelligence Unit (EIU) ranking of 172 global cities, the three

most livable cities are stated in order to examine these cities later as an examples and show the intersection of their livability aspects with our theoretical scope of our study. It is noteworthy that, the absence of the livability ranking in 2020 was according to the Coronavirus global pandemic (covid-19), and the determination of Auckland (New Zealand) in 2021 as the most livable city was according to the pandemic shifts list related to the health care and the lockdown measures and restrictions [93].

Table 2.21: Top 3 Cities Economist Intelligence Unit (EIU) Ranking [94].

Top 3 cities Economist Intelligence Unit (EIU) ranking			
Ranking year	1st place	2nd place	3rd place
2013	Melbourne (Australia)	Vienna (Austria)	Vancouver (Canada)
2014	Melbourne (Australia)	Vienna (Austria)	Vancouver (Canada)
2015	Melbourne (Australia)	Vienna (Austria)	Vancouver (Canada)
2016	Melbourne (Australia)	Vienna (Austria)	Vancouver (Canada)
2017	Melbourne (Australia)	Vienna (Austria)	Vancouver (Canada)
2018	Vienna (Austria)	Melbourne (Australia)	Osaka (Japan)
2019	Vienna (Austria)	Melbourne (Australia)	Sydney (Australia)
2020	Covid-19 pandemic period		
2021	Auckland (New Zealand)	Osaka (Japan)	Adelaide (Australia)
2022	Vienna (Austria)	Copenhagen (Denmark)	Zurich (Switzerland), Calgary (Canada)

2.10.1 Vienna (Austria)

For a long time, Vienna was among the most livable cities according to Economist Intelligence Unit (EIU), in 2018, 2019, 2022, It took the first place as the most livable city. According to most of the reviews the inclusivity of different livability indicators was mentioned through surveys, interviews and scholars' studies. The main livability features which were mentioned by many reviewers and one of them was the Expat Arrivals who stated them below:

Healthcare: accessing to free healthcare facilities for all citizens and paying acceptable levies for medication.

Public transportation: providing paths for several kinds of transportation methods (bikes, bicycles, public transportations) which enhance the city's accessibility, on the other hand, the walkability of the city (especially within the historical quarters) contributed on reducing the congestions problems.

Culture and Art: the city's culture and which was represented through its museums, galleries, theaters, and the coffee related culture represented by the well spread coffee shops and with pleasant spaces.

Housing Affordability: this affordability was the most within the renting scope comparing the renting prices with the income and with other European cities.

Safety: Austria it was ranked as the fifth peaceful country in the world in 2022.

Clean air and Minimal Pollution: it is featured with its clean environment and green

reputation [95].

Other important aspects were stated like:

Proper educational facilities.

cultural heritage preservation and keeping historical buildings.

aesthetic and well-designed public spaces.

[25], [90].

Table 2.22: Intersection Of Vienna Livability Features With Historic Preservation And Livability Indicators.

Vienna livability features	Intersection with Livability dimensions and indicators	Intersection with Historic Preservation indicators
Healthcare	Economical dimension (Health facilities) Social dimension (equity and equality)	
Public transportation	Environmental dimension (streets and pedestrian paths-accessibility)	Streetscape- Gauging- Protecting- Enhancing- Mix of uses
Culture and Art	Environmental dimension (Visual character)	Protecting- Enhancing- Visually Cohesive Neighborhoods- Community character
Housing Affordability	Economical dimension (affordability)	Diversity and Affordable Housing- Interfacing- Ownership
Safety	Social dimension (safety)	
Clean air and Minimal Pollution	Environmental dimension (Pollution)	
Educational facilities	Economical dimension (Public Services and Facilities) Social dimension (Public educational level)	
Heritage preservation and keeping historical buildings		Protecting- Enhancing- Visually Cohesive Neighborhoods
Public spaces	Environmental dimension (Public spaces-Parks and green areas)	Gauging- Protecting- Enhancing

2.10.2 Melbourne (Australia)

Melbourne took the 1st place as most livable city according to EIU for five years, in 2013,2014, 2015, 2016, 2017, and the 2nd place in2018, 2019. In 2021, and according to

Covid-19 lockdown restrictions included the schools, restaurants and cultural events, it took the 8th place.

The city's essential objectives were stated as:

a. Thriving and sustainable city
b. Economic growth
c. Social equity
d. Environmental quality [25].

On the other hand, many features which contribute to enhance livability were stated by reviewers like:

a. Population diversity: Multicultural society.
b. Healthcare High quality: superior reputation for healthcare and accessing to high quality healthcare facilities and medications.
c. Streetscapes: The functional, economical and cultural diversity of the city enhanced by the city paths system.
d. Physical environment: The beauty of Melbourne's nature, its cultural heritage representative architecture and its festivals.
e. Parks and green areas: [96].

In addition, the city's Historic Preservation objectives which concentrate on the historical buildings preservation in order to maintain the city's historical, architectural, character and identity.

Table 2.23: Intersection Of Melbourne Livability Features With Historic Preservation And Livability Indicators.

Melbourne livability features	Intersection with Livability dimensions and indicators	Intersection with Historic Preservation indicators
Thriving and sustainable city	Environmental dimension (Pollution)	Vital and Sustainable Neighborhoods
Economic growth	Economical dimension (Vitality and Viability)	Local Economic Generators -Vital and Sustainable Neighborhoods
Social equity	Social dimension (Equity and Equality)	Visually Cohesive Neighborhoods
Environmental quality	Environmental dimension (Visual character)	Visually Cohesive Neighborhoods
Population diversity	Social dimension (Social Cohesion "resilience and adaptability"- Equity and Equality)	
Healthcare High quality:	Economical dimension (Health facilities) Social dimension (equity and equality)	
Streetscapes	Environmental dimension (Streets and pedestrian paths)	Streetscape- Gauging- Protecting- Enhancing- Mix of uses
Parks and green areas:	Environmental dimension (Parks and Green areas)	
historical buildings preservation		Protecting- Enhancing- Visually Cohesive Neighborhoods

2.10.3 Copenhagen (Denmark)

Copenhagen has gained the 9th place in 2018, 2019, and the 2nd place in 2022. Noticeably, it has rised according to the efforts which were employed to achieve improvements on different

domains, which are linked with livability features. the most repeated features which were stated by public reviews were:

a. One of the safest cities with low crime rate
b. Good healthcare
c. Best bike-path system keeps healthy lifestyle
d. Sustainability and waste recycling: Around 58% of its waste is recycled and 40% is used for Copenhagen's district heating system [97].

Table 2.24: Intersection Of Copenhagen Livability Features With Historic preservation And Livability Indicators.

Copenhagen livability features	Intersection with Livability dimensions and indicators	Intersection with Historic Preservation indicators
Safest city	Social dimension (safety)	
Good healthcare	Economical dimension (Health facilities) Social dimension (equity and equality)	
Best bike-path system	Environmental dimension (streets and pedestrian paths- accessibility- Pollution)	Streetscape- Gauging- Protecting- Enhancing- Mix of uses
Sustainability and waste recycling	Environmental dimension (Pollution)	

3. CASE STUDY (GAZİANTEP)

3.1 GENERAL INFORMATION OF GAZİANTEP CITY

Gaziantep is located in the westernmost part of Turkey's southeastern Anatolia region as in the Figure 3.1. Gaziantep as a population is the ninth biggest city in Turkey and the biggest city in the southern part of Turkey.

Gaziantep has wealthy cultural heritage, according to Kurian [98] it was considered as one of the oldest inhabited cities in the world. The location of Gaziantep in the southern part of Turkey and north to Levant (Syria, Jordan, Lebanon, and Palestine in the historical decades) and between Mediterranean Sea and the Mesopotamian region, have given it an important role on different levels, and through history different empires have tried to seize Gaziantep and make it subordinated to them, many old civilizations were hosted like Assyrians, Persians, Romans, Byzantines, Abbasids, Seljuks, and the Ottoman Empire [99]. According to it, Gaziantep contains many structures and artifacts which represents these different civilizations. The passing of the silk road through the city contributed in the protection of city's cultural and commercial qualities [99]. Gaziantep name was firstly Ayintab, it was named by the Arabs and Arramics which means the "bright spring" then the city was honored with the title of "Gazi" for its inhabitants' courage it resisting French siege and in the present time it is known as Gaziantep [100], [101].

Till the recent days Gaziantep has an important role on the country's industrial and commercial level, it is famous with carpet manufacturing and the diversity of Turkish traditional food, flavors and handcrafts. In the last decades the city has developed rapidly on different levels, resulting an increasement in the population especially in the last decade according the immigrants' movements. This increasement in population led to shelters need increasement and as a result city's rapid expansion.

Figure 3.1: The Location Of Gaziantep According To Turkey [102].

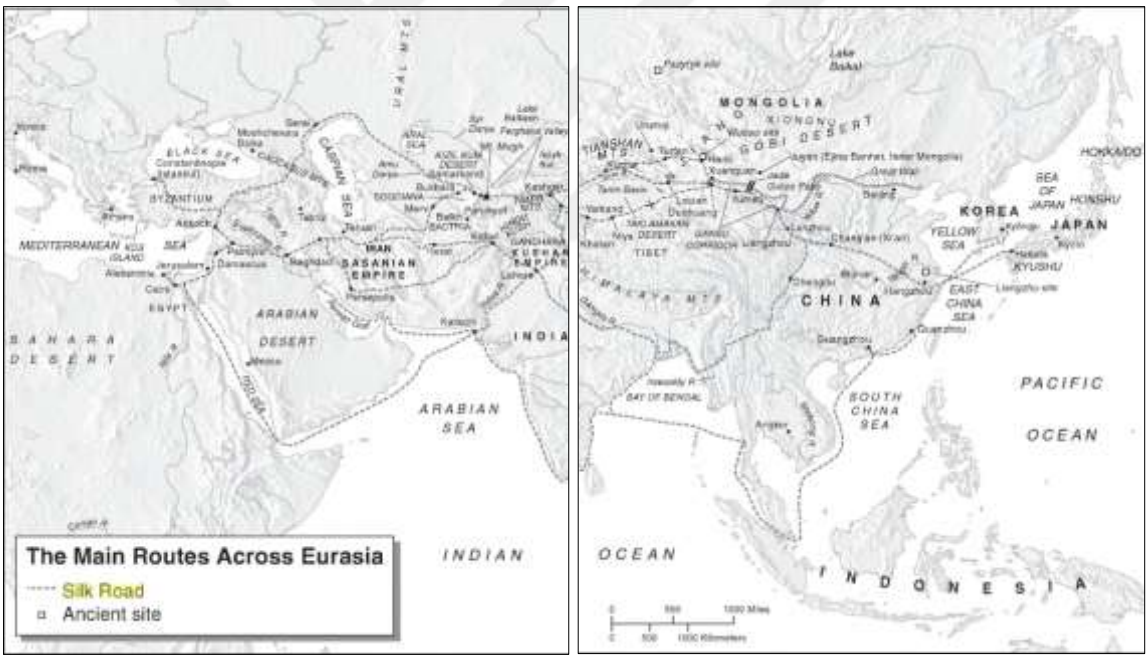

Figure 3.2: Silk Roadmap [103].

3.2 HISTORICAL DEVELOPMENT OF GAZİANTEP

The first habitation in Gaziantep was the Doliche city at BC 1700, Doliche's location was in the northern part of Gaziantep [98]. Gaziantep had gone through many struggles between ruling powers along the history, it was mostly attributed to its important location. Gaziantep was ruled by different empires through the history, but the remarkable empires which made

the difference and shaped the history of the city were: Hittites between 1800-1200 BC, Roman domination 2nd and 4th centuries AD, Mamluks ruling between 1277-1516, Ottoman empire beginning of 15s to 19s [101], [104], [105]. After the proclamation of the Republic of Turkey in 1924 Gaziantep was turned into a province, in 1926 Nizip sub-province was made a district and connected to Gaziantep, in 1933 and as a result of removing Osmaniye and Pazarcık districts from Kahramanmaraş Islahiye district was connected to Gaziantep, Oğuzeli district was established and connected to Gaziantep in 1946, Araban and Yavuzeli were established and connected as well in 1957. In 1989, the Metropolitan Municipality of Gaziantep was established, and Şahinbey and Şehitkamil districts were formed in the Center. In1991, Karkamış from Nizip District and Nurdağı from İslahiye District became a district. In 1995, Elbeyli Sub-district of Oğuzeli district and its villages were connected to Kilis province [105]. The districts which were mentioned before are shown in the Figure 3.3

Figure 3.3: Gaziantep Administrative Boundary Map [106].

Gaziantep was established around the castle which was built in the 2nd and 4th centuries AD on a large mound, the main aim was to emphasize on the Roman suzerainty, by putting up numerous towers on the northwest part of the hill to act as an outpost and to maintain the security of the Alleben Creek and the parallel roads to it [101]. Gaziantep's population growth started at the beginning of 1950s according to the migration movements from the

rural areas to the city, and the Syrians' migration movements in 2013 played crucial role in population increasement [104].

Table 3.1: Gaziantep's Population Through Years [104], [107].

Year	1980s	1990s	2000	2012	2022
Population	808.697	1.140.594	1.385.249	1.799.558	2.154.051

According to the historical development analysis of Gaziantep there are four master development plans, each one can represent the urban development orientation and how each plan represent a preiod of time needs and aspirations. so we can consider that each plan represents a time phase and these four phases are:

1930-1950 period: First master development plan of Gaziantep was prepared by Herman Jansen in 1938 as in the Figure 3.4, it was emphasized on two main purposes, the first one is linking the city's railway line to the northern part of the old city, the second one, is widening the highway to Aleppo in south of the old city along east-west direction. According to this plan Gaziantep was partitioned into three regions which were defined by railway route, the old city's southern and western parts were used for housing development, Gaziantep population in 1938 was approximately 50.000 and according to Jansen's estimation population would increase to 150,000 in 1950 but indeed to became only 70.000 [104].

1950–1970 period: In 1950 Kemal Ahmet Aru and Kemali Söylemezoğlu provided a new urban plan for Gaziantep, it was emphasized on the traditional urban values of the city and road system. The streets within the old city like Gaziler were renewed and were appropriate for motor vehicles passing. the population in this period was increasing rapidly and unexpectedly, there was a noticeable migration movement from the rural areas to the city resulting an increasement for shelter demand, that led to slums and high-rise apartments manifestation apart from the old city. Some new neighborhoods had appeared and contained unauthorized buildings due to housing needs for low-income immigrants (like Karşıyaka and Düztepe). Even though multi stories building system has appeared in new residential district but some low-rise buildings in the old city were demolished and rebuilt [102], [104].

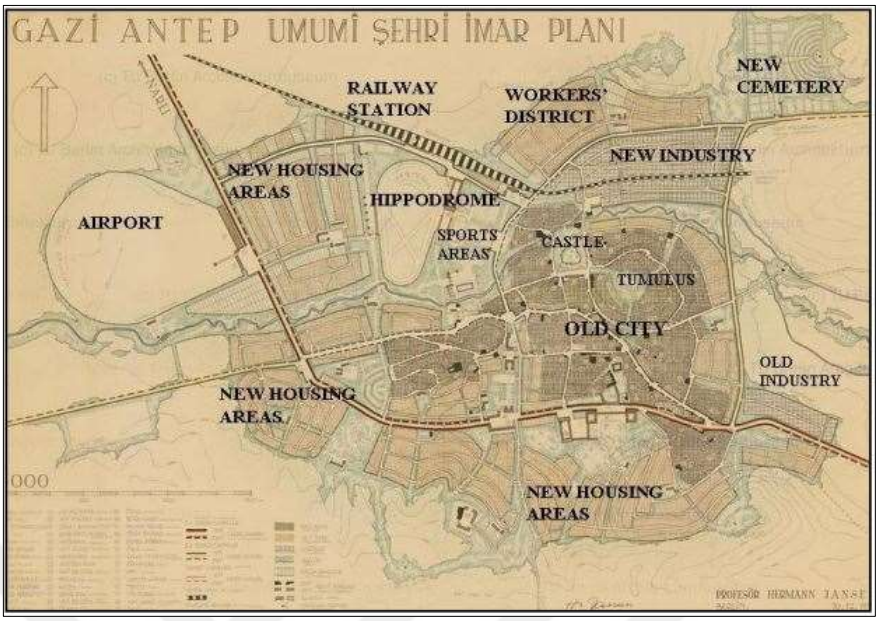

Figure 3.4: Gaziantep Urban Plan By Jansen In 1938 [104].

1970–1980 period: The 3rd expansion plan was provided by Zühtü Can, the population estimation was 1 million, due to this estimation this plan was prepared to satisfy city's needs. The population in 1995 didn't grow as expected but then it accelerated quickly and caused the continuity of unauthorized buildings and squatter housing construction and the city's unplanned expansion, on the other hand, residential neighborhoods were planned to meet the needs for shelters for the middle- and high-income level of people and these neighborhoods were considered as the new city center [102], [104].

1990 and after period: The fourth plan was prepared by Oğuz Aldan 1990. it was estimated that the population will reach 1.800.000. by 2005, according to it, city's planned areas increased from 8.000ha to 21.000ha, according to the need for shelter more residential areas were added and planned to meet those needs. on the other hand, the industrial districts continued to expand [102], [104].

In 2011 proposed master development plan by Egeplan Planlama was accepted by MMG, and it was considered as the 5th master plan, it relied on the discussed developments of 1993, according to this plan residential districts like Sarıgüllük, Emek, İbrahimli, Yeditepe, Güneykent, Karataş were contained in the development process and Kızılhisar as a new district was planned to be contained. On the other hand, planning new industrial zones

contributed in the population growth acceleration, on the other hand the city center assessing process was considered slow and economically cost. The city center played the role as city's single service sector for trade, tourism and management sectors. It was noticeable that the city center problem, as residential and functional city's focal point problem, wasn't able to be solved although this phase of planning process [108].

According to city's expansion analysis main factors were: urban population estimation, planning city's zones according to this estimation and need for residential areas, residential zones according to people's income, industrial development, connecting the city's zones and city's transportation system. In the Figure 3.5 the Metropolitan Municipality of Gaziantep MMG provided city's expansion map through different periods of time.

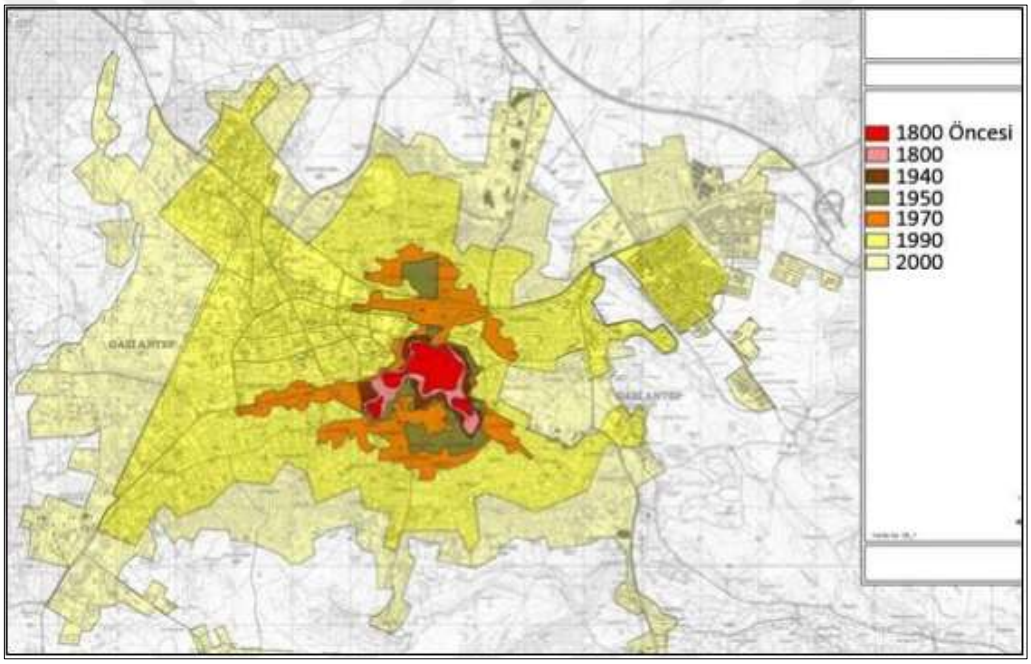

Figure 3.5: Gaziantep City's Development Map [108].

3.3 CHARACTERISTIC OF HISTORICAL DISTRICT'S URBAN TISSUE

According to the scholars' studies about the historical texture of Gaziantep and the main factures which had influenced the urban tissue were, the topographic, climatic and socio-cultural conditions [109]. The city's topography influenced the urban texture by giving it an organic form and that was because of settling on the top of the hill in the historical texture [102]. On the one hand, the socio-cultural conditions mean traditions, inhabitants life style and their aspirations have a crucial role in the city's traditional houses designs, the main idea

was the privacy and protection by isolating the house from the streets, this isolation was by constructing massive and high facades with less windows to the streets, and more opening to the courtyard, *sofa* or "*hayat*" [110]. The houses were defined by the place of the *sofa* or "*hayat*" as it is known according to scholars' studies about Turkish traditional houses. Basically, there are three types which are: houses without a sofa, houses with external sofa, and houses with inner sofa.

On the other hand, the climate played main role in housing orientation, since Gaziantep has hot weather in the summer, and cold winter, so the traditional houses were oriented in a way which provides appropriate shadow for the courtyards, benefiting from the north western winds during summer period and supplying houses with protected warm areas during the winter. The narrow streets with the high walls have provided for the inhabitants shaded pedestrian and to benefit from the winds in the hot weather as well [102].

Figure 3.6: Gaziantep Traditional Urban Texture [102].

By examining the urban tissue of Gaziantep as in the Figure 3.7 it was clarified by the scholars most of houses contained the external sofa or with courtyard and this courtyard was surrounded by the other functions like (kitchen, toilet, warehouse, etc…) that was because of the dry hot weather of Gaziantep and as it was mentioned to achieve the most privacy the

house was isolated by massive stone walls with a few small windows which located in the upper floors and mostly with fences or screens, the traditional houses contained mostly 2-3 floors. Most of windows of the houses were opened to the courtyard, and the houses entrances differentiate between to the court yard or to the building as in the Figure 3.8.

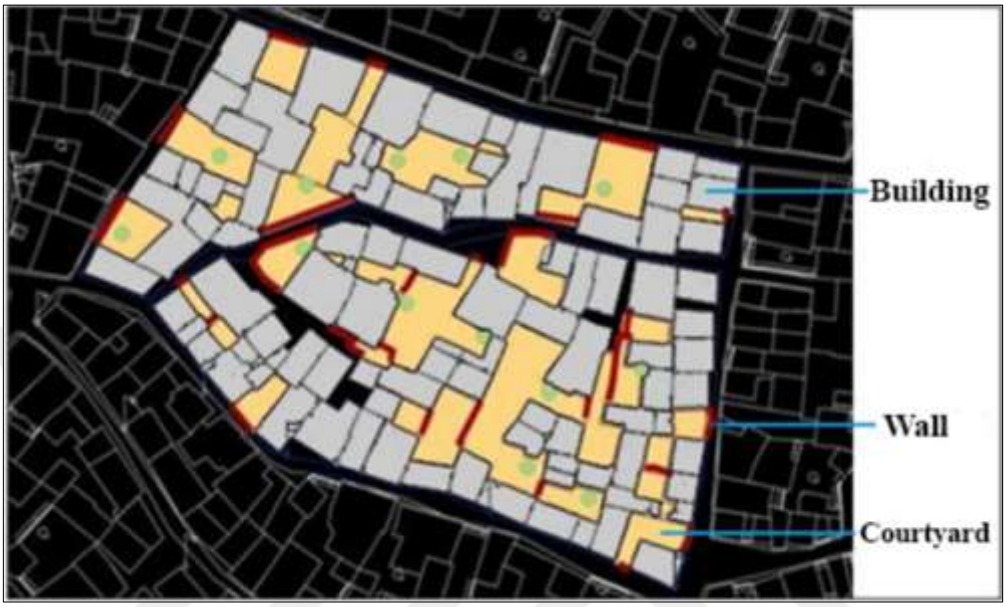

Figure 3.7: The House-Courtyard-Wall-Tree Relationship That Forms The Traditional Texture Of Gaziantep [102].

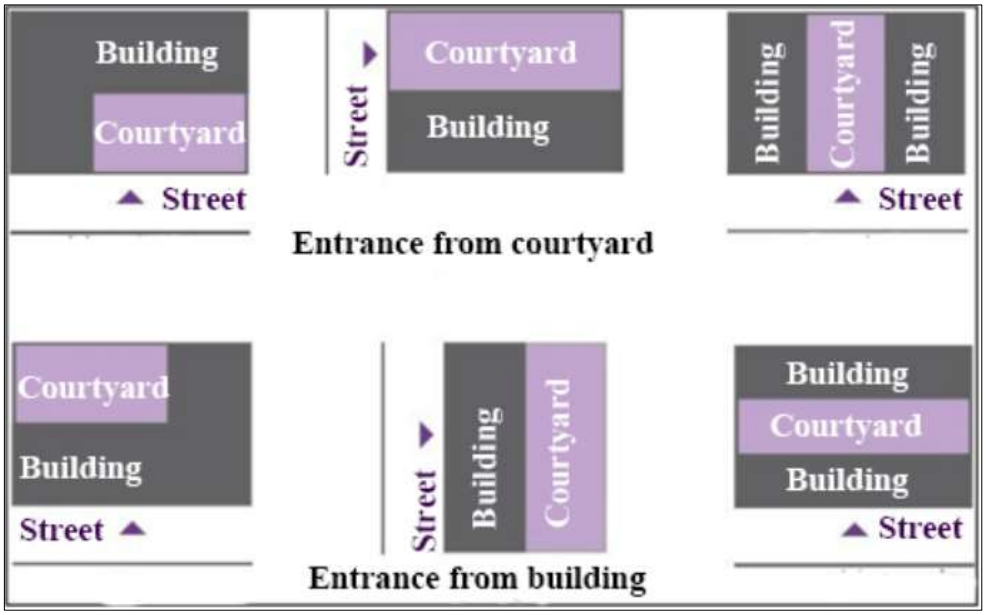

Figure 3.8: Different Street-Courtyard-Entrance Types In Gaziantep Houses [102].

In the historical district of Gaziantep, the urban tissue doesn't contain much of streets for vehicles, they are mostly narrow pedestrian streets which branches to streets with dead ends. It was noticed that the empty spaces were left to be as courtyard for other buildings which will be built [102].

Figure 3.9: Bey District, Gaziantep [111], [112].

3.4 CASE STUDY ANALYSIS

The case study as in the Figure 3.10 area located within the historical part of the city with an 814,101.5 m2 as a total area containing Gaziantep castle and some parts of city's heritage. Although it contains in some parts the city's valuable heritage but in other parts through the built environment's analysis the old ruined buildings will be reviewed and other livability environmental indicators will spot the light on hidden parts of these districts.

As it is shown in the Figure 3.11 for the districts' land use analysis the dominant functional pattern between the 11 category is the residential function with percentage of (40.2%) then the commercial function with percentage of (6.65%),the mixed commercial-residential with the percentage (3.7%) [113].

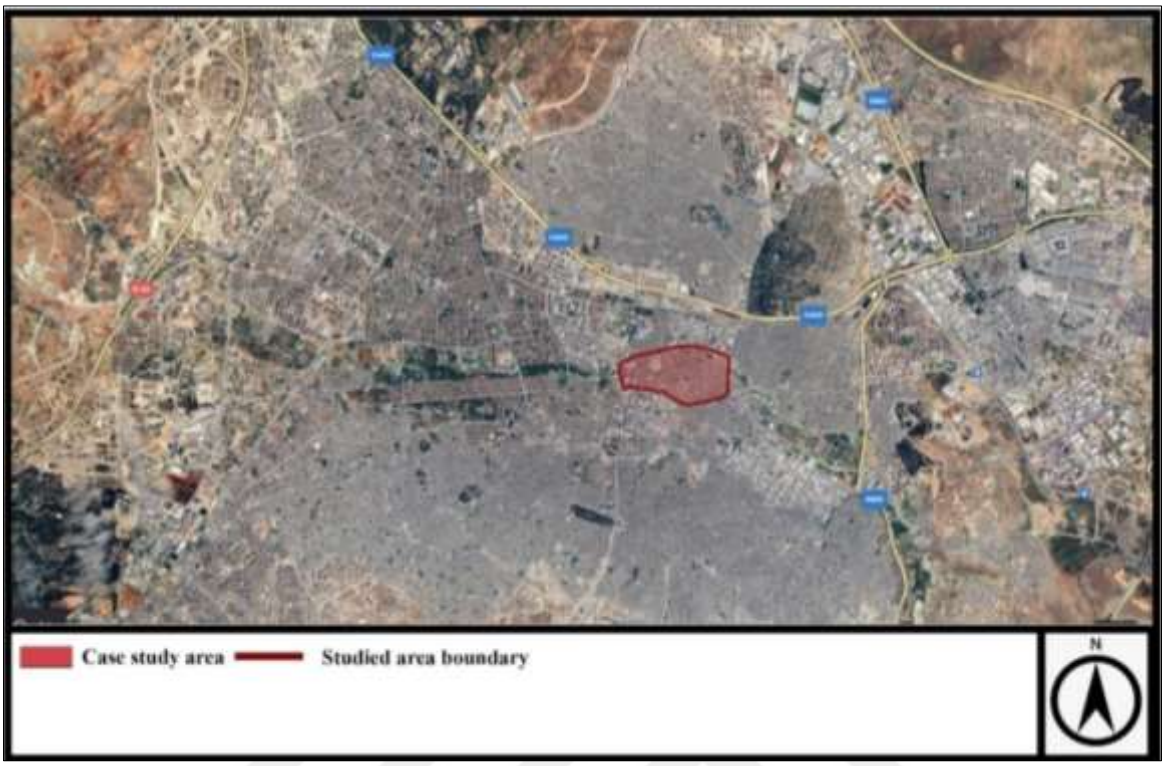

Figure 3.10: Studied Area Within Gaziantep

The case study contains 13 districts as in the Figure 3.12 which they are namely : (Türktepe, Yazıcık, Bekirbey, Kanalıcı, Tışlaki, Boyacı, Şekeroğlu, Seferpaşa, Bostancı, Cabi, Karagöz, Düğmeci, Çakmak). The total population for this area in 2022 was estimated as 13,287 [107]. It was noticeable the decreasement in the population growth through the years and it was an important sign to the deterioration of living conditions. This decreasement was clarified in the Table 3.2.

This part of the historical district was chosen to be studied because of the residential function domination and the obvious environmental deterioration for some parts of these districts which played crucial role in decreasing the credits of these districts to be lived in.

Table 3.2: Studied Area Population Growth [107].

Neighborhood name (Mahalle)	Population 2020	Population 2021	Population 2022	Population decreasement (2020)	Population decreasement (2021)
Türktepe	718	671	629	% 6.55	%6.26
Yazıcık	2,744	2,679	2,529	% 2.59	%5.39
Bekirbey	2,781	2,594	2,531	% 6.72	%2.43
Kanalıcı	916	853	842	% 6.88	%1.29
Tışlaki	846	800	727	% 5.44	%9.13
Boyacı	2,381	2,334	2,268	% 1.97	%2.83
Şekeroğlu	421	400	403	% 4.99	(increasement) %0.75
Seferpaşa	747	683	659	% 8.57	%3.51
Bostancı	863	846	829	% 1.97	%2.01
Cabi	1,132	1,072	1,046	% 5.30	%2.43
Karagöz	745	712	692	% 4.43	%2.81
Düğmeci	-	-	-	-	-
Çakmak	141	138	132	%2.64	%4.02
Total	14,435	13,782	13,287		

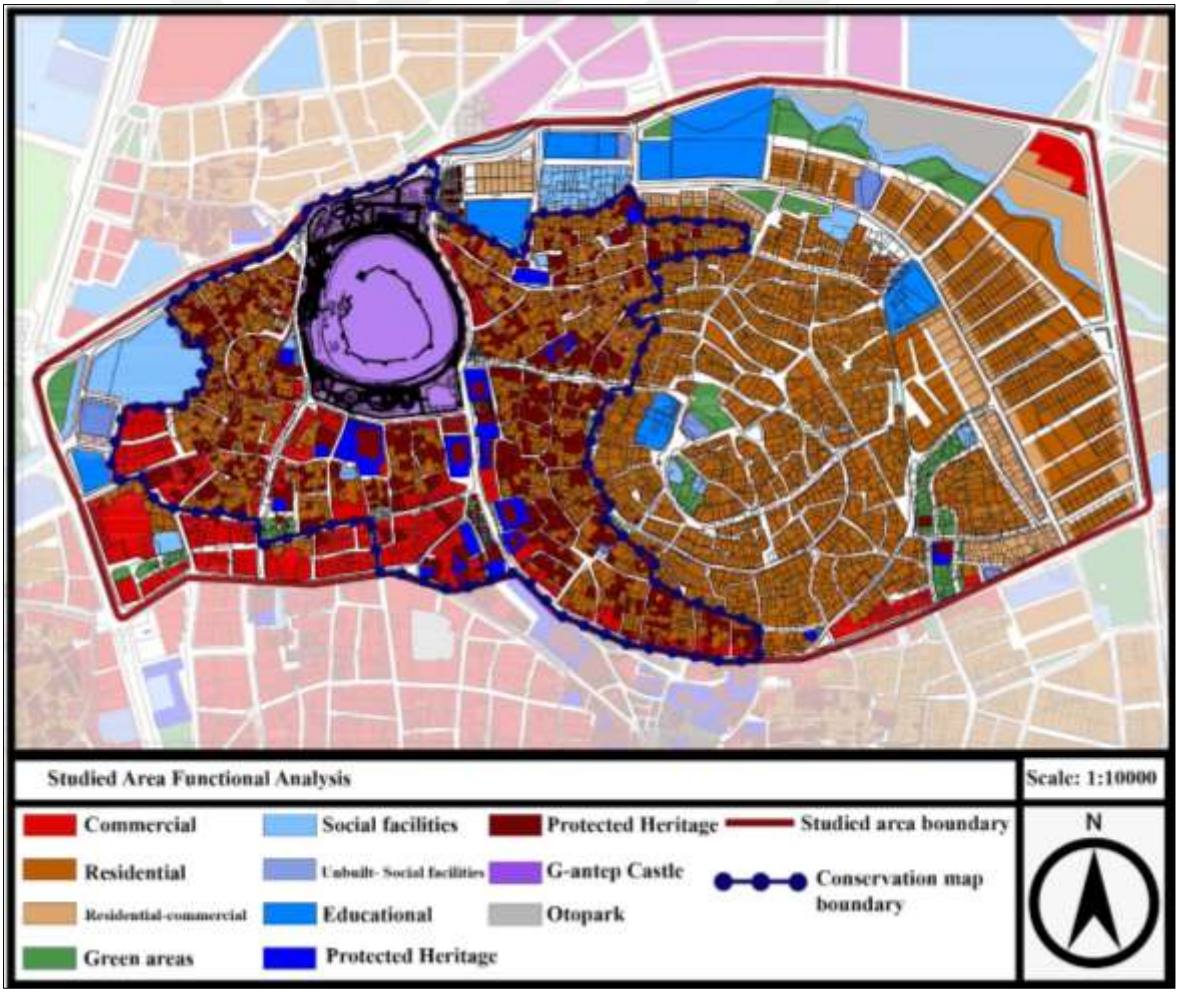

Figure 3.11: Case Study Functional Analysis [113].

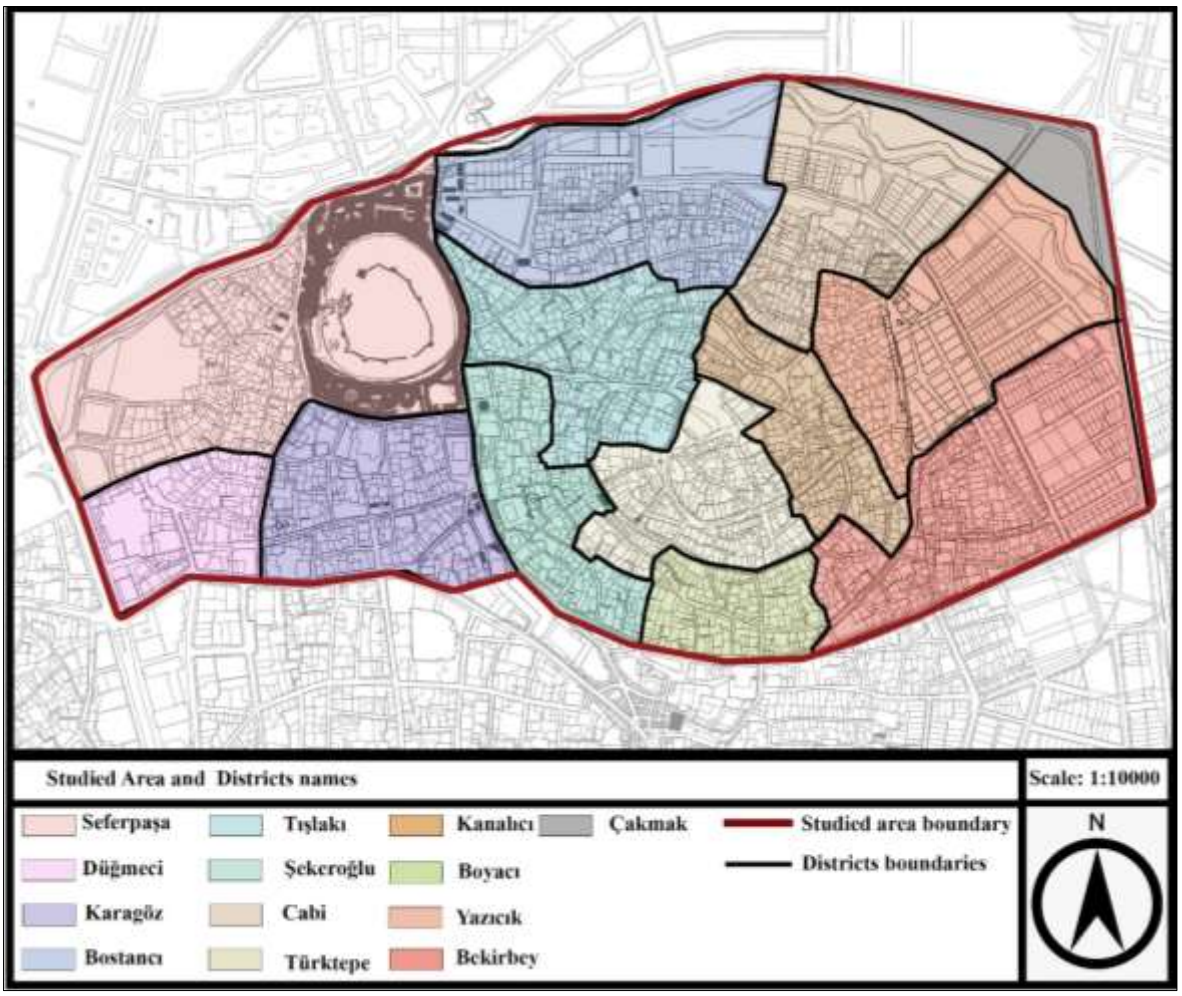

Figure 3.12: Studied Area Districts Names.

3.5 MEASURING LIVABILITY (LIVABILITY QUANTIFICATION)

According to the stated parts of this study, the different aspects of livability, its dimensions, and indicators, and their impacts on human life and daily life activities were stated, the overall of the previous part of our study was to clarify the ability to quantify these aspects (livability dimensions and indicators) or converting qualities, which were considered as unmeasurable, to quantities, that can be measured.

It was stated about the importance of monitoring the city centers' vitality and viability, and by gauging livability, planners can recognize weakness and strength points, employing efforts to improve the weakness points, support and augment the strength points. Livability dimensions and indicators provided the thread head to determine the causing reasons, monitor the changes and orient efforts of revitalization initiatives to be more effective [44].

In order to determine the livability level in the historical quarters which represent the heart of the city, the stated indicators have to be measured, the livability dimensions and indicators were clarified in Table 2.16, these indicators can spot the light on aspects which are important for the citizens more than it is expected, and that helps the decision makers to employ their efforts to satisfy inhabitants and increase the livability level.

According to the scope of our study which is focusing on the environmental dimension, the indicators which were represented in Table 2.13 will be used to determine the environmental livability level.

3.5.1 Methodology of Measuring Livability In Historical Districts

As it was clarified before the main mean which can convert the livability quality approach to the quantity are the indicators, it is known that each city has its own character and identity, which means each city has its core and priorities, these priorities will be represented in the change in importance of livability indicators among cities and countries, Balsas [44] explained that livability could be represented by a number of similar indicators among different cities while it could be variables among other cities. Our study contains two main parts, first, the Observation, Second, the Survey.

To start explanation of methodology we started with the *Quantitative* part which is the Surveys, since the scope of our study is about the livability's environmental dimension within the historical district and it depends on the peoples' experience of living, so, measuring will be by making questionnaire and interviews with the inhabitants, parameters and indicators of livability's environmental dimension, which are related to inhabitants' point of view, were utilized in the surveys.

In order to transform these qualities into quantities "Liker Scale" was used mainly to measure character and personality which were difficult to be measured [114]. According to the scope of our study to determine the problem in the environmental aspect of livability and evaluate which indicator has more effectiveness rather the others, "Likert Scale" was the numerical way in the determination and evaluation process.

For the Observation part, some of the indicators were analyzed according to the architectural and urban principles of analyzing in order to deduce the nature of indicators and evaluate

them properly to be quantified according to “Likert Scale”. The data which were available on the official websites of Gaziantep Municipality, Ministry of Environment, Urbanization and Climate Change, and Turkish Population were used in architectural analysis process, maps were available on Gaziantep university data set and in some parts Google Earth maps and Open-street maps were used. The Parameters are: Visual Character, Density, Public Spaces, Parks and Green areas, Streets and Pedestrian Paths, Accessibility, Pollution, Levels of Derelict and Vacant Land, and Environmental safety (Natural hazards), their related indicators are stated in Table 3.3. The indicators which were asked for the districts inhabitants for Surveys in order to evaluate the urban features which related to their needs are: Visual Character, Public Spaces, Streets and Pedestrian Paths, Accessibility, Pollution, Environmental safety (Natural hazards). These indicators are stated in Table 3.3. The questions were asked for 106 people for people who live in the mentioned districts of Historical quarters of Gaziantep, the population in 2022 was estimated at 13,287 [107]. So, the number 106 was deduced by considering that the Confidence Level was 90%, the Margin of Error was 8% and the Population Proportion was 50% for the Population Size which was 13,287 [115].

Table 3.3: Questionnaire And Observation Evaluation Scores.

Parameter	Indicators		Very Poor (1)	Poor (2)	Average (3)	Good (4)	Very Good (5)
Visual Character		Buildings materials, colors, textures.					
		Peoples' beauty perception					
		Buildings physical situation					
		Buildings' Facades harmony					
		Buildings' Facades Beauty					
Density		Total built-up area to site area					
		Ratio of population density					
Public spaces	Condition maintenance	Robust					
		Adaptable					
	Design	Well-designed					
		Legible					
		Has a sense of enclosure					
	User	Healthy					
		space for social interaction					
		Fulfilling					
		Relaxing					
	Function	Vital and viable					
Parks and Green areas		Ratio of parks and green areas to total surfaces					
		Green surface to built-up surface density					
Streets and Pedestrian paths	Streets and Pedestrian paths	The streets design and physical situation quality					
		Pedestrian sidewalk and walkability					
		Streets furniture (seatings, lighting system, ..)					
		Streets safety (walkability, entry and exit to vehicles)					
		Ground floor functions' impact on the streets' busyness					
Accessibility	Non-vehicular Accessibility	Walking					
		Cycling					
		Safety of Non-vehicular accessibility					
	Vehicular Accessibility	Public transportation					
		Cars' accessibility					
		Traveling time					
	Parking and servicing.	Availability of car parking areas					
		Spread of car parking					
Pollution		General health condition					
		Garbage collection					
		Noise Generating Activities					
Vacant and Derelict land		Proportion of empty area to built-up area					
		Proportion of vacant buildings to total number of buildings					
Environmental Safety (Natural Hazards):		Environmental Safety (Natural Hazards)					

Table Legend		
Observation only	Survey	Mixed (Observation + Survey)

At the end of the survey, they were asked to determine which of four indicators was the most important during the Kahramanmaraş earthquake as the flowing:

“Which indicator was important for safety against environmental disaster (Kahramanmaraş earthquake):

a. Parks and Green areas
b. Public Spaces
c. Accessibility
d. Streets and Pedestrian Paths design”

The Environmental Safety (Natural Hazards) was considered here as a critical indicator to be asked about, especially after 06.02.2023 Kahramanmaraş earthquake with the magnitude of 7.7 and followed by another earthquake with the magnitude of 7.5 which made the southern part of Turkey seismically active. As a result, the “Environmental Safety (Natural Hazards)” became an important indicator, and in order to evaluate the important indicators which related to it, inhabitants were asked about their opinions. Through the interviews people were stating about some problems and reasons which they were facing through their daily life, they were included as parts of results to be taken in consideration.

After Collecting questionnaire and analysis data we will reach to the final level (Contextual inquiry) to determine the Environmental livability level. So, according to the literature review 38 indicators were stated, and according to “Likert Scale” each indicator has been given a specific score as in Table 3.3 and the “Average” as it is shown has the score “3”, by multiplying three by thirty-eight we get the total points as “114” which refers to the average score and it represents the guideline to determine the livability level within the historical quarter. The “Very Poor” has the score “1” which give the total of “38” and the “Very Good” has the score “5” which give the total of “190”. The range from “38” to “114” refers to below the average and they are Unlivable which refers to the need for radical approaches and new strategies to enhance the livability, on the other hand the range from “115” to “190” the districts are above the average and they are Livable, which means the preservation indicators can be utilized to improve the livability. This method was used as Mousavi [25], in his study, where the zero value was added to refer the absence of some indicators.

Table 3.4: Livability's Indicators Quantification Table.

Indicators	Measurement of Indicators				
	Very Poor (1)	Poor (2)	Average (3)	Good (4)	Very Good (5)
38 Indicators	1	2	3	4	5
Total points	38	76	114	152	190

Table 3.5: Livability Ranges According To Average Score.

Livability Evaluation	Below Average (Unlivable)	Above Average (Livable)
Total points	38-113	115-190

In the next section parameters and their indicators analyzing process will be explained in details.

3.6 MEASURING LIVABILITY IN THE HISTORICAL QUARTERS OF GAZİANTEP (OBSERVATION)

As it was mentioned before in the methodology section about measuring the livability in this part these methods will be utilized for the case study area which was analyzed in section **3.4** and it contains the districts which are namely: (Türktepe, Yazıcık, Bekirbey, Kanalıcı, Tışlaki, Boyacı, Şekeroğlu, Seferpaşa, Bostancı, Cabi, Karagöz, Düğmeci, Çakmak). It is important to mention that there is an absence of data (Visual character and population) for Düğmeci district but because of its important location especially in terms of accessibility it was excluded from *Visual Character* analysis and *Vacant and Derelict land (Proportion of vacant buildings to total number of buildings),* and kept in other parameters and indicators. On the other hand, some of the buildings which are *Protected Heritage* were excluded as well because their evaluation related to Gaziantep Protection Enforcement and Control Offices.

3.6.1 Visual Character

As it was mentioned in the Literature Review the Visual Character is one of the Environmental dimension parameters to measure it we have four indicators to be measured, they were observed and analyzed according to districts' architectural features, for this part the data was collected from the official website of Ministry of Environment, Urbanization and Climate Change for damage detection after 6th of February Kahramanmaraş earthquake, at this website buildings physical situation was evaluated by experts to determine if they were damaged because of the earthquake and if their physical situation livable or not, each building according to its located City, Council's name, Districts name, Street's name, and its identity number can be found with its evaluation results. Most of buildings have an attached photos to ensure on building's physical situation. In order to determine the score of *Buildings materials, colors, textures* indicator the buildings were architecturally evaluated and analyzed. Firstly, to determine the used materials, the buildings photos were downloaded, all photos were observed and facades visible materials were evaluated and they were categorized as in the Table 3.6 with an example to show approximately how the facades appearance. The available photos on the website were 2465 from 3386 building which means 72.8% of the area's facades were studied and evaluated resulting 18 categories of used materials as in the Table 3.6. It is noteworthy that, firstly, the attached photos were mainly captured to show the buildings main façade which contain the building entrance, secondly, according to the traditional buildings' designs and historical quarter urban tissue there are many houses' entrances have no facades because the entrances are from the narrow dead-end streets so, in the Table 3.6 *No façad*e refers to this type of buildings. The *Stone* as a material was dominant in several districts but it differs in the way of appearing because of the way of restoring buildings or trying to hide buildings defects. So, *Stone (restored/new)* refers whether to new or restored buildings, *Stone (restored/new), Painted* refers to the buildings with the new or restored stone with painted parts of the building, *Stone-painted* refers to buildings were restored with stone texture and fully painted with white color which is close to the lime stone impact.

Table 3.6: Facades Materials Legend [116].

Buildings' Facades Used Materials		
Painted/ cladded	Concrete, Painted (1st floor)	Concrete
		
Stone (restored/new)	Stone (restored/new), Painted (1st floor)	Stone (restored/new), Painted
		
Stone	Stone, Painted (1st floor)	Stone-painted
		

Table 3.6: Facades Materials Legend [116] “Table Continued”.

Mixed (Concrete blocks, Stone)	Mixed (Concrete blocks, Stone), Painted (1st floor)	Mixed (Concrete blocks, Stone), Painted
		
Mixed (Concrete blocks, Stone, Brick blocks)	Mixed (Concrete blocks, Stone, Brick blocks), Painted (1st floor)	Mixed (Concrete blocks, Brick blocks), Painted (1st floor),(2 floors)
		
Brick blocks	Concrete, Painted (2 floor)	No façade
		

After analyzing the available data of buildings as it was mentioned in the Table 3.6, the percentage of each material according to the available data is demonstrated in Table 3.7 and Figure 3.1.

Table 3.7: Analyzed Facades Material Percentages.

Materials	Percentage
Painted/ cladded	49.1%
Concrete, Painted (1st floor)	20.9%
Concrete	5.6%
Stone (restored/new)	10.0%
Mixed (Concrete blocks, Stone)	3.8%
Mixed (Concrete blocks, Brick blocks), Painted (1st floor),(2 floors)	0.2%
Mixed (Concrete blocks, Stone),Painted (1st floor)	2.3%
Stone (restored/new), Painted (1st floor)	0.4%
Mixed (Concrete blocks, Stone), Painted	0.2%
Mixed (Concrete blocks, Stone, Brick blocks), Painted (1st floor)	0.04%
Mixed (Concrete blocks, Stone, Brick blocks)	0.2%
Stone (restored/new), Painted	1.5%
Stone, Painted (1st floor)	0.5%
Stone-painted	1.7%
No façade	2.0%
Stone	1.3%
Brick	0.04%
Concrete, Painted (2 floor)	0.4%

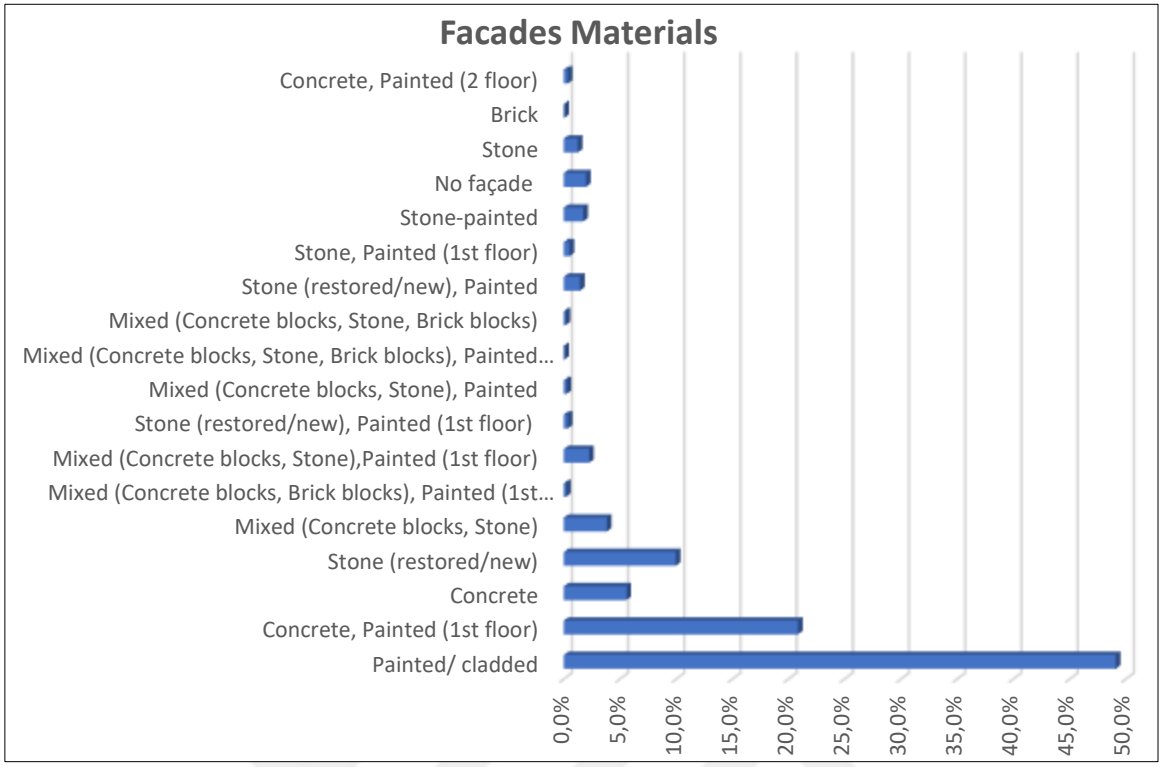

Chart 3.1: Analyzed Facades Materials Categories Percentages.

For *Facades Colors* evaluation results, they were categorized into six categories of colors. As in the Table 3.8. *Suitable* refers to light colors like (white, ecru, light grey, light earthy tones,..), stone materials' colors, previous colors with darker colors but visually the lighter are more dominant. *Acceptable* refers to darker tones of the *Suitable* tones, or when the façade contains unsuitable colors with visually little proportion. *Unsuitable* refers to the bright or dark colors which are not familiar to be used for a full façade. *Mixed (Less than Acceptable)* refers to these materials which are namely:

a. Mixed (Concrete blocks, Stone), Painted (1st floor)
b. Mixed (Concrete blocks, Stone), Painted
c. Mixed (Concrete blocks, Stone, Brick blocks), Painted (1st floor)
d. Mixed (Concrete blocks, Brick blocks), Painted (1st floor), (2 floors)
e. Concrete, Painted (1st floor)
f. Concrete, Painted (2 floor).

Cladded with textured materials (Unsuitable), Unpainted refers to unpainted Concrete, or Mixed (Concrete blocks, Stone, Brick blocks). The percentage for analyzed facades according to mentioned colors categories are clarified in Table 3.9 and Chart 3.2.

Table 3.8: Facades Colors Legend [116].

Buildings' Facades Colors		
Suitable	Acceptable	Unsuitable
		
Mixed (Less than Acceptable)	Cladded with textured materials (Unsuitable)	Unpainted
		

Table 3.9: Analyzed Facades Colors Categories Percentages.

Colors	Percentage
Suitable	36.7%
Acceptable	11.4%
Unsuitable	15.5%
Mixed (Less than Acceptable)	25.8%
Cladded with textured materials (Unsuitable)	1.7%
Unpainted	8.9%

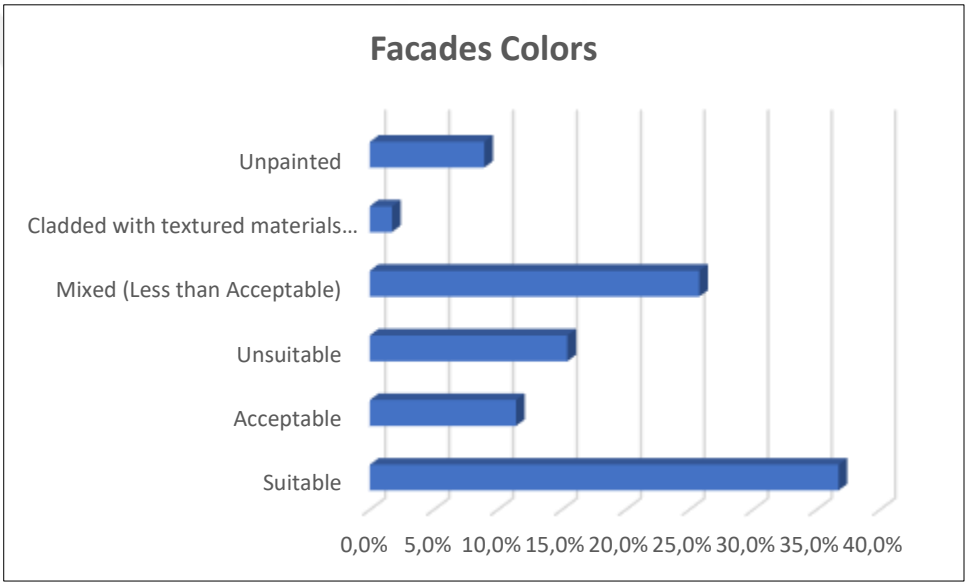

Chart 3.2: Analyzed Facades Colors Categories Percentages.

According to previous analysis results Buildings materials, colors, textures. Can be considered as an "Average".

According to the available data and the disparity between the facades styles in representing time period so each building façade was evaluated in determining whether it's belonging to Gaziantep traditional houses as in the Figure 3.14 (see Appendix A and B) or to the modern urban style as in the Figure 3.13 (see Appendix C). So, *Facades harmony* was categorized to five levels, the closer the facades design to one of each two styles the more score (from 1 to 5) of harmony it gets, it is clearer in the Table 3.10. Analyzing results are stated in Table 3.11. and Chart 3.3.

Figure 3.13: Case Study Urban Districts Familiar Facades Style.

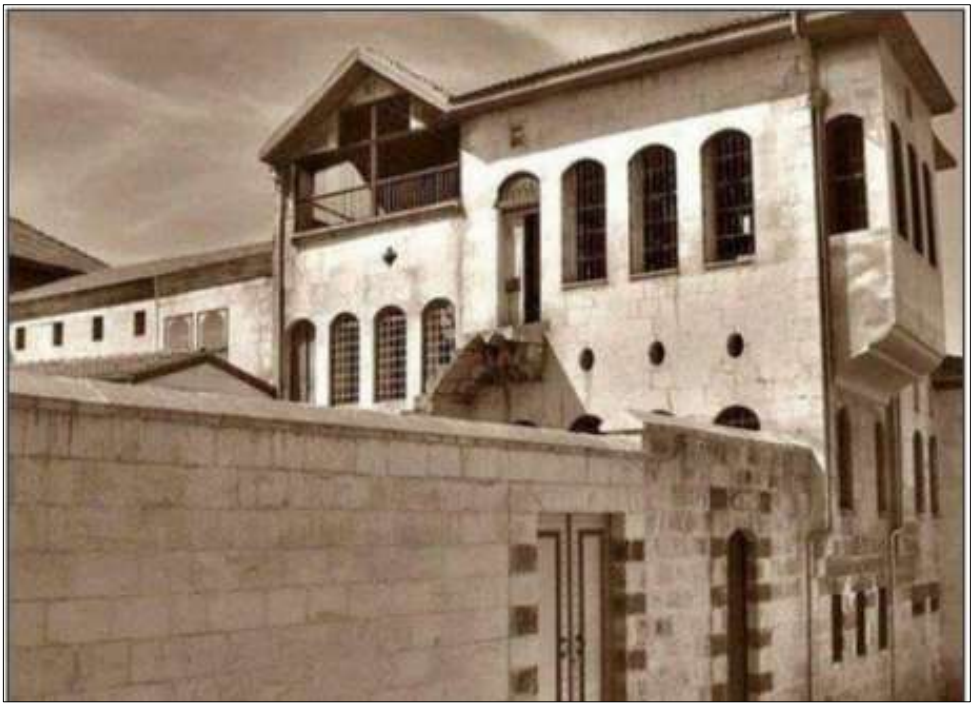

Figure 3.14: Gaziantep Traditional Houses Facades [102].

Table 3.10: Facades Harmony Legend [116].

Buildings' Facades Harmony		
1	2	3
   	  	 
4	5	
  	  	

Table 3.11: Analyzed Facades Harmony Categories Percentages.

Façade Harmony	Percentage
1	53.7%
2	15.7%
3	14.7%
4	13.3%
5	2.6%

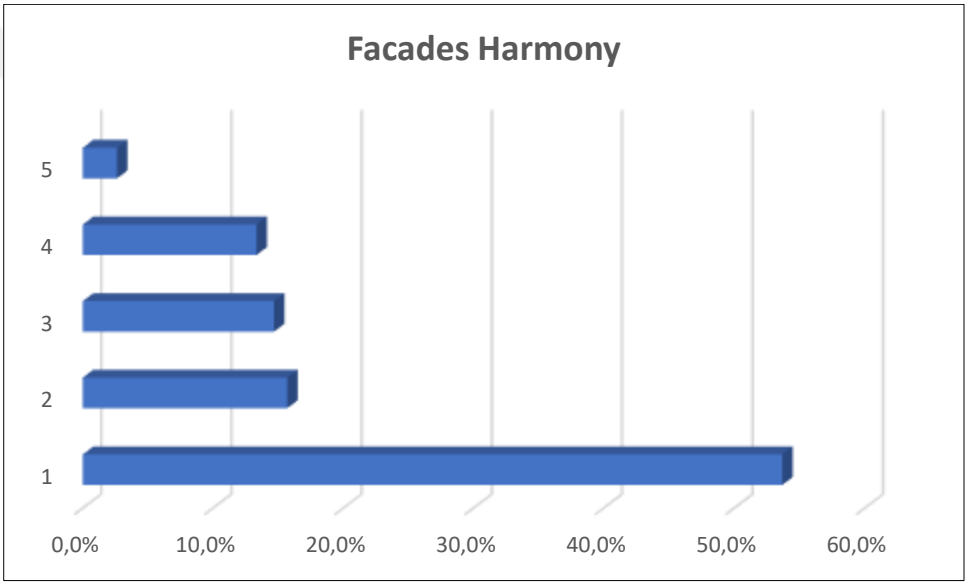

Chart 3.3: Analyzed Facades Harmony Categories Percentages.

So. Facades harmony indicator can be evaluated as “Very Poor”

The previous indicators have direct linkage to the *Facade’s Beauty* evaluation. The results were divided as well into five categories each group represents a score (from 1 to 5). It is noteworthy that the score “1” contains “Painted/ cladded” but they have the Unsuitable color evaluation or their facades don’t contain any windows to the outside and it appears as a wall or the ones of No façade and Unpainted material evaluation in addition to the cases where the buildings appearance isn’t nice. In some cases, there are historical buildings but they were getting low scores because of their dirty appearance, inappropriate writings and drawings on their walls, electric cables, isolation materials like blue PVC sheets to protect

from rain and other climatic factors, and Shops billboards. In the Table 3.12 the Facades Beauty legend shows the facades evaluation from 1 to 5. Analyzing results are stated in Table 3.13 and Chart 3.4.

Table 3.12: Facades Beauty Legend [116].

Buildings' Facades Beauty		
1	2	3
		
4	5	
		

Table 3.13: Analyzed Facades Beauty Categories Percentages.

Façade Beauty	Percentage
1	57.4%
2	16.8%
3	15.7%
4	8.9%
5	1.2%

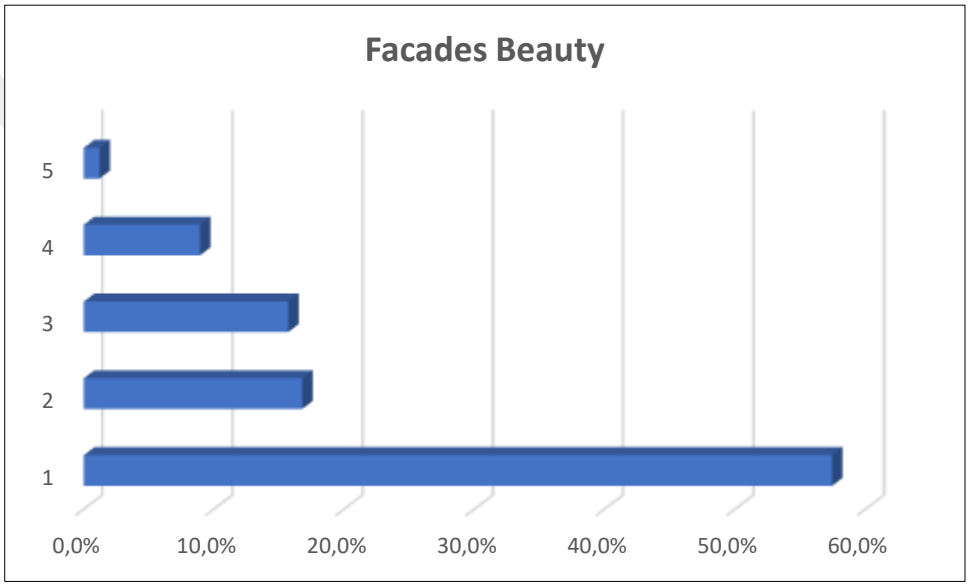

Chart 3.4: Analyzed Facades Beauty Categories Percentages.

Facades Beauty indicator according to the previous results can be evaluated as “Very Poor”

As it was mentioned the Ministry of Environment, Urbanization and Climate Change was responsible for evaluating the buildings physical situation and whether they are livable after 6th of February Kahramanmaraş earthquake or not, the main five categories of evaluation are:

a. Undamaged: This type of building was not damaged by earthquake. There is no problem with the use of the building
b. Less Damaged: This kind of buildings has suffered an earthquake which caused thin cracks in the plaster and walls of the structure.

c. Medium Damaged: This type of building which has cracks in the walls or thin cracks in the carrier part caused by an earthquake. Structures with moderate damage should not be used until the loss of bearing capacity is resolved (the structure is restored) or strengthened. Items can be evacuated
d. Heavily Damaged: This kind of building where earthquakes cause large and extensive shear failures/debonding of the building's load-bearing elements. A “severely” damaged structure is defined as a building with irreparable loss of bearing capacity and irreparable damage (in terms of strength and economics).
e. Urgent to be demolished: This type of building whose load-bearing elements have been permanently displaced and partially or completely destroyed due to an earthquake. These buildings, which cannot be used in any way, cannot be entered or evacuated. In addition to the previous evaluation, there are Rundown and Out of Evaluation and in some cases the inhabitants weren’t existing so the houses weren’t evaluated. [116]. The previous categories percentages of our analyzed area are stated in Table 3.14 and Chart 3.5.

Table 3.14: Buildings Physical Situation Percentages.

Building Physical Situation	Percentage
Undamaged	59.8%
Less Damaged	18.3%
Medium Damaged	2.6%
Heavily Damaged	5.9%
Rundown	0.6%
Urgent to be demolished	0.3%
Out of Evaluation	2.0%
Not Detected	10.4%

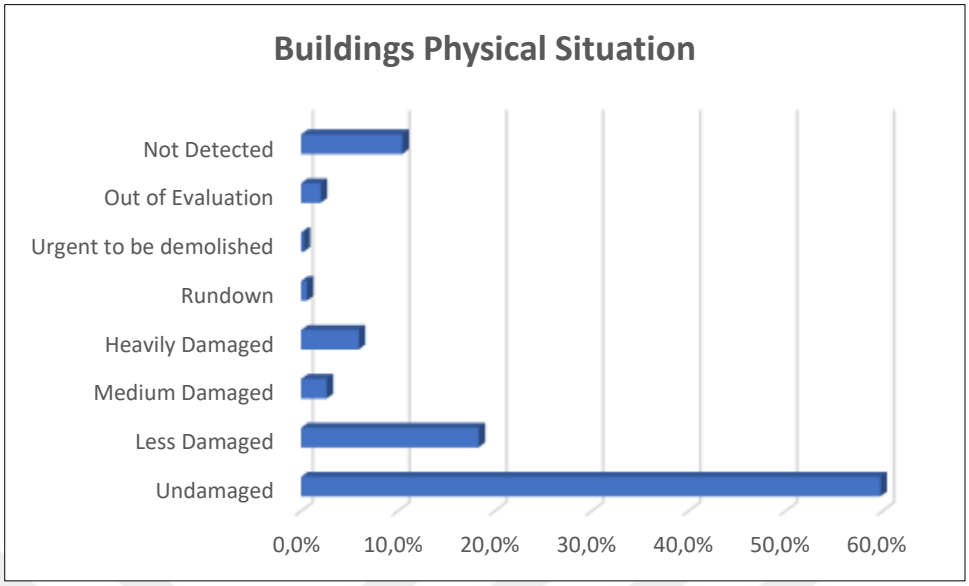

Chart 3.5: Buildings Physical Situation Percentages.

The results of Buildings Physical situation analysis can be evaluated as "Very Good"

The first step was to determine the total percentage for all buildings within the studied area without considering each district dominant pattern of indicators, this step is the main for determining the scores in total for the final results of Visual Character's indicators in Measuring Livability.

However, a comparision was made between the districts in terms of *Visual Charecter* indicators. For the used materials the most seven dominant materials was chosen for comparing between districts as in the Chart 3.6, for facades *Colors, Harmony, Physical situation* the same patterns were used as in the Chart 3.7, Chart 3.8, and Chart 3.9. This step was beneficial for the suggestions and improvement plan for each district to show which one requires more attention than others, which district reflect the history with its material, which districts livability can improved with restoration and rehabilitation step and which ones need fully new plan for improving its livability.

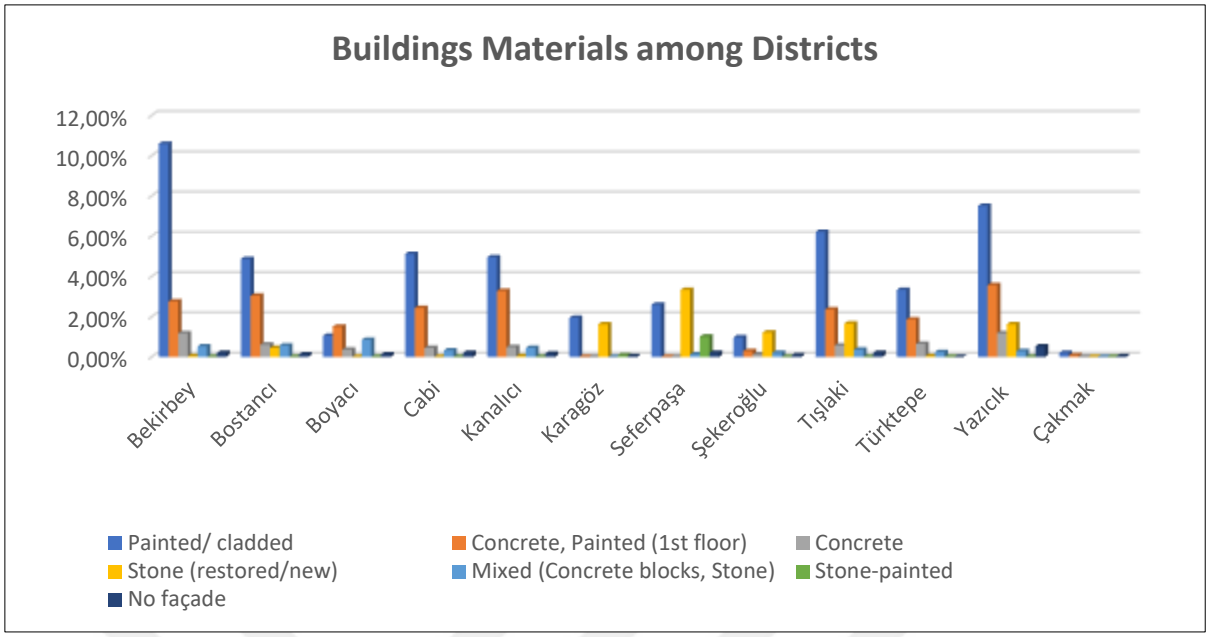

Chart 3.6: Materials Among Districts

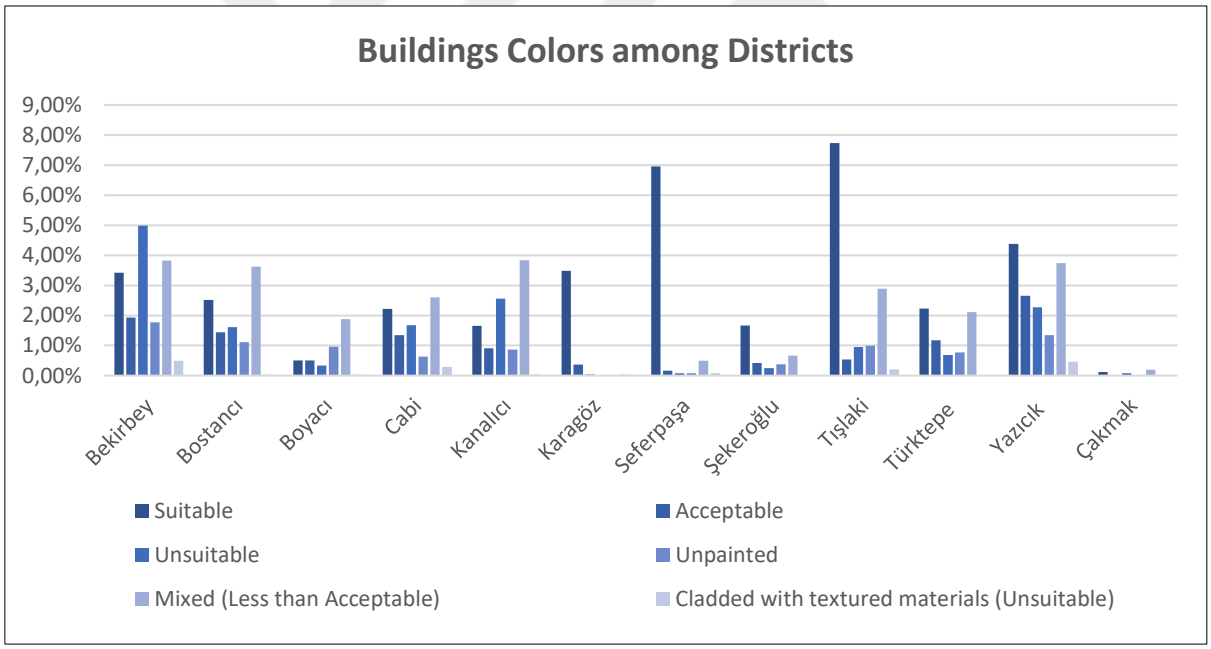

Chart 3.7: Facades Colors Among Districts.

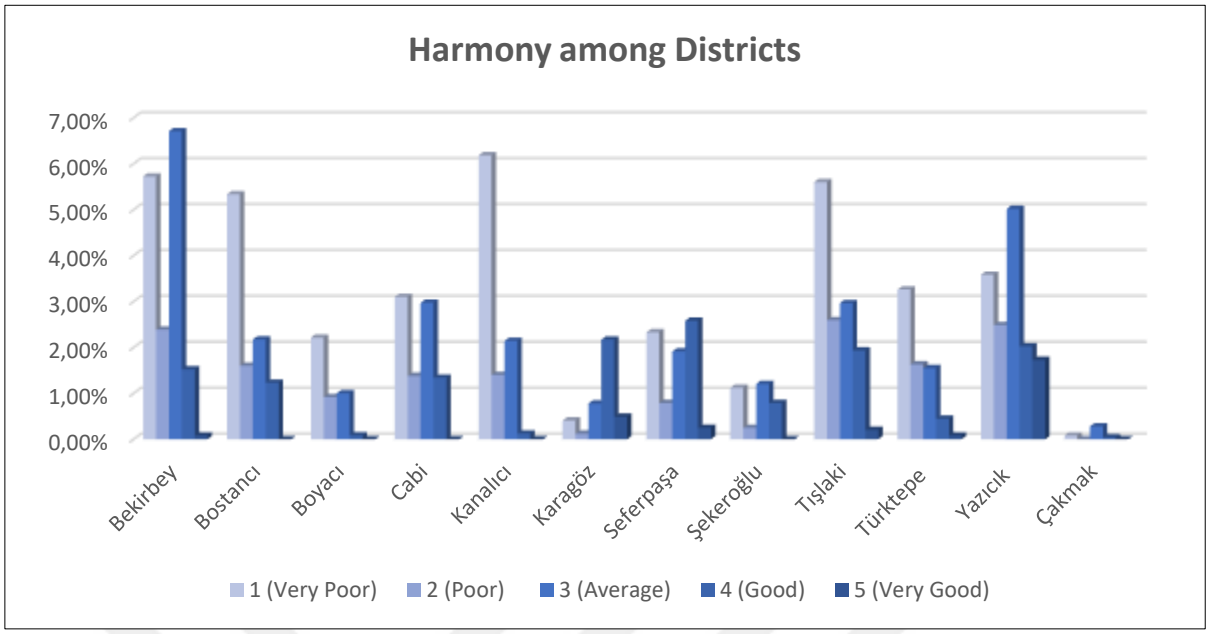

Chart 3.8: Facades Harmony Among Districts.

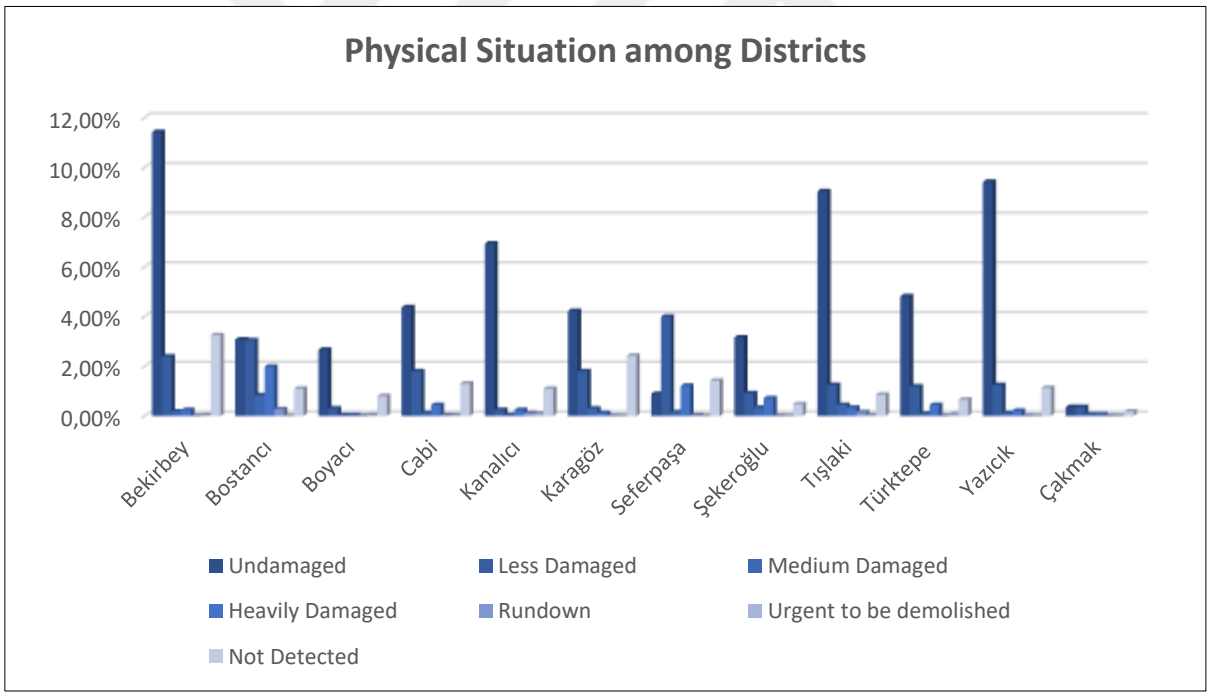

Chart 3.9: Physical Situation Among Districts.

3.6.2 Density

For this parameter to measure the Total built-up area to site area the data which was taken as districts Autocad (DWG) files and contains details was used by dividing the built-up area

(m2) by the total case study area (m2). The total built-up area was estimated as 470,473.9 m2 when it is divided by 814,101.5 m2 we get 0.577 or in other words the built-up area percentage is 57.7 %. Buildings density is high, so, evaluation can be considered as “Poor” On the other hand, to measure the Population density within the districts we divide the number of individuals by the total case study area (m2). The total population was estimated as 13,287 divided by the total area 814,101.5 the density is 0.016 or 1.6 %. It can be considered as “Very Good”.

3.6.3 Public Spaces

Public spaces represent the public realm and as it was mention in the literature review Parks and green areas were considered as separate parameter. To measure the quality of Public spaces parameter we have to measure firstly the indicator of Condition maintenance (Robust-Adaptable) according to functional analysis in the Figure 3.11 there are acceptable number of buildings as a Protected Heritage and according to the observation process in the part 3.6.1. and the results of Facades Materials analysis in Table 3.7 there are 13.6% of buildings which restored and considered in good condition.

Table 3.15: Restored And Maintained Buildings Percentage.

Materials	Percentage
Stone (restored/new)	10.0%
Stone (restored/new), Painted (1st floor)	0.4%
Stone (restored/new), Painted	1.5%
Stone-painted	1.7%
Total Percentage	13.6%

The results of Facades Beauty analysis, which influenced by Appearance, Materials, Harmony, and buildings' aesthetic physical situation, in Table 3.13 which shows that 15.7% in Average level of beauty while 10.1% in Good and Very Good levels which means only 25.8%.

Table 3.16: Facades Beauty Analysis (Condition Maintenance).

Façade Beauty	Percentage
3	15.7%
4	8.9%
5	1.2%
Total Percentage	25.8%

So, these results give the "Poor" score for (Robust-Adaptable) indicators.

To measure the second indicator which is related to public spaces Design (Well-designed, Legible, has a sense of Enclosure). Because of the area's urban tissue and according to the functional analysis in the Figure 3.11 and public spaces concept meaning beside studied area observation, the Figure 3.15 was deduced showing two types of public spaces, as a linear and as an area. the linear public spaces are streets indeed which gained their reputation because of commercial and handcrafts functions which attract citizens and tourists. The number of clear yards which considered as public spaces within the whole studied area are limited. They are located more around the castle as number 5-6 in Figure 3.16 and Table 3.17 and as number 1 in front of 25 December Gaziantep Defense Heroism Panorama and Museum as Figure 3.16 and Table 3.17. In order to measure legibility, we relied on Kevin Lynch approach, which is basically depends on people's ability to understand a place and emphasized on the ability to find the right direction and move easily and the main five elements which contributes to make the mental map are: Paths, Edges, Nodes, Landmarks, and Districts [117]. This approach was used to analyze our case study in Figure 3.17.

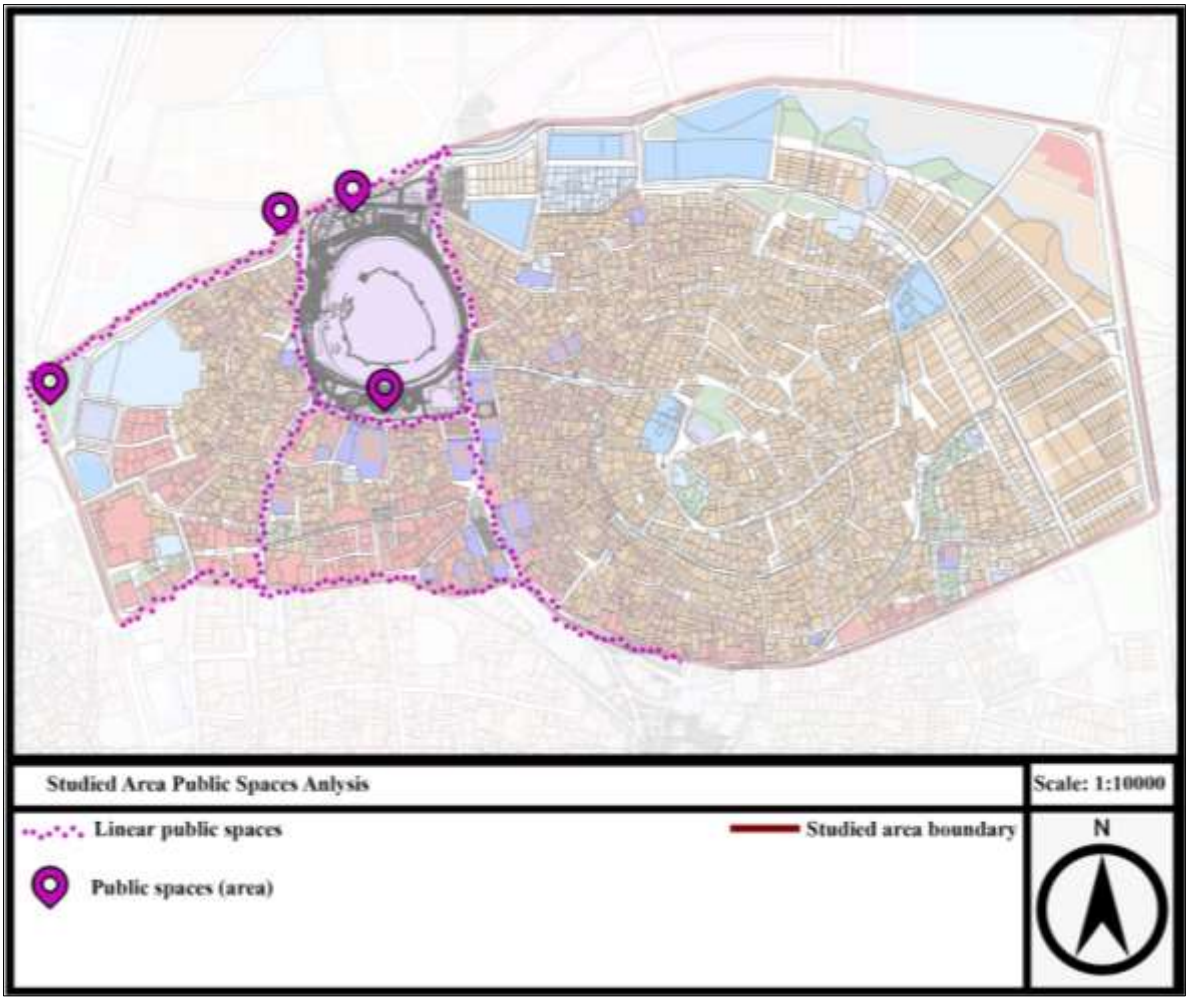

Figure 3.15: Public Spaces Analysis.

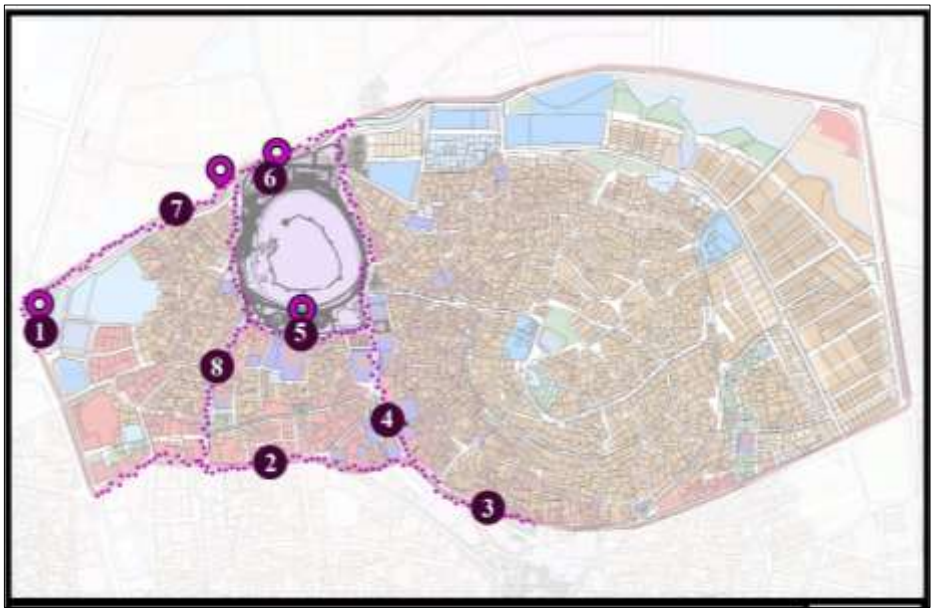

Figure 3.16: Location Of Some Public Spaces' Examples.

Table 3.17: Public Spaces Examples According To Figure 3.16 [118].

1	2
	
3	4
	
5	6
	
7	8
	

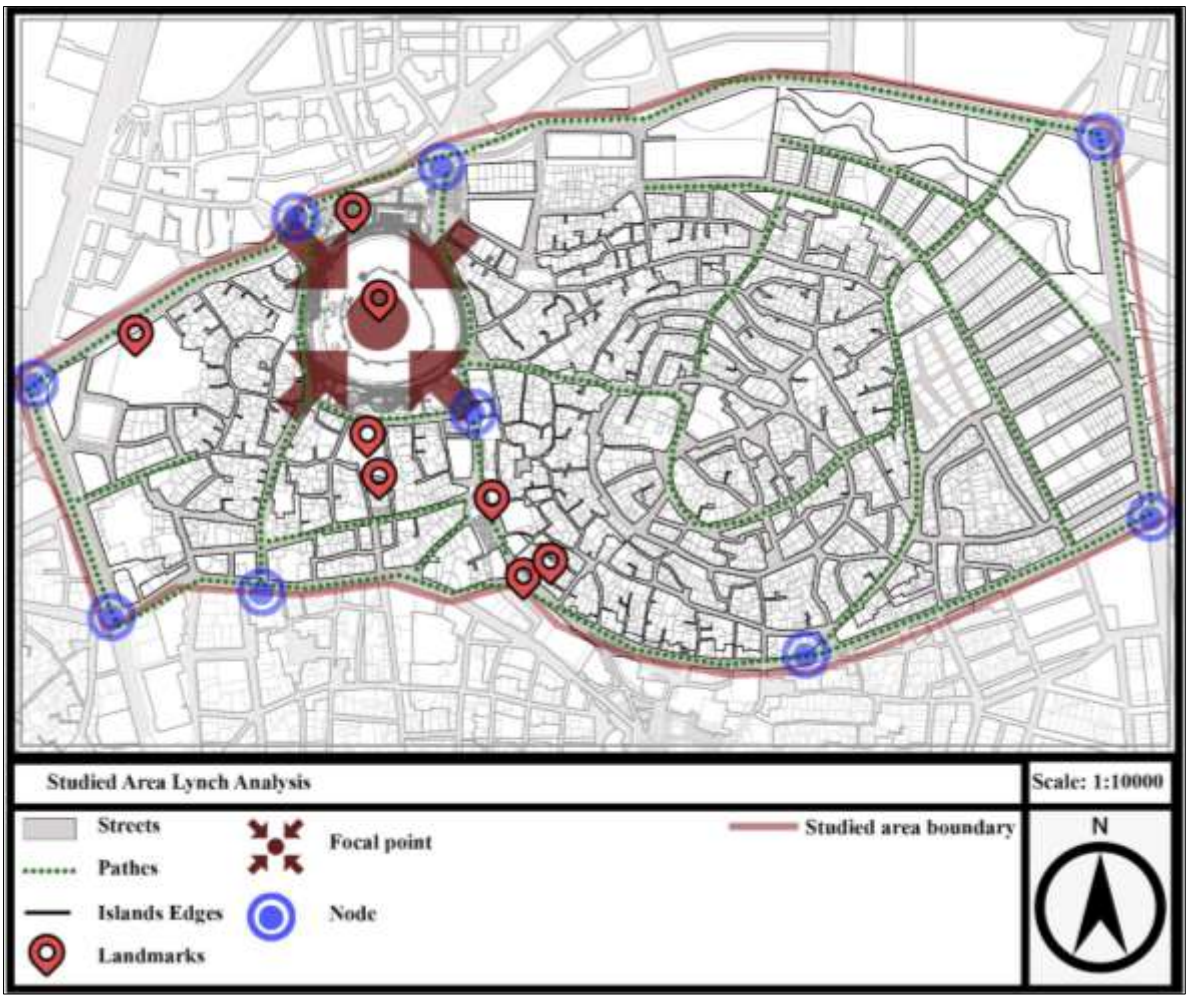

Figure 3.17: Lynch Analysis.

As it is shown in the Figure 3.17 the studied area contains Gaziantep castle as focal point and landmark surrounded with linear and areal public spaces, beside the castle there are many well-known landmarks like, (25 December Gaziantep Defense Heroism Panorama and Museum, Hışvahan, Gümrük Han, Naib Hamam), the area has well designed edges, where the buildings are attached to each other and each island seems to be independent mass, on the other hand, the narrow streets, the organic urban tissue and the traditional pattern of houses emphasized on these edges. The dominant pattern of streets and paths is the following the organic texture and give the sense of turning inside and being lost, beside the narrow streets and the walls with less openings which give in some places the unsafe sensation. The clear readable paths were shown in the Figure 3.17, the nodes were mainly distributed along the outer perimeter of the area.

To measure the sense of enlosure, the ratio of buildings heights “in proportion to the width of interfering public space”. The obtained ratio relies on the types of streets or open spaces and it may be chanegable [114], [119].

Table 3.18: Height To Width Ratio [119].

Types	Maximum	Minimum
MINOR STREETS, E.G. MEWS	1:1.5	1:1
TYPICAL STREETS	1:3	1:1.5
SQUARES	1:6	1:4

Table 3.19: Studied Area Streets Types And Dimensions.

Types	Dimensions (*w)*	Proportion (building *h*/street *w*)	Score
Type (A)	12.5 - 21 m	(1:2-1:1.33) - (1:3.5-1:2.33)	*Good*
Type (B)	3.6 – 9.6 m	(1:1.6-1:2.5) - (1:1.6-1:1.06)	*Good*
Type (C)	2.7 - 3.4 m	(1:2.22-1:3.33) - (1:1.76-1:2.6)	*Average*
Type (D)	1.8 – 2.7 m	(1:3.33-1:5) - (1:2.22-1:3.33)	*Poor*

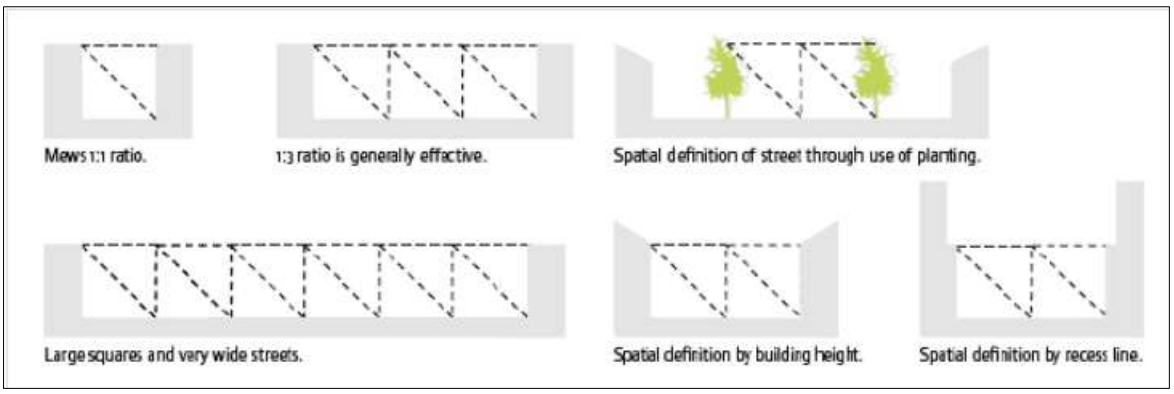

Figure 3.18: Height To Width Ratio [119].

According to the previous explanation and by measuring the proprtion of buildings height and streets width arithmetic mean we can see a good sense of enclosure within the residentaial areas where C and D types are more dominat and along the A an B types the sense of enclosure considered as an avergae. For the areal public spaces there is not a space

with specific shape and bounded by buildings rather the marked in Figure 3.24 and according to proportion there is an Average sense of enclosure.

For the Function indicator can be measure according to the scope of our study only with the Vital and viable. So, according to Figure 3.19 districts' vitality and viability can be considered as limited or "Good "in the main streets and "Poor" within the residential areas. So, it will be considered as "Poor".

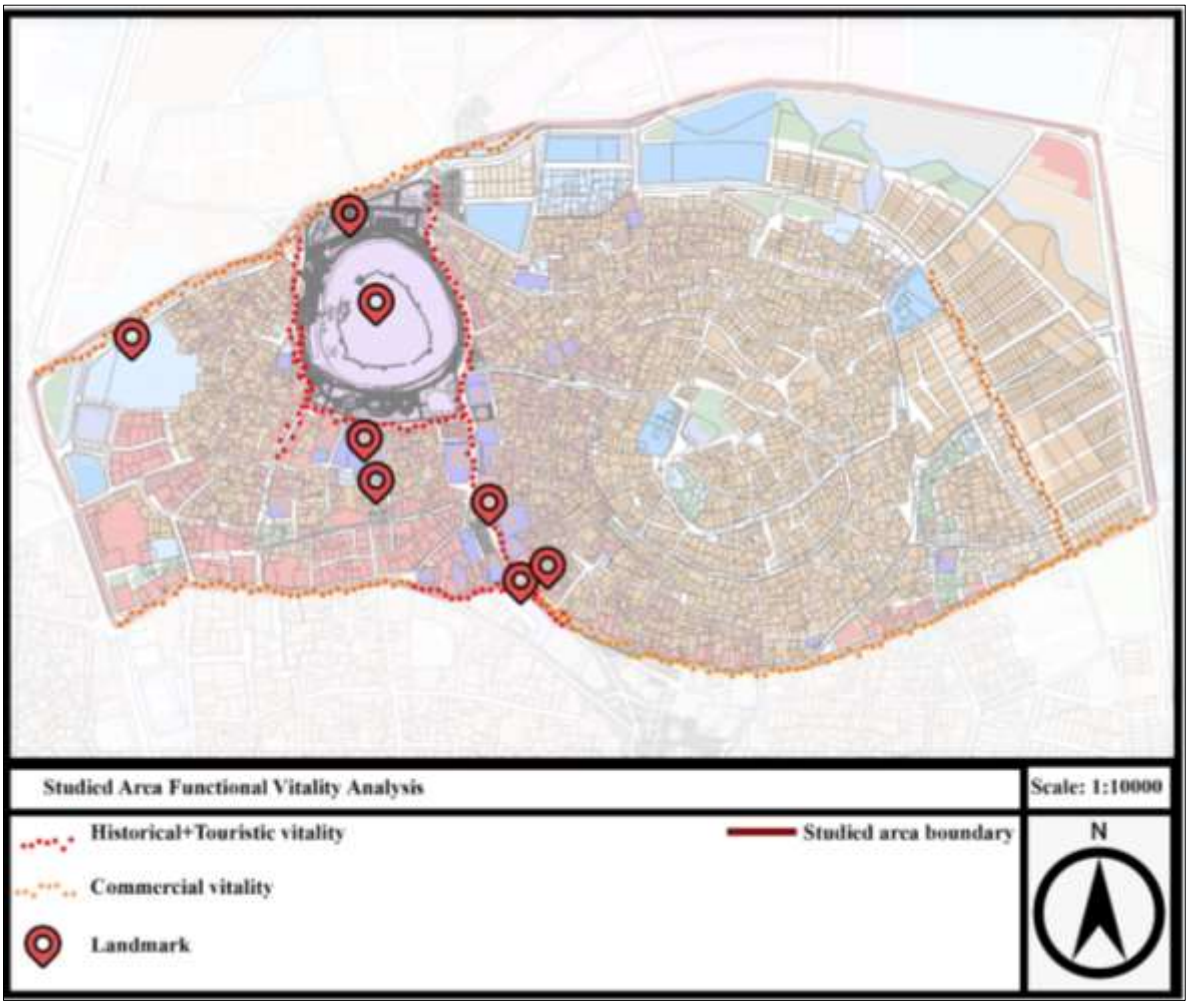

Figure 3.19: Studied Area Vitality Analysis.

3.6.4 Parks and Green Areas

As it was mentioned in the literature review to measure the Ratio of green space to total surfaces, we divided the total green areas (m2) to the area of our case study (m2). According to the land use map as in the Figure 3.11 it was estimated that the total of the green areas is approximately 18,703.9 m2 which means 2.3 %. So, it can be considered as "Poor".

In addition, to measure Green surface to built-up surface density we divide the Green area (m2) to the built-up area (m2). The total green surface was measured approximately as 18,703.9 m2 divided by 470,473.9 m2 results 0.039 or 3.9%. it's considered "Poor" as well.

3.6.5 Streets and Pedestrian Paths

As a fifth parameter of environmental dimension, Streets and Pedestrian paths play a role in enhancing the livability as it was mentioned in the literature review, our case study area surrounded with four main axis which contributed on determining its boundary. From the western side Istasyon street, intersects with Prof. Muammar Aksoy Street which contains the tram-way line contributing in facilitating city's transportation system. From the eastern side Tüfekçi Yusuf Street which intersects on its northern part with Sani Konukoğlu boulevard which passes through industrial districts and contains in some parts the Metro line which was also established to connect city with industrial areas. From the northern part there is Derekenari street which intersects from western side with Istasyon continuous as Kadi Osman street and at its end intersects with Tüfekçi Yusuf Street from its eastern side. On southern side there is Karagöz street which is commercially well-known and Hamdi Kutlar street. It was noticeable the organic texture for area's urban tissue, This organic pattern of urban tissue gives the sense of turning inside the districts and getting lost for who aren't familiar with these districts. Streets with dead-ends are widespread within the area. In the Figure 3.20 the studied area Transportation map shows streets types and directions. It is noteworthy to mention that the secondary streets traffic direction is random. To measure *Streets design indicator*, the Figure 3.22 is showing the streets types according to their containment for vehicular and Non-vehicular and Pedestrian paths, Type (1) of streets contains different vehicular and non-vehicular transportation and pedestrian paths for walking, Type (2) contains vehicular and non-vehicular transportation, though the absence of paved paths for pedestrians but according to the functional necessity we can see pedestrians, Type (3) of streets can contain some of vehicles or non-vehicular transportation or pedestrians because of their narrowness, Type (4) can contain only non-vehicular transportation or pedestrians. For *Streets Physical situation* more attention was paid for the main streets physical situation, secondary streets within districts like (Karagöz, Seferpaşa, Şekeroğlu, Düğmeci) which reflect city's historical value and contains commercial vitality have also *good* or *acceptable* physical situation, but the secondary streets within other

districts were in *poor* physical situation. So, for *Pedestrian sidewalk and walkability* indicator we can notice the absence of pedestrian sidewalks but individuals kept on walking through different streets types. We can find the mentioned four types of streets in the Table 3.20. in the Figure 3.19, the vitality of streets was stated, the streets around Gaziantep castle contains commercial, historical and touristic functions which enhance the vitality and causes as busyness in the streets, Karagöz and Hamdi Kutlar streets have commercial functions which would enhance the commercial vitality resulting busyness as well. On the other, within streets individuals could have traffic issues because of streets widths, their one-way flow in some places.

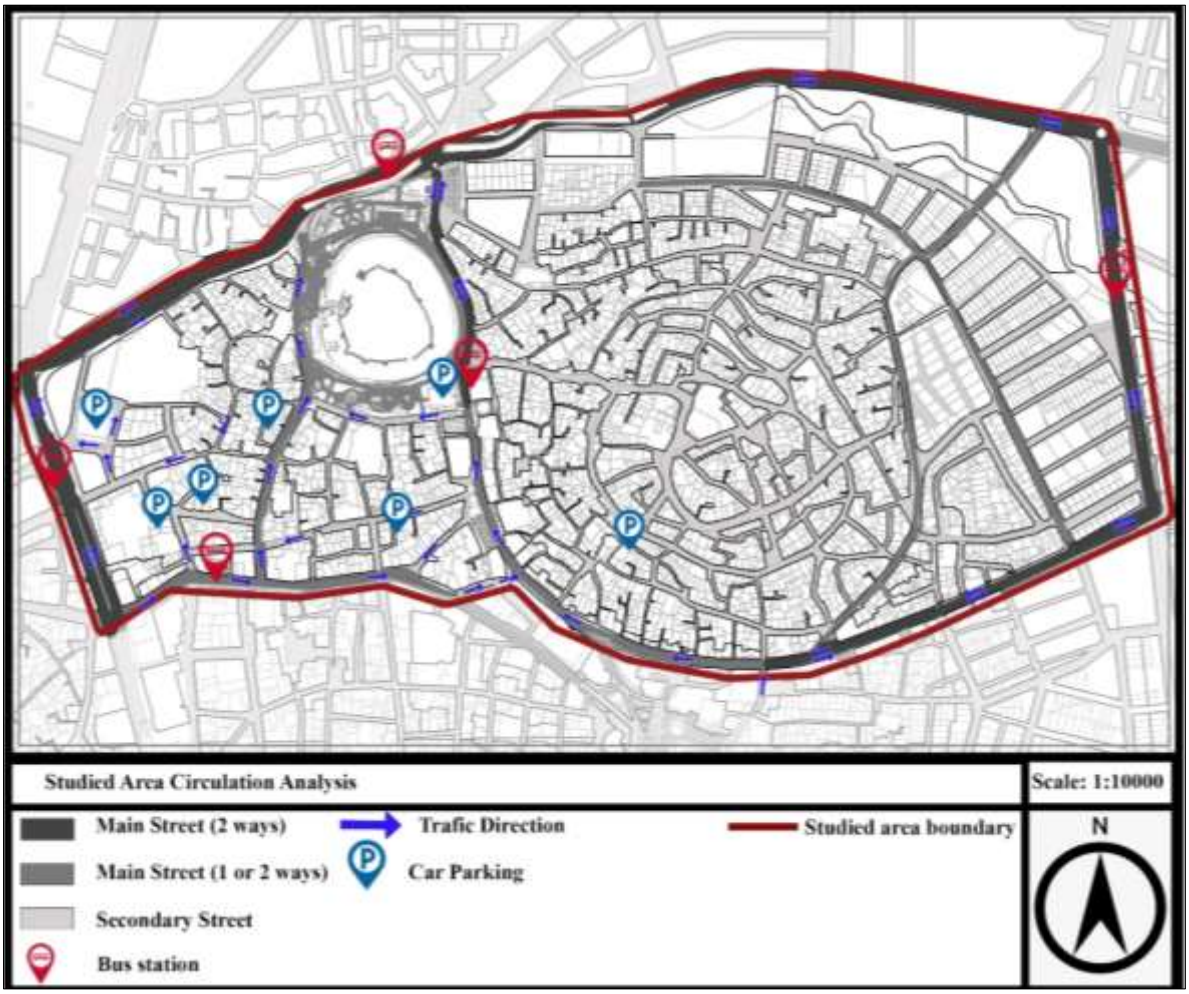

Figure 3.20: Circulation And Streets Analysis.

Table 3.20: Streets Types.

Types	Contained Accessibility	Dimensions
Type (1) Vehicular + Paved Pedestrian path	Vehicular, Non-vehicular, and Paved Pedestrian path	4.2 - 21 m
Type (2) Vehicular + Non- Paved Pedestrian path	Vehicular, Non-vehicular, and Non-Paved Pedestrian path	3.6 – 9.6 m
Type (3) Vehicular / Pedestrian	Vehicular or Non-vehicular or Pedestrians	2.7 - 3.4 m
Type (4) Pedestrian	Pedestrians	1.8 – 2.7 m

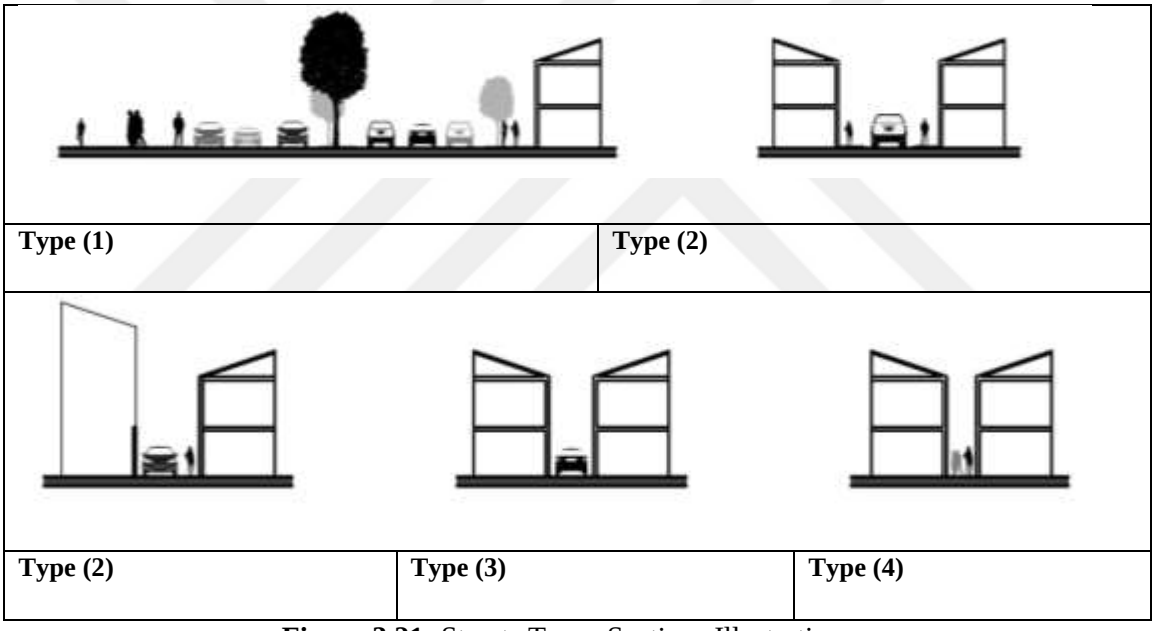

Figure 3.21: Streets Types Sections Illustration.

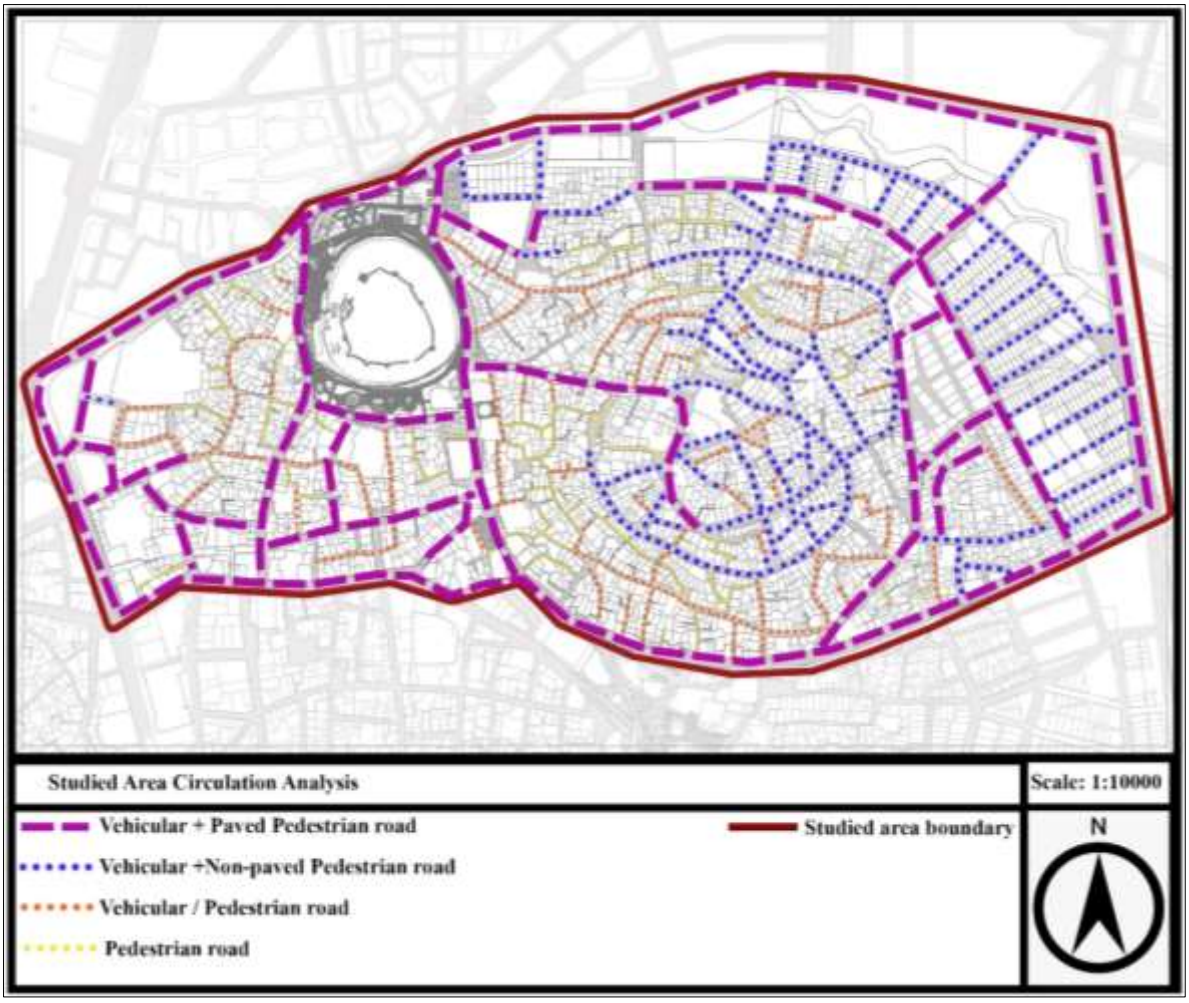

Figure 3.22: Circulation Analysis According To Streets Types.

3.6.6 Accessibility

Accessibility was considered as crucial parameter, the first indicator was Non-vehicular accessibility (walking, cycling) according to the Figure 3.22 it was noticeable the absence of paved pedestrian sidewalks in some parts of the area but the inhabitants used to use these roads to access to their houses, or their workplaces. As it was mentioned before, the organic pattern of area's urban tissue would contribute in reducing the accessibility. the second indicator was the Vehicular accessibility (Cars, Public transportation), according to Figure 3.22 and Figure 3.20 the vehicular transportation network can be considered as average because of the one-way traffic flow in some parts and the congestion during particular hours of the day as in the Figure 3.23.

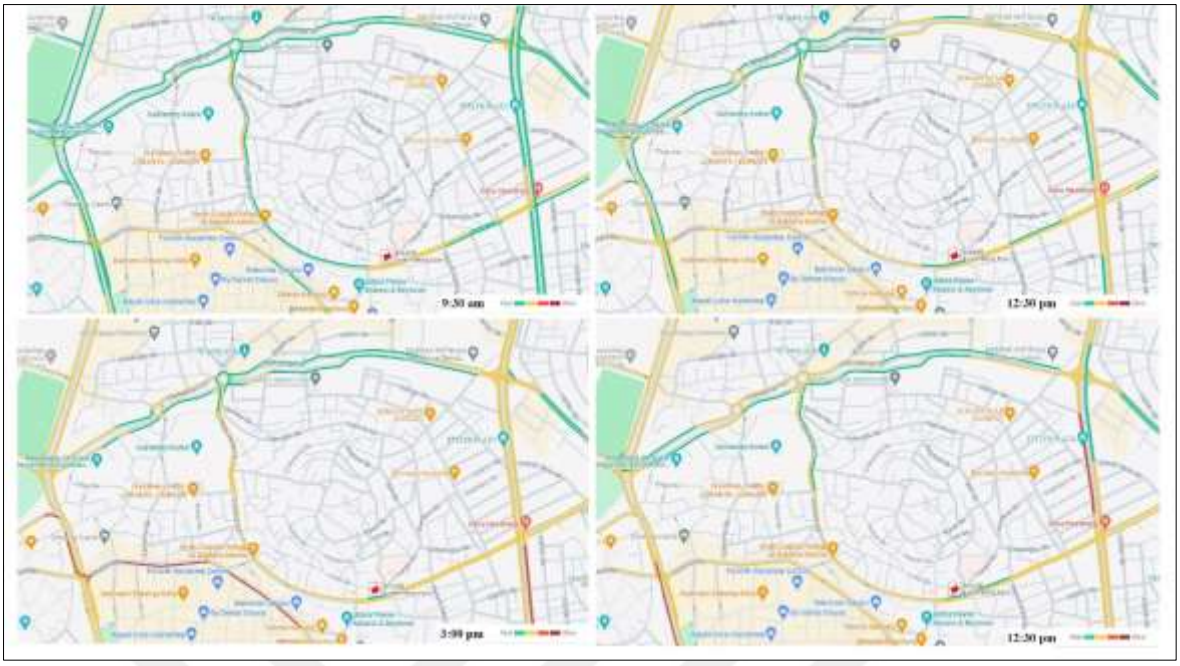

Figure 3.23 Studied Area's Traffic Map During Different Times Of Working Hours [119].

However, Gaziantep as a city can be considered as well served in terms of public transportation. For the studied area, in the first place the buses are commonly used and there are many spread bus stations which can serve districts but can't cover the all inhabitants' needs, in addition, the western side is close to the tramway line, so reaching city's other parts could be easier, and in the northern part it is close to the metro line which helps to reach the industrial areas. In the Figure 3.24 these connection lines are shown. Parking and servicing parameter can be observed in the Figure 3.20 where we can find an acceptable number of closed or open parking lots which serves more (Karagöz, Seferpaşa, Şekeroğlu, Düğmeci) where the commercial and touristical vitality exists along the narrow streets which weren't designed according to modern life considerations. In the districts like (Kanalıcı, Türktepe, Cabi, Tışlaki, eastern side of Şekeroğlu) the vacant lands were used as car parking.

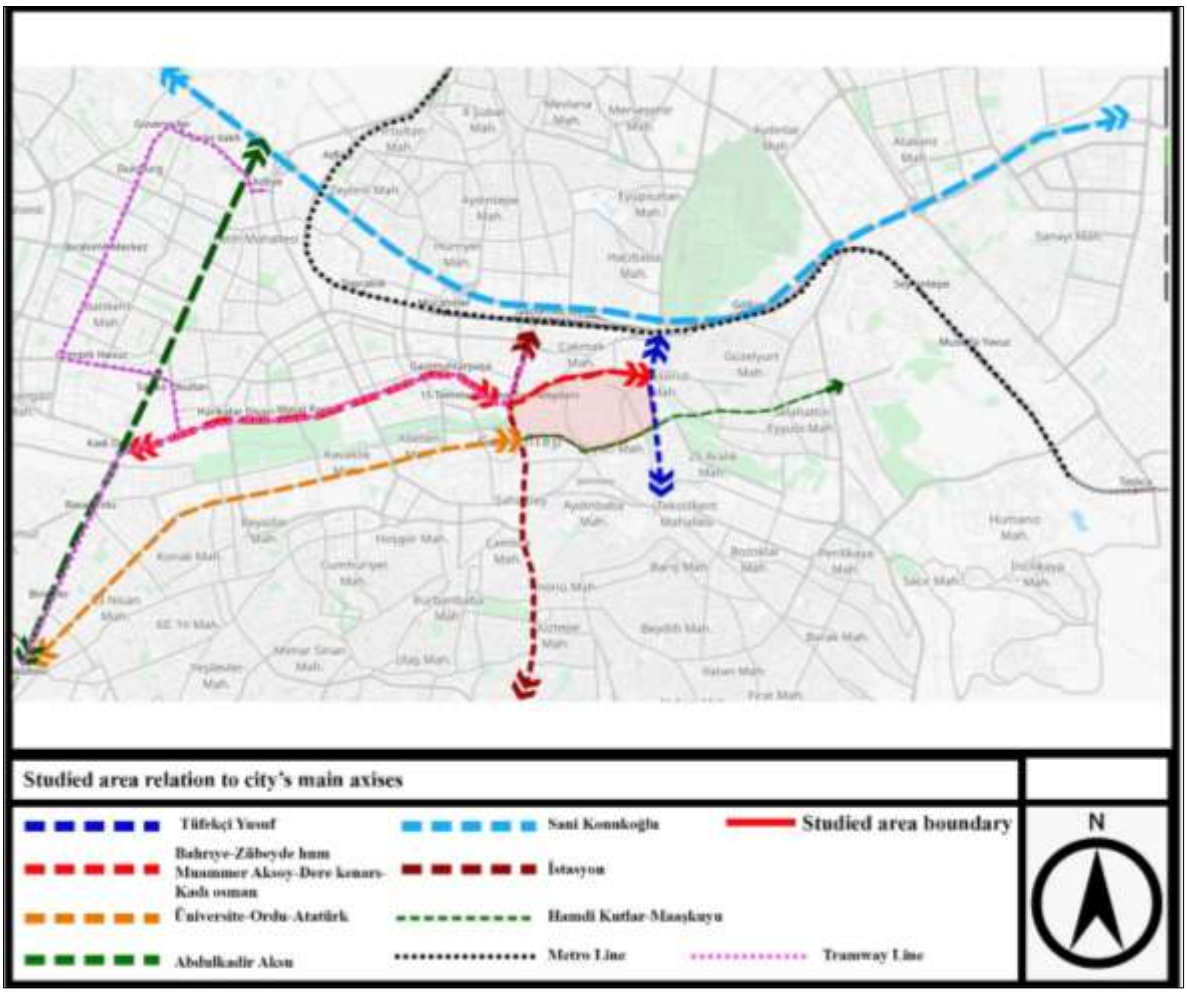

Figure 3.24: Studied Area Relation To City's Main Axises.

3.6.7 Levels Of Derelict And Vacant Land

In order to find the Proportion of empty area to built-up area we divide the total area of vacant lands (m2) by the case study area (m2). After observing the studied area as in the Figure 3.25, the total vacant land area was estimated as 9,264.6 m2 divided by 470,473.9 m2 results 0.0196 which means 1.9 %. it can be considered as "Very Good". On the other hand, to find the Proportion of vacant buildings to total number of buildings, it has been relied on the buildings' evaluation after 6th of February Kahramanmaraş earthquake on the official website [116], the attached photos for buildings, which have categorized as out of evaluation, were analyzed, it was shown that their doors were closed with concrete blocks, so, they were considered as a vacant building. So according to the available data the number of out of evaluation buildings were divided by the total number of buildings. According to the available data the out of evaluation buildings' percentage was 2%. In addition, heavily

damaged buildings were evacuated resulting more vacant buildings and according to the available data their percentage was 5.9% and the rundown buildings' percentage was 0.6%. So, the total percentage can be considered as 8.5%.

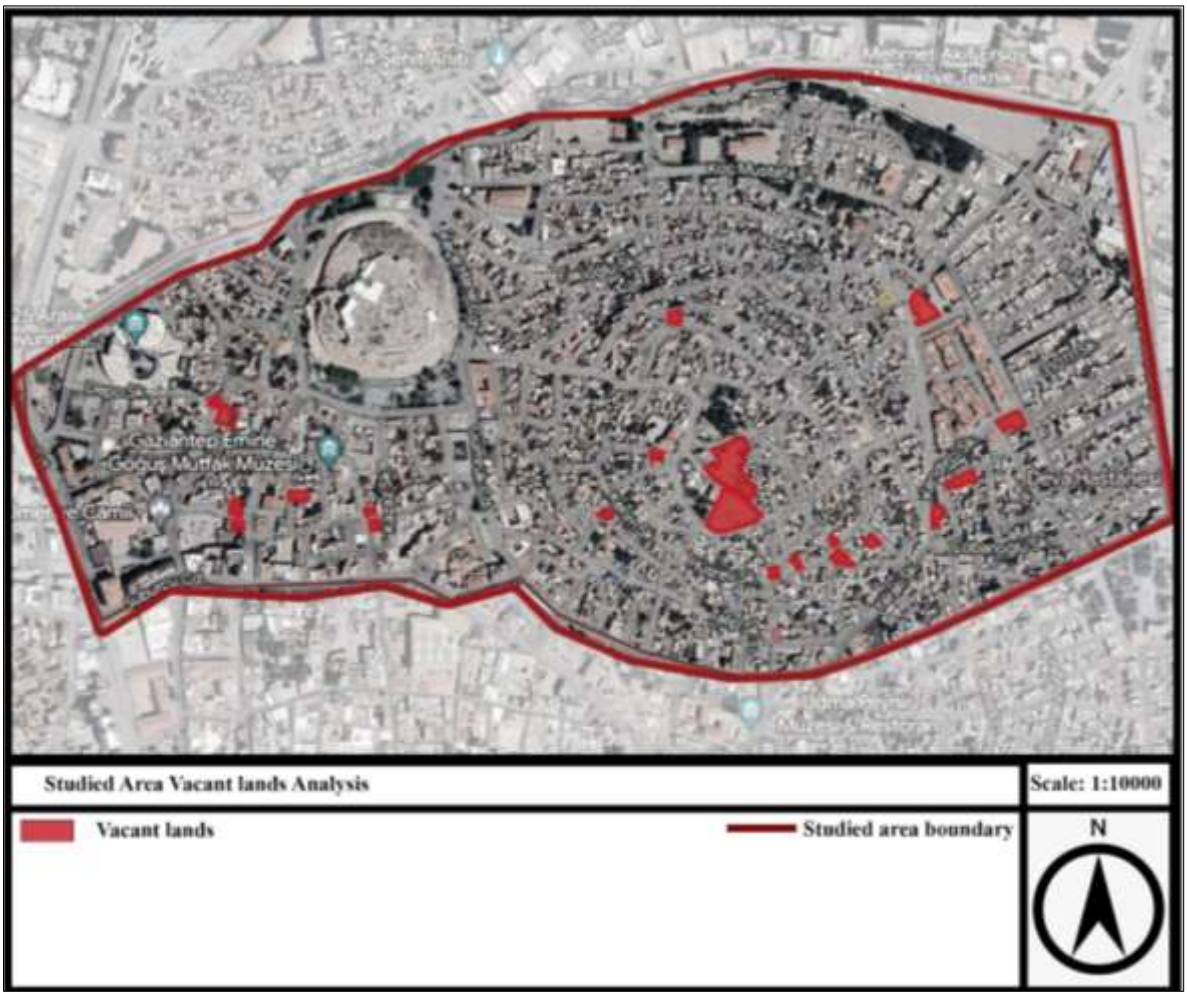

Figure 3.25: Studied Area Vacant Lands Analysis.

This percentage will be considered as "Very Good".

3.6.8 Environmental Safety (Natural Hazards)

According to the nature of hazards which the city has went through, the most common are earthquake (especially after Kahramanmaraş earthquake), and flood. In the Figure 3.26 according to GGPDED [106], it is shown how far the city center from the fault lines, in the Figure 3.27 according to GGPDED estimation for the damage which could be occurred if an earthquake with 7.5 magnitude happened and its center is Kahramanmaraş, so the estimation showed that less damage will happen within the city center [106]. On the other hand,

according to buildings damage evaluation of Kahramanmaraş earthquake, which was considered as Devastating earthquake, in Table 3.14 there are 2.6% as Medium Damaged, 5.9% Heavily Damaged, 0.6% Rundown, 0.3% Urgent to be Demolished and as a total of the evaluations it will be 9.4%. this percentage can be considered as “Very Good ”.

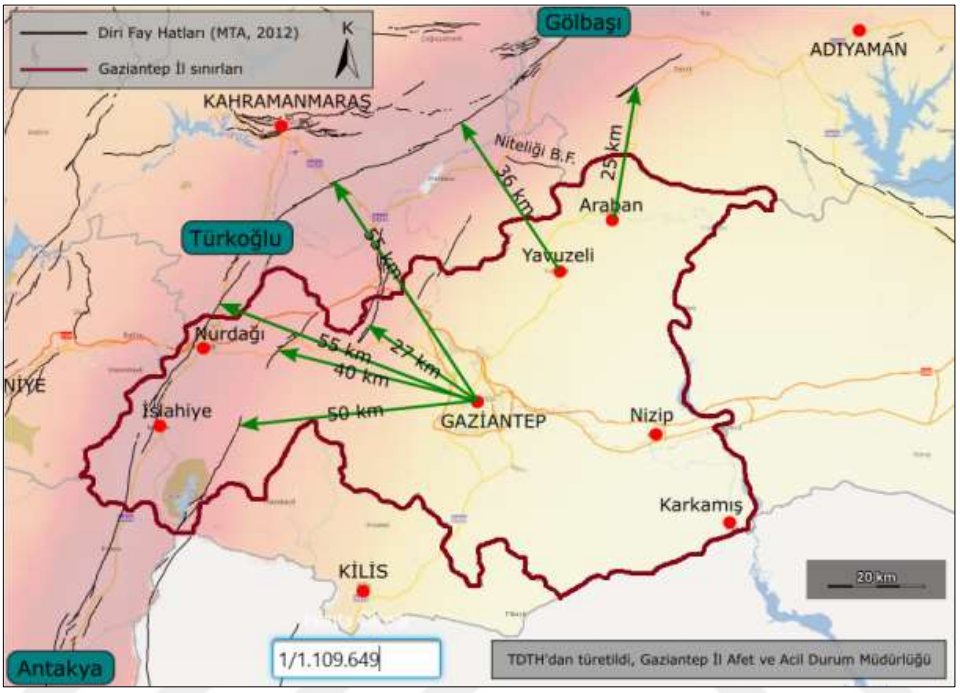

Figure 3.26: City Center Distance From The Fault Lines [106].

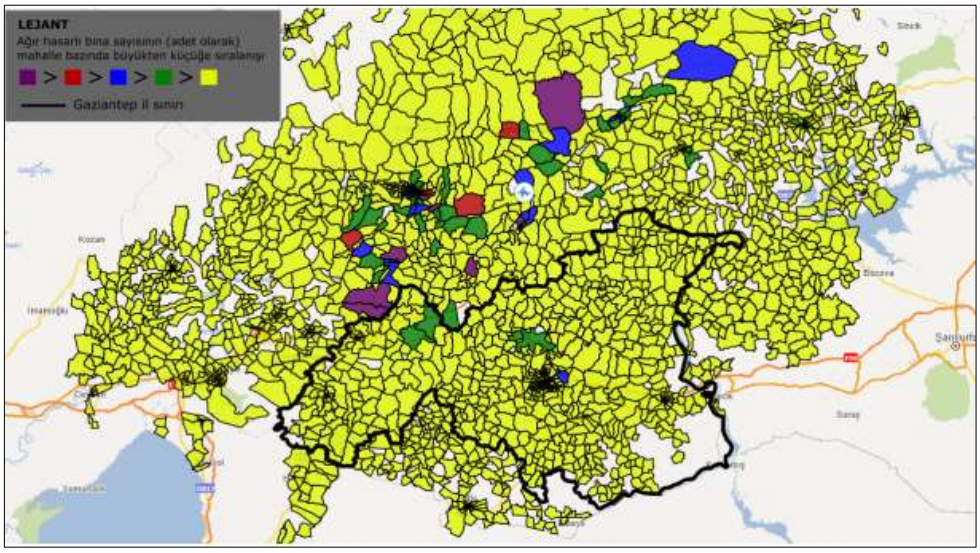

Figure 3.27: GGPDED Estimation For The Damage Of 7.5 Earthquake Which Its Center In Kahramanmaraş [106].

Table 3.21: Observation Results.

Parameter	Indicators		Very Poor (1)	Poor (2)	Average (3)	Good (4)	Very Good (5)
Visual Character		Buildings materials, colors, textures.			■		
		Buildings physical situation					■
		Buildings' Facades harmony	■				
		Buildings' Facades Beauty	■				
Density		Total built-up area to site area		■			
		Ratio of population density					■
Public spaces	Condition maintenance	Robust		■			
		Adaptable		■			
	Design	Well-designed		■			
		Legible			■		
		Has a sense of enclosure				■	
Parks and Green areas		Ratio of green space to built surfaces		■			
		Green surface to built surface density		■			
Streets and Pedestrian paths	Streets and Pedestrian paths	The streets design and physical situation quality			■		
		Pedestrian sidewalk and walkability		■			
		Streets furniture (seatings, lighting system, ..)	■				
		Streets safety (walkability, entry and exit to vehicles)		■			
		Ground floor functions' impact on the streets' busyness			■		
Accessibility	Non-vehicular Accessibility	Walking				■	
		Cycling				■	
		Safety of Non-vehicular accessibility		■			
	Vehicular Accessibility	Public transportation		■			
		Cars' accessibility			■		
		Traveling time				■	
	Parking and servicing.	Availability of car parking areas			■		
		Spread of car parking			■		
Vacant and Derelict land		Proportion of empty area to built-up area					■
		Proportion of vacant buildings to total number of buildings					■
Environmental Safety (Natural Hazards):		Environmental Safety (Natural Hazards)					■

3.7 MEASURING LIVABILITY IN THE HISTORICAL QUARTERS OF GAZİANTEP (SURVEY)

As it was mentioned in part **3.5** the second part of livability evaluation was the survey, in Table 3.3 the indicators which were asked for the people were mentioned. 107 people were asked with a demographical information clarified in Table 3.22

Table 3.22: Participants Demographic Information.

Gender		Age				Children		Nationality	
Male	Female	18-29	30-40	41-50	50+	Has	Doesn't have	Turkish	Foreign
95	12	9	33	18	63	92	15	48	59
Married	Single	working		Not working		Has car		Doesn't have car	
96	11	56		51		45		62	
Districts									
Bekirbey: 20	Bostancı: 7	Boyacı: 18		Cabi: 8		Çakmak: 2		Düğmeci:-	Kanalıcı: 7
Karagöz: 6	Seferpaşa: 5	Şekeroğlu: 3		Tışlaki: 6		Türktepe: 5		Yazıcık: 20	

The survey's results are clarified in Table 3.23 showing the inhabitants evaluation and satisfaction of some urban features of their living district.

Table 3.23: Survey Results.

Parameter	Indicators	Very Poor (1)	Poor (2)	Average (3)	Good (4)	Very Good (5)
Visual Character	Buildings' beauty	38%	17%	45%	0%	0%
Public spaces	Healthy	50%	13%	30%	3%	4%
	space for social interaction	50%	13%	30%	3%	4%
	Fulfilling	42%	24%	21%	8%	4%
	Relaxing	50%	19%	22%	8%	0%
	Vital and viable	49%	11%	24%	14%	2%
Streets and Pedestrian paths	The streets design and physical situation quality	29%	16%	41%	11%	3%
	Pedestrian sidewalk and walkability	20%	35%	24%	20%	2%
	Streets furniture (seatings, lighting system, ..)	35%	21%	25%	20%	0%
	Streets safety (walkability, entry and exit to vehicles)	28%	31%	19%	19%	4%
	Ground floor functions' impact on the streets' busyness	7%	21%	51%	13%	7%
Accessibility	the Non-vehicular Accessibility (Walking-Cycling)	17%	20%	21%	25%	18%
	Vehicular Accessibility (Public transportation-cars)	11%	13%	29%	29%	16%
	Traveling time	3%	15%	38%	29%	15%
	Availability of car parking	45%	24%	14%	11%	6%
Pollution	health condition in general	10%	19%	51%	16%	4%
	Garbage collection	4%	7%	16%	12%	62%
	the noise generating activities	21%	11%	28%	24%	15%
Environmental Safety (Natural Hazards):	Environmental Safety (Natural Hazards)	53%	21%	9%	16%	0%
	indicator was important for safety against environmental disaster (Kahramanmaraş earthquake)	Public Spaces+ Streets and Pedestrian Paths design: 4% Parks and Green areas: 41% Parks and Green areas +Public Spaces: 8% Streets and Pedestrian Paths: 18% Public Spaces: 16% Parks and Green areas + Accessibility: 4% Accessibility: 10%				

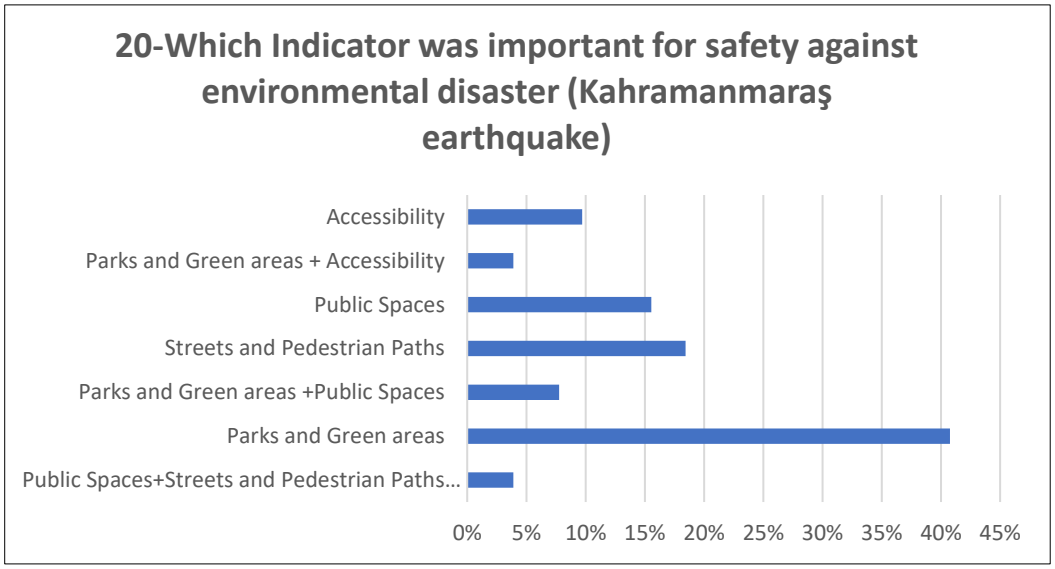

Chart 3.10: 20-Which Indicator Was Important For Safety Against Environmental Disaster (Kahramanmaraş Earthquake).

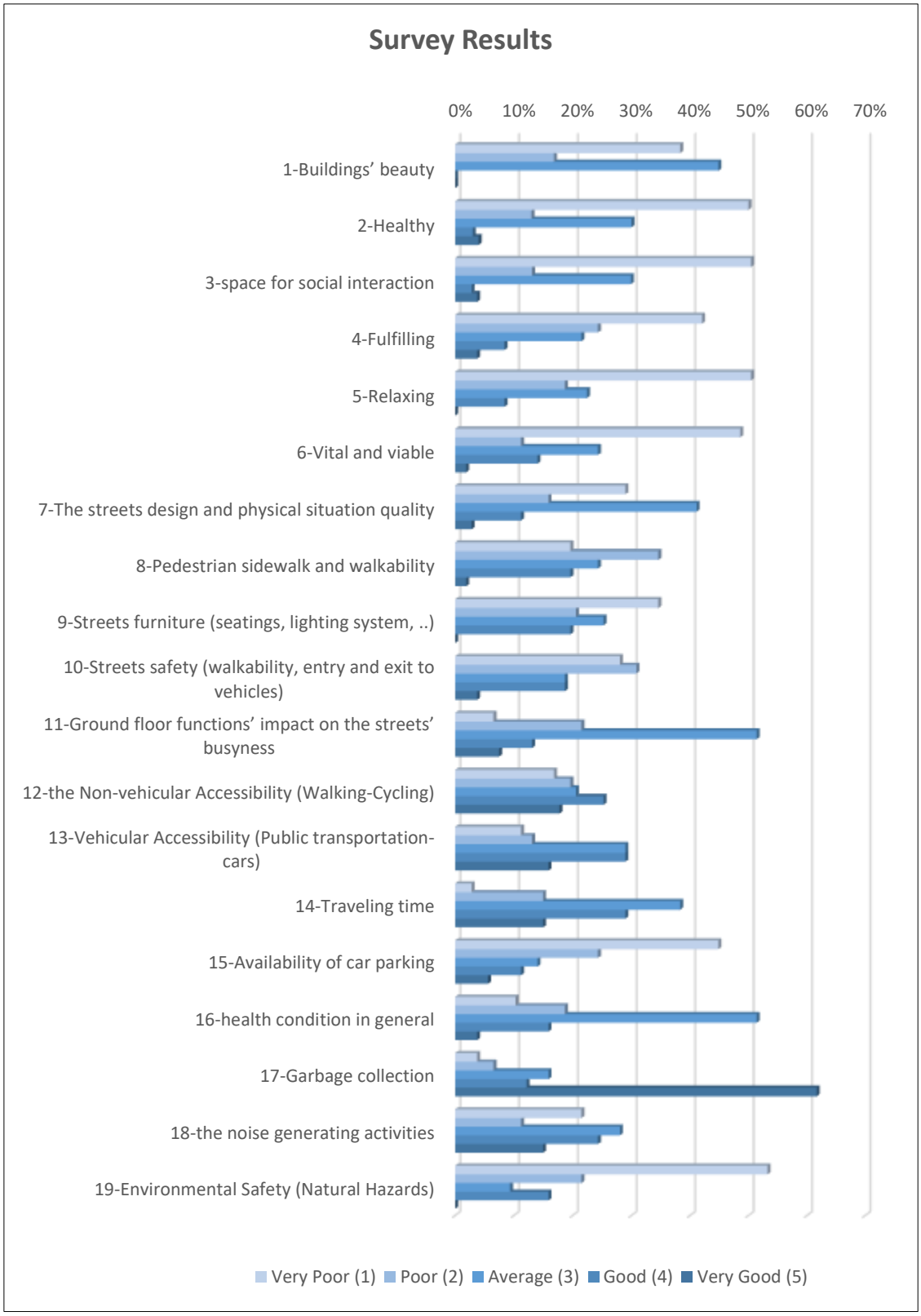

Chart 3.11: Survey Results.

4. RESULTS

4.1 FINDINGS

According to the previous chapter results of evaluating and quantifying the Environmental dimension indicators by utilizing the methods of observation and survey and which are stated with their scores according to Likert Scale in Table 3.21 and Table 3.23, it is noteworthy that fort he indicators which rely on both methods, in the parts where there is no correspondence between them, it has been relying on the survey scores, and according to it, it was found out that:

4.1.1 Visual Character

The Buildings' materials, colors, textures indicator was evaluated as Average, Peoples' beauty perception score was considered as Average as well. Buildings physical situation was Very Good while Buildings' Facades harmony and Buildings' Facades Beauty were Very Poor.

4.1.2 Density

The Total built-up area to site area indicator was considered Poor while the Population density to the total area was Very Good.

4.1.3 Public Spaces:

For the Condition maintenance (Robust-Adaptable) indicators they were evaluated as Poor, furthermore, for the Design, Well-designed indicator was considered Poor, Legible was evaluated as Average, and Has a sense of enclosure was evaluated as Good. The User evaluation according to survey results showed that Healthy was Very Poor, space for social interaction was Very Poor, moreover, Fulfilling and Relaxing were Very Poor, Function (Vital and viable) evaluation was Very Poor as well.

4.1.4 Parks And Green Areas

The Ratio of parks and green areas to total surfaces and The Green surface to built-up surface density indicators were evaluated as Poor.

4.1.5 Streets And Pedestrian Paths:

The survey and observation results were corresponding for all indicators, so, the streets design and physical situation quality indicator was evaluated as Average, Pedestrian sidewalk and walkability was evaluated as Poor, beside the Streets furniture as Very Poor, Streets safety was considered as Poor, and Ground floor functions' impact on the streets' busyness was Average.

4.1.6 Accessibility

Non-vehicular Accessibility evaluation was Good for Walking and Cycling in both methods of survey and observation while Safety of Non-vehicular accessibility was evaluated as Poor. For Vehicular Accessibility, Public transportation according to the observation was considered as Poor and Cars Accessibility as an Average while according to the survey the results of evaluation as an Average and Good were equal to each other in both so, both results will be considered as an Average. Traveling Time was considered as Good according to the observation while it was evaluated as an Average according to the survey results so, it will be considered as Average as final result. For Parking and servicing the Availability of Car Parking was considered as Average according to the observation while it was Very Poor according to survey results, so, according to people's experiences it will be considered as Very Poor. The Spread of car parking was considered as an Average according to the observation.

4.1.7 Pollution

General health condition indicator according to the survey results was considered as Average, while the Garbage collection was evaluated as Very Good, and Noise Generating Activities was considered as Average.

4.1.8 Vacant And Derelict Land

Proportion of empty area to built-up area and Proportion of vacant buildings to total number of buildings according to the observation were considered as Very Good.

4.1.9 Environmental Safety (Natural Hazards)

According to the observation the studied area was considered as Very Good according to GGPDED estimation results and according to the real evaluation of buildings physical situation after Kahramanmaraş earthquake, in terms of Environmental Safety (Natural Hazards) in contrast the survey results was Very Poor but peoples' evaluation was more influenced by their fear and panic feelings during the disaster so, the result will be considered as Very Poor relying on the survey results.

The previous results are declared clearly in Table 4.1

Table 4.1: Environmental Dimension's Indicators Scores According To Likert Scale.

Parameter	Indicators		Very Poor (1)	Poor (2)	Average (3)	Good (4)	Very Good (5)
Visual Character		Buildings materials, colors, textures.					
		Peoples' beauty perception	38%	17%	45%	0%	0%
		Buildings physical situation					
		Buildings' Facades harmony					
		Buildings' Facades Beauty					
Density		Proportion of total built-up area to site area					
		Proportion of population density to the total area					
Public spaces	Condition maintenance	Robust					
		Adaptable					
	Design	Well-designed					
		Legible					
		Has a sense of enclosure					
	User	Healthy	50%	13%	30%	3%	4%
		space for social interaction	50%	13%	30%	3%	4%
		Fulfilling	42%	24%	21%	8%	4%
		Relaxing	50%	19%	22%	8%	0%
	Function	Vital and viable	49%	11%	24%	14%	2%
Parks and Green areas		Ratio of green space to total surface					
		Green surface to built surface density					
Streets and Pedestrian paths	Streets and Pedestrian paths	The streets design and physical situation quality	29%	16%	41%	11%	3%

Table 4.1: Environmental Dimension's Indicators Scores According To Likert Scale "Table Continued".

		Pedestrian sidewalk and walkability	20%	35%	24%	20%	2%
		Streets furniture (seatings, lighting system, ..)	35%	21%	25%	20%	0%
		Streets safety (walkability, entry and exit to vehicles)	28%	31%	19%	19%	4%
		Ground floor functions' impact on the streets' busyness	7%	21%	51%	13%	7%
Accessibility	Non-vehicular Accessibility	Walking	17%	20%	21%	25%	18%
		Cycling	17%	20%	21%	25%	18%
		Safety of Non-vehicular accessibility	28%	31%	19%	19%	4%
	Vehicular Accessibility	Public transportation	11%	13%	29%	29%	16%
		Cars' accessibility	11%	13%	29%	29%	16%
		Traveling time	3%	15%	38%	29%	15%
	Parking and servicing.	Availability of car parking areas	45%	24%	14%	11%	6%
		Spread of car parking					
Pollution		General health condition	10%	19%	51%	16%	4%
		Garbage collection	4%	7%	16%	12%	62%
		Noise Generating Activities	21%	11%	28%	24%	15%
Vacant and Derelict land		Proportion of empty area to built-up area					
		Proportion of vacant buildings to total number of buildings					
Environmental Safety (Natural Hazards):		Environmental Safety (Natural Hazards)	53%	21%	9%	16%	0%
Table Legend							
Observation only	**Observation**	**Observation + Survey corresponding**	**Observation + Survey final result**				

We can notice that only five indicators have *Very Good* evaluation which are: Buildings physical situation, Ratio of population density, Garbage collection, Ratio of vacant area to built-up area, and Ratio of vacant buildings to total number of buildings. In contrast, nine indicators were evaluated as *Very Poor* which are: Buildings' Facades harmony, Buildings' Facades Beauty, Healthy, space for social interaction, Fulfilling, Relaxing, and Vital and viable, Streets furniture (seatings, lighting system, ..), Availability of car parking areas and Environmental Safety (Natural Hazards) . Five indicators have *Good* evaluation which are:

Has a sense of enclosure, Walking, Cycling, and Public transportation. while, nine indicators have *Poor* evaluation which are: Total built-up area to site area, Robust, Adaptable, Well-designed, Ratio of parks and green areas to built-up surfaces, Green surface to built-up surface density, Pedestrian sidewalk and walkability, Streets safety, and Safety of Non-vehicular accessibility. Furthermore, ten indicators were evaluated as an Average which are: Buildings materials, colors, textures, Peoples' beauty perception, Legible, The streets design and physical situation quality, Ground floor functions' impact on the streets' busyness, Public transportation, Cars' accessibility, Traveling time, Spread of car parking, General health condition, and Noise Generating Activities. The total score of indicators evaluation was 97 which means according to Table 3.5 the livabilty evironmental rate is below the average, which means that these quarters needs radical new approach and new improvement strategies. Inhabitants complaints were taken in consideration as well, and they were considered as crucial factors in order to find absent aspects and develop the improvement stratigies to meet inhabitants' needs. When they were asked about Streets and Pedestrian paths parameter One of participants stated that:

"In some parts of the district it is difficult to walk or cycle because of the inclined raod"

+50, Male, Foreign, from Yazıcık

Another participant indicated to the absence of paved pedestrian roads stating:

"As we all know it is very old district and with this type of streets it is difficult and not safe to walk "

41-50, Male, Turkish, from Şekeroğlu

Other participant emphasized on the absence of safety nor with its familiar meaning neither with its meaning according to the scope of our study stating that:

"Since these districts are full of thieves and drugs sellers, while walking you should be careful of motorcycles, most of them are used for theft purposes."

+50, Male, Foreign, from Yazıcık

When inhabitants were asked about *Pollution* parameter it was stated by one of the participants that:

"The district's general health condition is Average but during the winter and because of the coal usage for heating the district is over polluted."

41-50, Female, Foreign, from Bekirbey

Another participant clarified that:

"The pollution can be attributed to the industrial factories and industrial districts which we are surrounded by, furthermore, my house is surrounded by motorcycle repairing halls so all sorts of pollution can be found"

30-40, Female, Foreign, from Boyacı

The survey was concluded by asking participants to choose which urban element was more important for safety against environmental disaster (Kahramanmaraş earthquake). 41% chose Parks and Green areas as safest place, 16% chose Public Spaces, 18% chose Streets and Pedestrian Paths, and 10% chose Accessibility. On the other hand, Parks and Green areas + Public Spaces were chosen by 8%, besides, Public Spaces + Streets and Pedestrian Paths design were chosen by 4%, Parks and Green areas + Accessibility were chosen by 4% as well. So, as the Figure 4.2 we can notice that the Parks and Green areas were the most important urban element for the safety against environmental disaster (Kahramanmaraş earthquake) while Accessibility has the lowest rating of importance.

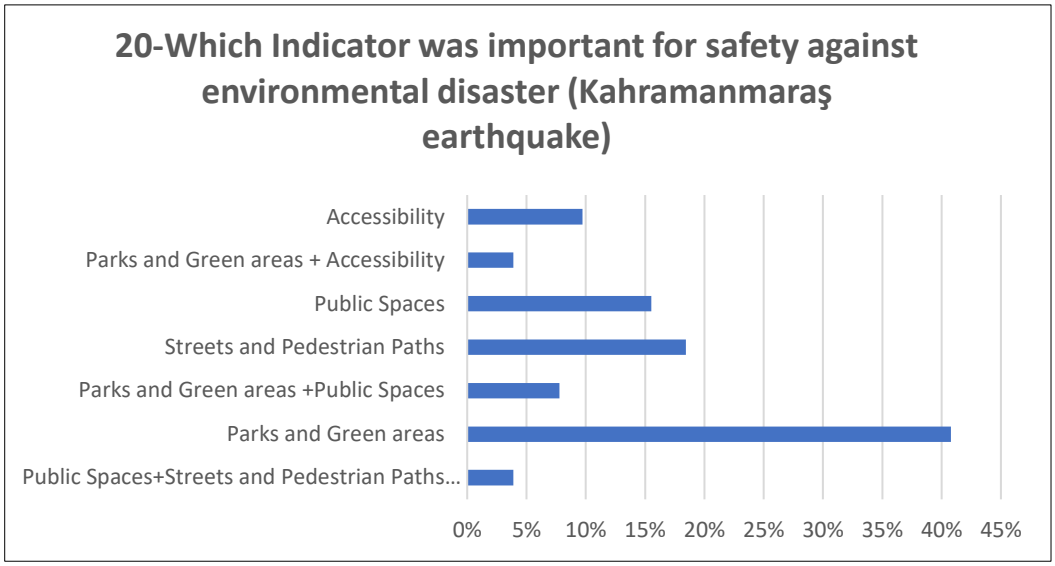

Chart 4.1: Which Indicator Was Important For Safety Against Environmental Disaster (Kahramanmaraş Earthquake).

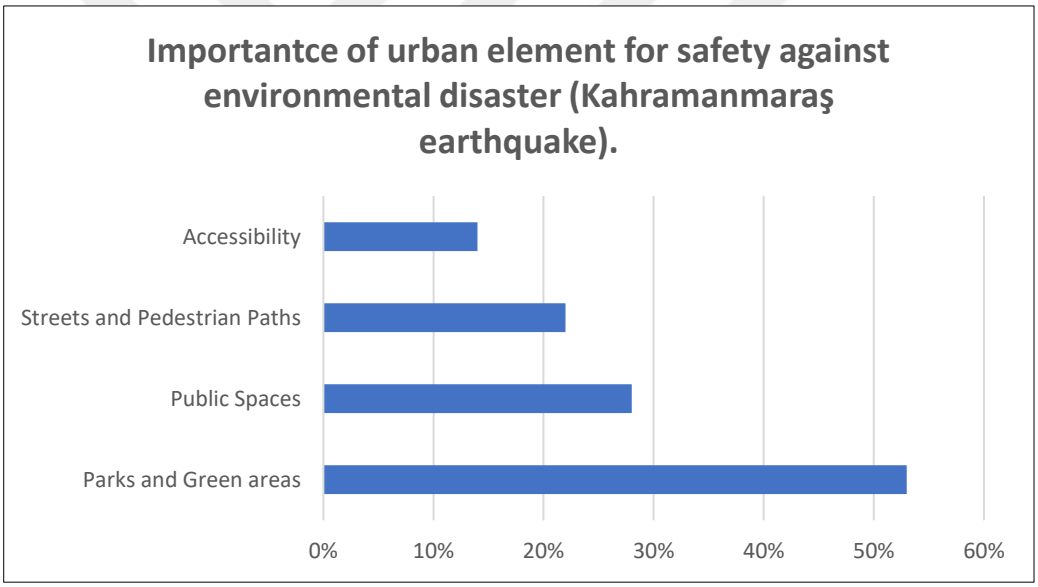

Chart 4.2: Rating Of Important Urban Element For Safety Against Environmental Disaster (Kahramanmaraş Earthquake).

5. CONCLUSION

According to this study, which is about evaluating the environmental livability level within the historical quarter in Gaziantep and determining its status, by observing the urban features of the historical quarter and making surveys with inhabitants, it was important to determine the indicators scores and which indicators are preferable or unpreferable for living within the studied area, and according to the previous evaluation results these indicators acquired the highest scores and were the most preferable for living: Buildings physical situation, Ratio of population density, Garbage collection, Ratio of vacant area to built-up area, Proportion of vacant buildings to total number of buildings. Conversely, the least preferable indicators were: Buildings' Facades harmony, Buildings' Facades Beauty, Public spaces user opinion (Healthy, space for social interaction, Fulfilling, Relaxing), Public spaces function (Vital and viable), Streets furniture (seatings, lighting system, ...), Availability of car parking areas and Environmental Safety (Natural Hazards). Hence the total score of environmental indicators was 97, it was found that the studied area's livability's level in terms of the environmental dimension was below the average, and the quarter's urban features aren't sufficient to meet modern life needs for living.

In addition to the previous results, through observing the studied area, other situations can be considered as a sub-indicators which had an impact on the overall livability sensation, it was apparent especially in the buildings' height disparity which influenced on the district's skyline, beside some buildings' façade's architectural style and these buildings are not fitting the context of the studied area, the presence of unauthorized residential buildings with their low qualities and poor architectural features, contradiction between aesthetical condition and evaluation of physical situation. The mentioned observed situation can provide more approaches to enhance the environmental livability level.

So, based on the obtained results in Chapter-4 and within the limitations of the investigated parameters in this study, the following recommendations can be drawn:

5.1 GENERAL RECOMMENDATION

a. Intensify efforts of decision-making institutions (Municipality, Governorate, Governmental institutions and Civil society institutions) to be poured into the process of

enhancing livability and its related aspects not only the environmental but also the social and economical aspects which have crucial contribution on the improvement's capability.

b. Emphasizing on the role of livability as critical parameter in the city planning and urban planning processes.
c. Enhance community participation and its important role for urban development and involving society in determining the required functional and aesthetical demands for the studied area.
d. Providing required financing for improving the urban livability and its related indicators.
e. Providing the required financing as well for restoration and preservation processes for the parts which should be kept in terms of their historical importance.
f. Preventing the issuance of licenses for high-rise buildings where they are influencing the district sky line, or make their facades design goes with historical pattern of these quarters.
g. Providing an appropriate and special training programs for individuals who have the ability to be involved in the urban development processes.

5.2 CASE STUDY LEVEL

The main target will be considered as Improving the Livability Level in terms of the Environmental dimensions, though the importance of this target, but the value of city's core and traditional urban tissue should be considered as a fundamental principle which gives *sense of place* for city's core. So, balancing between livability improvement target and urban and historical heritage features will be suggested in the following strategy. Each parameter improvement can be considered strategy and it branches to sub-strategies as in the literature review where they branched to indicators.

5.2.1 Visual Characteristic

A. According to the research results the studied area is visually and aesthetically Very poor and in order to follow the city's historical character followings should be taken into consideration:

a-The dilapidated buildings which historically (see Appendix D and E), physically, visually (see Appendix A and B), and aesthetically aren't belonging to districts' character or not

providing decent life requirements for its inhabitants should be demolished and rebuilt to be fitted in the district's urban tissue and its aesthetical regulation. (mostly in Bostancı)
b-The dilapidated buildings which their visual and aesthetical poor condition can't be restored or improved beside the quality of life within them are unsuitable should be demolished and rebuilt in order to fits with the urban environment character and quality. (mostly in Bekirbey, Bostancı, Kanalıcı, Yazıcık)
c-Buildings which their facades can be assessed to fit the district's urban pattern and traditional facades pattern can be kept (mostly Karagöz, Türktepe, Şekeroğlu, Seferpaşa)
d-Restored buildings which are visually polluted by drawings on walls or coal heating emissions effect on their walls should be repaired.

e-Hiding electric cables and unifying stores advertisements boards.

B. Improving the internal and external view of workshops which can attract more customers.
C. Considering the dimensions of windows to get more light and appropriate heat for winter which reduces the energy consumption [102].

D. Adding sun breakers when it is required with traditional concept design which belongs to Gaziantep traditional houses to reduce heating absorption during summer and keeping on the privacy concept.

E. Emphasizing on the value of historical district through inserting the traditional pattern features for the new buildings in a way can balance between the modern life needs and the architectural heritage impact on the sense of place which will be construct.
F. The new buildings which will be construct should keep on the district's sky line with 3 stories as maximum number of stories.

G. Encouraging historical houses owners to restore and repair their houses in order to participate in revitalizing city's core.

5.2.2 Density

Meditate the ability to balance the ratio of built-up area to the total area taking into account the historical quarter urban tissue, urban pattern and Gaziantep traditional houses designing aspirations which led to form this urban tissue.

5.2.3 Accessibility, Streets And Pedestrian Paths

After demolishing and determining buildings which will be kept and which will be eliminated, on the one hand, that will give the opportunity to improve the quality of streets, on the other hand, traditional urban tissue should be taken in consideration, and how the advantage was taken from the narrow streets and buildings orientation, so:

a. Improving the quality of streets and assessing the dimensions of them, with considering the traditional urban tissue, to allow vehicular accessibility in some parts of the studied area to enhance the accessibility.
b. Introducing the concepts of developed sustainable vehicular accessibility with their acceptable sizes which can help to keep on the narrow streets and traditional urban tissue.
c. Enhancing the walking and cycling for non-vehicular accessibility by improving the pedestrian pavement and constructing paved sidewalk for some parts where they are absent and can be added according to streets dimensions (mostly in Bekirbey, Yazıcık, Cabi, Türktepe, and Kanalıcı).
d. In some districts (mostly within Şekeroğlu and Tışlaki according to Figure3.22) limiting the accessing to walking and cycling to enhance the safety of non-vehicular accessibility which was evaluated as poor.
e. Considering the inclindness of paths between 5%-15% to be suitable for walking [102].
f. Considering the accessibility for all individuals situations like vulnerable people, disabled, children, etc...
g. According to the poor evaluation, adding streets furniture like seating desks and lightening system which can promote the aesthetical side of these quarters and serve inhabitants demands.
h. Increasing the spread of car parking within the studied area as long they needed.
i. Assessing the traffic flow and managing the vehicular movement to avoid the congestion problem during particular hours of the day.

5.2.4 Parks And Green Areas

Increasing the percentage of green areas and parks to be more than 20% [102], which they considered as lungs and breathing districts for these quarters beside their role as safe place during the earthquakes.

5.2.5 Public Spaces

According to the obtained results of both methods it was noticeable the absence of public spaces and the poor basic features of existed ones, so with considering the concepts of designing and forming historical quarter tissue it can be recommended as follow:

A. Taking advantages of vacant areas (mostly within Türktepe, Bekirbey, and Boyaci) beside the demand of different functions to be added and inserting more public spaces or semi-open public spaces to serve districts on the neighborhood level and this can be provided by:

a. Well-designed open squares with suitable sense of enclosure which can give the healthiness and relaxing sensation beside providing spaces for social interaction.
b. Inserting architectural features which attract individuals and can enhance the aesthetical aspect of these public spaces like unique traditional outdoor furniture, beside their role in enhancing the vitality and social interaction.
c. According to the history some functions were serving the function of public spaces (like mosques,) so places for social interaction can be attached to them which can enhance the vitality of studied area.

B. Considering the privacy and security concept within some parts by keeping on the residential function without inserting functions can invite non habitants.

C. In order to enhance the vitality and viability within some parts of the studied area taking in considerations the exist and possible main axises beside the residential privacy concept, new functions can be inserted like:

a. Multi story commercial buildings consist of 2-3 stories with restaurants on terraces.
b. Parks which surrounded by caffes or restaurants with unique design ideas.
c. Institute for teaching city's traditional crafts which emphasize on the continuity of city's history and giving potential for more working opportunities.
d. Cultural centers for different ages.
e. Squares which can host festivals and traditional events.

5.2.6 Pollution

a. Gathering some noise generating functions within specific places being away from residential functions.

b. Removing unsuitable drawings on the walls to decrease visual pollution.
c. Using advertisement boards which fits the districts traditional pattern.
d. Providing appropriate heating system which produces less emissions and doesn't increase the pollution rates (like gaz as a fuel).
e. Adding air-quality monitoring stations within the historical quarter (temporary or permanent stations) in order to determine accurate air pollution rates during different times of the year to be considered as reliable resource specifically for the historical quarter livability improvement process.

5.2.7 Environmental Safety (Natural Hazards)

a. Emphasizing on the human safety by using sufficient structural system and foundations.
b. Supporting damaged or structurally weak buildings which should be supported with specific materials (like basalt fiber reinforced polymer sheet) [122].
c. The parks and green areas were considered as an important safe urban character during the earthquake, so increasing the number and spread of them within the district.
d. Emphasizing on the role of the multi-purpose halls not only for containing different events but also, as safe place for protecting inhabitants.

According to the previous recommendations, and in order to employ them in realty a strategy has been estimated considering the phases which it should be go through according to time and according to logical basic strategy for the required radical approach, in Table 5.1 tasks are stated with the Estimated duration and the Adjusted duration (considering week ends and official holidays). According to this strategy this approach could be finished and the purpose of it could be achieved by 2029 as in Figure 5.1 and it can be the basic plan or the step which paved the way for other strategies and approaches with futuristic vision and aspirations to enhance the livability not only on the environmental level, but also other livability dimensions should be taken into account as well.

Table 5.1: Radical Approach Strategy Phases.

Tasks		Duration	Estimated duration (days)	Adjusted duration (days)
Task 1	Buildings for Demolishing evaluation	2-4 months	120	167
	New map Pre-demolishing			
Task 2	Inhabitants time limit for moving	3-6 months	180	252
Task 3	Designing Main, secondary Axis, Streets, pedestrian paths, Open Public spaces, Green areas, Functions Determinations	2-4 months	120	168
Task 4	Municipality approvement requests	1-2 weeks	14	20
	Design Adjustments	2-3 weeks	21	29
	Final Municipality approvement	1-2 weeks	14	20
Task 5	Demolishing process	1-4 months	120	168
	Removing ruins	2 weeks	14	20
Task 6	Land leveling	2-3 weeks	21	29
Task 7	Infrastructure working	2-3 weeks	21	29
	Streets network leveling	1-2 weeks	14	20
	Streets final preparing	2-3 weeks	21	29
Task 8	Construction site preparation	2-3 weeks	21	31
	Buildings from start to finish	11-24 months	720	1008
Task 9	site preparation	1-2 weeks	14	20
	Public spaces constructing	2-3 weeks	21	29
Task 10	Parks and green areas construction	2-3 weeks	21	31
Task 11	Historical buildings restoration	11-14 months	420	588

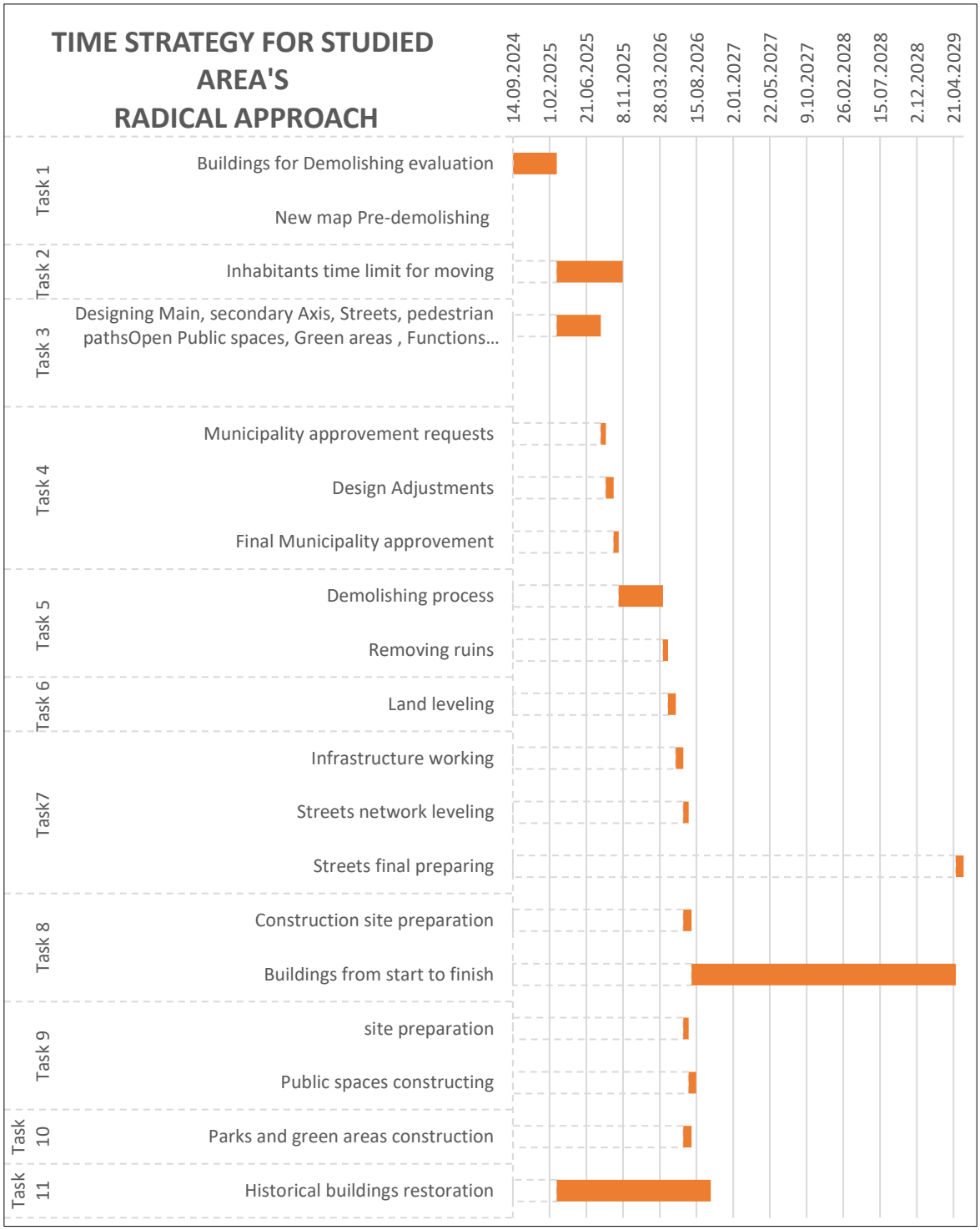

Figure 5.1: Time Strategy For Studied Area's Radical Approach.

5.3 RECOMMENDATIONS FOR CONCERNED INSTITUTIONS

Including Ministry of Environment, Urbanization and Climate Change, Metropolitan Municipality of Gaziantep (MMG), Gaziantep Municipality Şahinbey in particular, Ministry

of Culture and Tourism, Concerned Institutions of Culture and City's Heritage, it is noteworthy to recommends the followings:

a. Restoring and revitalizing the buildings which have their historical value after the proper evaluation processes of their physical and aesthetical condition.
b. Encouraging and coordinating with house owners to improve the Quality of life by making the appropriate restoration and repairing for the houses to be more livable.
c. Coordinating between concerned institutions to enacting appropriate building codes for the historical quarter.
d. Contemplating the ability to add new functions within the districts to enhance the vitality on different levels.

5.4 RECOMMENDATIONS FOR INVESTORS AND THE PRIVATE SECTOR:

a. Establishing a public joint stock company in order to develop the historical quarter and construct new touristic projects like hotels and by coordinating with vacant properties owners.
b. Studying the possibility of buying vacant properties or the dilapidated buildings which needs to be demolished from their owners by Municipality or other Investment companies then constructing residential projects with urban features and sustainable services which can helps their inhabitants to handle the cost of living beside having suitable quality of living which could attract other social classes.
c. Revitalizing the historical quarters commercially and providing proper financing for new investments and new opportunities and provide jobs for inhabitants in order to help them to improve their living conditions and attract other activities to be established within these quarters.

5.5 RECOMMENDATION ON CITY PLANNING AND URBAN DESIGN LEVEL

a. Take into account the traditional urban tissue, which gave the sense of historical heritage during the urban revitalizing the city's core.
b. Analyzing the critical points within the studied area which requires more facilities in terms of increasing the connection with other parts of the city by meditating the ability of inserting modern sustainable solutions.

c. Managing the residential function to meet the needs for shelter according to population changes.
d. Utilizing an urban design guide line as an effective document to be developed by the planners and municipality to be referred during the implementation process to maintain hidden characteristics of the studied district.

5.6 RECOMMENDATIONS FOR FURTHER WORKS

a. Intensifying efforts to study the social and economical dimensions and their crucial impact on inhabitants Quality of life.
b. Categorizing studies to be specialized in one dimension with the ability to cover all indicator of it could be more effective for more comprehensive results for future.
c. Emphasizing on the important role of historical quarters beside the human needs for livings importance through making more researches, studies, approaches and recommendations with different cities which can enhance the livability within these quarters around the world.

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APPENDIX A

GAZIANTEP TRADITIONAL HOUSE EXAMPLE-1

<table>
<tr><th colspan="2">Gaziantep Traditional House Example-1</th></tr>
<tr><td>Site plan</td><td>Photos</td></tr>
<tr><td>  </td><td rowspan="5"> 
 
Source: [121].</td></tr>
<tr><td>District: Yaprak</td></tr>
<tr><td>Function: Shelter</td></tr>
<tr><td>Materials: stone, wood, iron</td></tr>
<tr><td>Design features: house entrance from the court yard, stone stairs, L type plan.</td></tr>
<tr><td>Representing the Gaziantep typical traditional houses’ facades in:
-Windows in the upper floors (privacy and security concept)
-Massive walls to achieve privacy
-Stone material
-Containing courtyard
-Direct entrance from street to the courtyard
-Gable roof</td></tr>
</table>

APPENDIX B

GAZIANTEP TRADITIONAL HOUSE EXAMPLE-2

<table>
<tr><th colspan="2">Gaziantep Traditional House Example-2</th></tr>
<tr><th>Site plan</th><td>Photos</td></tr>
<tr><td>  </td><td rowspan="6"> 
 
Source: [121].</td></tr>
<tr><td>District: Bey Mahallesi</td></tr>
<tr><td>Function: Shelter</td></tr>
<tr><td>Materials: stone, wood, iron</td></tr>
<tr><td>Design features: house entrance from street to the courtyard, stone stairs, L type plan.</td></tr>
<tr><td>Representing the Gaziantep typical traditional houses’ facades in:
-Windows in the upper floors (privacy and security concept)
-Massive walls to achieve privacy
-Stone material
-House with hayat
-Gable roof
-Birds nest place</td></tr>
</table>

APPENDIX C

GAZIANTEP FAMILIAR URBAN BUILDINGS EXAMPLE-1

Gaziantep Familiar Urban Buildings Facades Example-1	
Photos	**Photos**
	
Design features: -Buildings containing residential apartments - More than 3 floors number -openings to the street (opposite to the privacy concept in traditional houses) -Windows shape and spread - Balconies containment -Commercial function in the ground floor Previous features serve modern life demands	

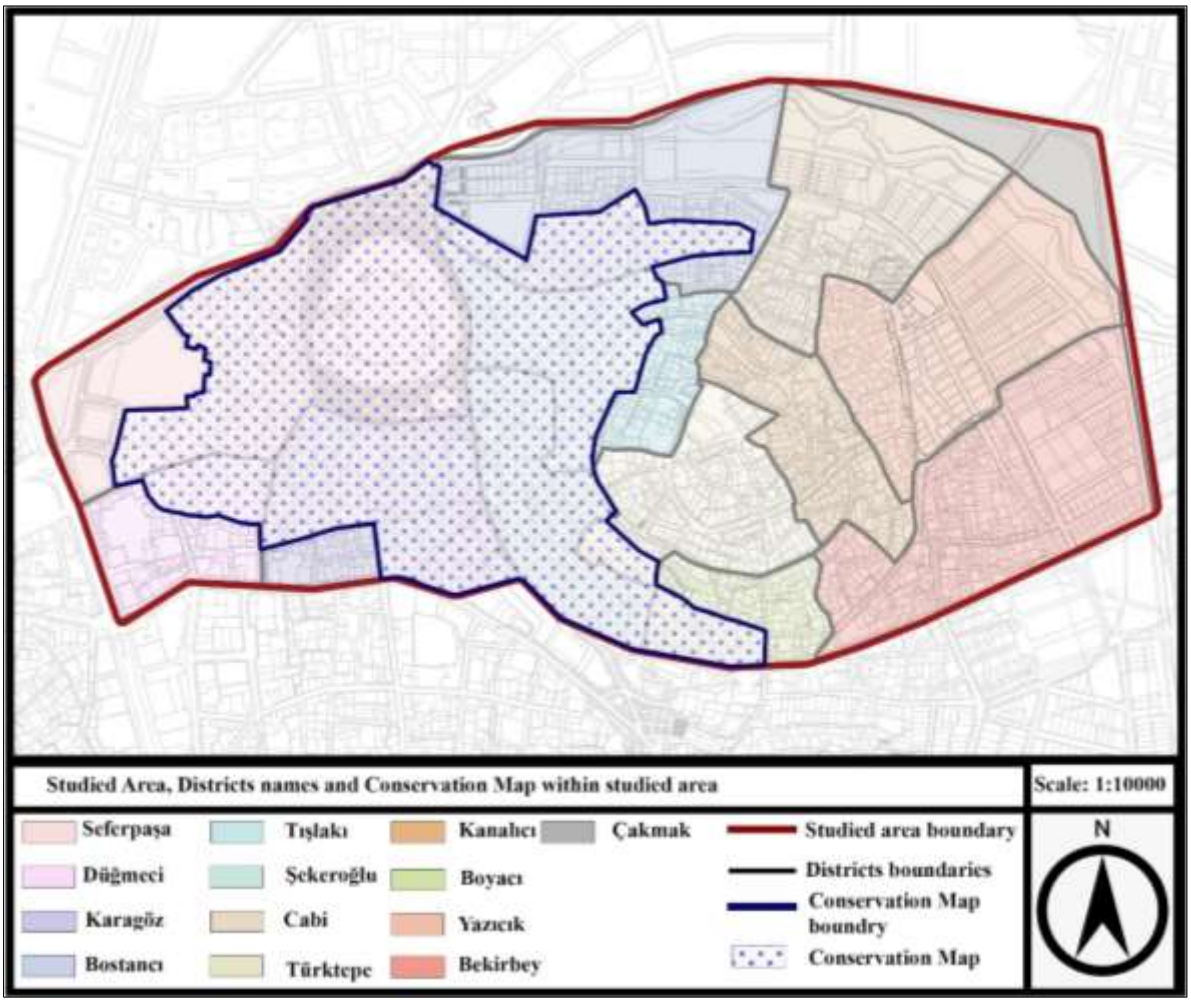
APPENDIX D

GAZIANTEP CONSERVATION MAP

Gaziantep Conservation Map. Source: [113].

APPENDIX E

CONSERVATION MAP WITHIN THE STUDIED AREA



Conservation Map Within Studied Area.