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**Criteria for Successful Livable city, Based on the  
architecture of the traditional city of Salt in Jordan**

Doctor of Philosophy in Architectural Engineering

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## **ABSTRACT**

The livability of the city is fulfilled through good planning; by providing a vibrant, attractive, walkable and safe environment for people to live, work and play. At the same time, a livable successful city is a place that has a strong and local distinctive identity that reflects the heritage and culture in their built form, this research focuses on the criteria of livable successful cities in Jordan, taking a heritage city of Salt as a case, by connecting the criteria of livable cities with the architectural physical elements which can be categorized under three main categories: landscape, building and street linkage. Jordan cities currently are losing a great part of their heritage due to rapid development, demolition in the name of progress, vandalism, and misuse. Most planning projects have been conducted without a clear reference or benchmark to guide practice. Thus, this research tries to find a guideline for planning and developing livable cities. Mixed-method was used in this study namely; qualitative data collection that involves direct site observation and historical document review. The quantitative data collection involves questionnaires (n= 330) and the data was statically analyzed such, as percentage and frequency.

The findings are determined through the triangulation of all data. This research found that the criteria of a livable city can be categorized under two main factors which are: imageability and walkability. In addition, each factor contains sub-factors including their own physical elements.

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# CHAPTER I

## INTRODUCTION

### 1.1 Introduction

This thesis examines the criteria of livable successful cities by connecting the physical elements (building, landscape and public spaces) with the urban qualities by taking Salt city in Jordan as a case study. Generally, heritage cities represent the local people, nations, needs, and cultures within their context so it could be a model for a livable city which means '*fit to live in*' and assist in creating a sustainable environment, taking into account views from a social aspect.

This chapter presents the overall structure of the study. It consists of five parts:

(i)The first part elaborates on the research issues and problems that exist in the local context of this study; (ii) The second part explains the aims and objectives of the study that are derived from a study of issues and problems; (iii) The third part explains the scope of the study, which concentrates on the research focus and main enquiries made by the research; (iv) The fourth part describes the general approach of the study as well as the overall structure of the study and a brief overview of the methodology that was used in the study; and (v) The final section is a review of the study structure and finally, the conclusion.

The study discusses the significance of the people's experiences in relation to the city liveliness of the urban environment in heritage value. Concerns about people's experiences have led to a study seeking solutions to key questions: what users want from the spaces they use for various activities; how physical elements can efficient the attractiveness and comfortability of the urban places; and how the spaces can be enhanced to engage with people. People experience the place by interacting with their environment through creating bonds and links (Zaidin et al., 2015). Generally, spaces turn into places where people may interact physically and mentally; social interaction and the

environment. Human behaviors in public spaces can be observed in such ways as walking, standing, talking, playing, lingering and observing, which generate urban life (Jacob, 1993). Motloch (2000) argued that the environment is only valuable in its ability to serve; it exists to be exploited for human benefit and use.

## **1.2 Research Problem**

Cities are built primarily to provide a context that allows people to live and interact with each other and with their environment. Appositely, heritage cities have been facing great pressure and threats factored by climate change, rapid urbanization and uncontrolled growth. Fortunately, there has been an international consensus on the importance of safeguarding the monuments and key tangible heritage assets for the next generations. Meanwhile, less significant heritage assets like old-style housing, vernacular architecture, historic urban patterns and features, historic artefacts on the socio-economic structures, have not been receiving sufficient acknowledgement and protection (Trillo et al., 2020). There is yet a proper theoretical framework to guide the management of urban heritage cities to maintain their heritage and to be livable at the same time.

A good urban space requires human aspects in its framework. According to Rahman et al. (2015), urban spaces can be judged, as good or as bad, based on the individuals who use it and are involved in it. For Jordan and other Arab countries, their older cities signify a matchless historic link with the past. Somehow, the rapid growth and transformation faced by these cities have caused the reduction and misuse of land, and this jeopardizes both the cultural and natural resources of these countries.

It is very common to see abandoned heritage buildings in many cities in Jordan, and many of these prominent heritage buildings have owners but are in dire need of restoration. Furthermore, fast urban expansion has been harming the structures of these urban heritage assets. As to exacerbate the problem, most of the residents of these buildings have migrated to the capital city (Amman), as it was a common trend back then during the 1950s and 1960s. Many of these buildings have been unoccupied while the surrounding families and communities are often unable to preserve these buildings due to poverty and ignorance. In addition, the public seems to lack awareness and a sense of belonging, and therefore, they do not see the need to rebuild and conserve the traditional buildings in their hometown as Salt city.

On other hand, the available services and systems to manage the pedestrian movement in the historic core are inadequate and inefficient, posing risks to both the traffic and the pedestrians. In fact, the traffic at Salt is very congested during the day.

The ancient city of As-Salt needs to be improved in terms of its public space, as it considers as World Heritage site. Hence, presenting just the distinctive architecture of the fragmented components is inadequate. As-Salt city have a diverse heritage and activities that make the city a good case for vibrant and livable urban space. In revitalizing the As-Salt city's public spaces, the municipality of the city and other related bodies should concentrate on the role of social interaction by focusing on the building of more attractive pedestrian areas that cater to those with special needs. Also, there should be more parks and squares that would allow events and activities. The aesthetic and functional elements must be comprehensively studied when designing public spaces. Among the elements to be included in these spaces include pathways, correct stone tiles on the surfaces, and safe and pedestrian-friendly floor levels.

The conservation plan is important in preserving the traditional buildings and spaces, and at the same time, these buildings and spaces could still keep abreast with today's modern environments that people can still live and work in these historic areas (Smith, 1989).

The aspects of economy and culture are the two major contradictory aspects guiding the framework of an action plan for the historic cores. Sustainable rehabilitation for the core is mainly aimed at improving the quality of life of the residents. Hence, in preserving the prominent façades of traditional built environments, architects, planners and municipal administrators must adapt them to the modern life of people. Hence, the integrity, values and shared memory of the community itself can be preserved, while the standards and expectations are being upgraded.

### **1.3 Research Agenda**

This study focuses on physical factors that are connected with urban quality in order to create a livable city. Hence, to obtain actual knowledge about the urban design qualities, social interaction relationships information is gathered and is applied this empirical knowledge in practice. This study first focuses on the theories of urban studies connected with architectural elements and landscape at the meantime understanding the need of the local community of Salt city (the case

study) Second, the combined methodology includes mixed methods (quantitative and qualitative) and direct site observation is conducted.

*Research statement*

**This research attempts to find the criteria of livable cities in the context of Jordan by investigating the architecture of Salt city.**

Hence, as explanatory research, this thesis examines the important questions that are highlighted as follows in table 1.1:

Table 1.1: Research question and research objectives

<b>Research Question</b>	<b>Research Objective</b>
what are the physical elements that are connected with <i>walkability</i> as criteria for a livable city?	To determine the physical elements that are connected with <i>walkability</i> as criteria for a livable city.
What are the physical elements that are connected with <i>imageability</i> as criteria for a livable city?	To determine the physical elements that are connected with <i>imageability</i> as criteria for a livable city.

**1.4 Research methodology**

This research examines the physical elements of the city environment that contribute toward livability; by defining the main criteria and urban qualities for a livable city and connecting the physical element that relates with each quality to create a framework that will be invaluable as it has implications for urban design strategies and planning policies with regards city design.

There were four main techniques used in the collection of data for this research. The techniques brief as follows:

- A literature review of previous works by various scholars on the concept of the successful livable urban environment provided key elements criteria to create the structure for the theoretical framework for this research.

The review categorized the main criteria under two main headlines:

walkability for city users that covers the following qualities: human-scale safety comfortability and accessibility.

Imageability that covers: attractiveness, the identity of the place and legibility

These theories were developed by several scholars based on their own societies' perceptions of their environment and the physical characteristics of cities in their location. This review formed an important part of the research as it provides an avenue and a platform by which an investigation into the same field can be conducted in the Jordanian context.

- A questionnaire of 330 users of Salt city was conducted; taking into account their age, gender and frequency of visiting Salt city. A questionnaire schedule was used to record the answers given by the respondents. This questionnaire allowed a large sample of the users to join, thus giving an opportunity to analyze the variations between the elements noticed, experience and perception toward the place. The findings from the questionnaire were analyzed using statistics, namely frequencies and percentages.
- A direct site observation of Salt city neighbourhoods was also conducted. The aim is to record the presence and characteristics of physical elements (building attributes, landscape, streets and squares) and human activities that contribute to the city's character. This takes the form of a visual survey. These analyses were used to compare and complement the other findings.
- Historical & document review of Salt city.

This research adopted a mixed methodology approach due to the nature of the subject matter and the research questions. This means that the research will have a quantitative and qualitative methodology in data collection and analysis. However, the nature of this research tries to identify elements and qualities associated with the livability of cities as perceived by the city users and the physical setting of the city. Thus, the data collected were

analyzed in a way to complete the missing in each method. A more detailed explanation of the research methodology and procedure is provided in Chapter Four.

## 1.5 Case study

This study takes Salt city as a case study as it is a heritage city that reflects traditions which evolved by the collective memory and their related traditional forms can and must be widely used and re-used in contemporary architectural and urban design projects, with proper community involvement.

Following is brief of case study:

The city of Salt is located 30 kilometers west of the capital Amman and is the fourth largest city in Jordan. It has a population of about 140,000 people. It is built on three hills: Jada, Qala' and Salalem, whose central plaza (Saha) is situated at its meeting point. Urban heritage residents and mansions are mostly from the period between 1890 and the end of the 1920s. Local and migrant master builders built these mostly in yellow marl-lime stone, using local technologies, and introduced newly imported materials of metal I-sections and red tiles for the roofs as shown in figure 1.1.



Figure 1.1: buildings in Salt City



The city is characterized by large public buildings and private residences built with yellow limestone, which feature three bays and a central hallway. This demonstrates a mix of vernacular and modern architectural influences, as well as skilled craftsmanship. Adapted to the steep topography of the historic city core, the urban morphology consists of an interconnected system of streets, alleyways, public squares, and public spaces as shown in figure 1.2. In this way, residents' neighborhoods are connected to the city's public spaces and streets in a dense urban fabric. Urban cultures of the city have been shaped by these tangible characteristics, such as the distinctive cultural traditions of tolerance between different cultural groups and religions. Thus, this city is selected to be a world heritage site.



Figure 1.2: urban morphology in Salt city

Muslim and Christian communities share many traditions, demonstrated by a lack of physical segregation between them. Through sustainable non-segregated development, the city's Muslim and Christian populations have developed traditions of hospitality in the form of Madafas (guesthouses), known as Dawaween, and a social welfare system. (Fakhouri & Haddad, 2017)

## 1.6 Thesis Structure

### Chapter 1 Introduction

Research Background & Problem statement

### Chapter 2 Literature review

Overview and define the main terms and concepts in this research; (livable city, walkability, imageability, physical elements and urban qualities)

### Chapter 3 Case study

Review of the case study.

### Chapter 4 Research methodology

Explain the methodologies that used in this research, including qualitative and quantitative methods of data collection and data analysis.

### Chapter 5 Findings and analysis

Present the analysis and findings for the first objective of this study which is: to determine the physical elements that are connected with *walkability* as criteria for a livable city.

Present the analysis and findings for the second objective in this study which is: to determine the physical elements that are connected with *imageability* as criteria for a livable city.

### Chapter 6 Conclusion

Present the results, recommendations and contribution of this study.

## **1.7 Conclusion**

The purpose of this chapter is to provide a brief overview of the study. The problem statement, research agenda, research methodology, case study and the structure of the thesis were presented in details. The research questions and the objectives to be answered and met were discussed under the research agenda section. The main contribution of this chapter is to highlight the problem statement and the methodologies that should be adopted in order to provide a guideline for the planners to design a livable city. The next chapter discusses the theoretical elements of this study, including the definition and theoretical framework that was created based on previous studies.

## Chapter II

### LITERATURE REVIEW

#### 2.1 Introduction

This chapter discusses the concepts and definitions of livability and main urban qualities, as well as the roles of physical elements for cities in order to define the focus of the research and form the theoretical framework for conducting this research in Jordan. The literature review assists in the selection of respondents and the choice of methodology that is relevant for this research.

#### 2.2 Definitions:

##### City

Cities are built to create a context of engagement for people, it consists of buildings, roads, and open spaces. these components of course occupy a natural background. (Al-Asad, 2012) .

The main goal of cities is to create a context for people to engage with each other. Public spaces provide people with a fundamental channel for them to share viewpoints, expertise, alliances, and tangible goods as well. In cities, public spaces become key to public life, and hence, public spaces must be livable to promote and stimulate the social life of cities and also to increase the life quality of people.

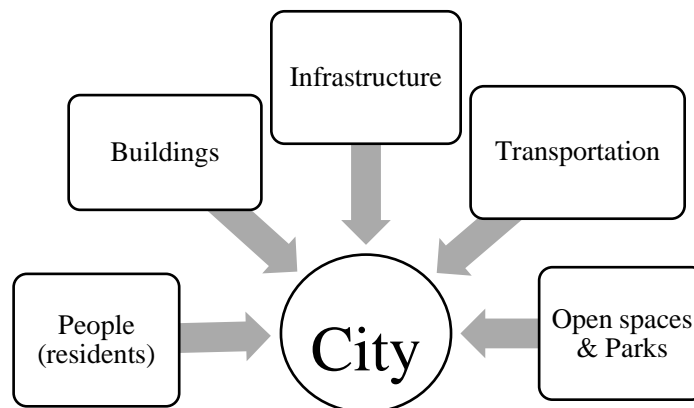


Figure 2.1: City components

City components can be categorized into man-made and natural components both elements interact to create a livable city. In some situations, the man-made components are designed in accordance with the natural ones. However, in many situations, the man-made components did not take into account the natural components, or even wipe out the natural ones. The buildings are where people perform most of their daily activities. The roads and their respective parking spots accommodate the movement of vehicles through the city, while the open spaces are where the city and its inhabitants “breathe” and interact. Alasad (2010) described a healthy city as a city with a balanced proportion of buildings, roads, and open spaces, to assure life quality.

Cities are generally the centers of economic activities and employment prospects, making cities attractive to those in search of fresh start in life. Somehow, cities also need to make available other elements besides job prospects and economic activities centers, like residential and entertainment areas. Equally, cities can become an epicenter of meaning and a tangible manifestation of value systems, ideas, beliefs, hopes and fears of man (Keleg et al., 2015).

Smith (1979) relevantly mentioned that a city essentially displays a cultural dimension that constrains its people in time and place, and ties them with the past and the future. Here, recognizable town center buildings generate a solid sense of place, and thus, towns and cities should have to ability to shape the identity of their inhabitants, by being exceptionally unique (Smith, 1979). Hence, as stated by Shamsuddin (1997), the identity of a place must be perceivable by its inhabitants, so that a solid sense of community could be developed.

### **Preferences of Urban Heritage**

The term ‘urban’ is associated with a town or large city, whereas the term ‘heritage’ relates to the historical culture and past happenings, UNESCO defines heritage as a value that is passed from one generation to the next and encompasses both tangible and intangible aspects, The tangible aspect refers to elements such as buildings and landscape, and the intangible aspect refers to elements such as software such as social pattern, activity, culture. While traditional is derived from the word 'tradition', which refers to a practice carried on from one generation to another, which relates to the concept of 'time' and 'heritage' of a place. These two concepts are essential in order to create a distinctive atmosphere as well as a unique identity based on the local needs (Ja'afar & Usman, 2009; Shuhana et al. 2002). Cultural values impact the behavior of people in public spaces

while also reflecting the direct reaction of pedestrian towards the environment (Shamsuddin, 2011). The definition of heritage has several dimensions as follows:

- a) Heritage as legacy, that is, it is inherited or handed down from one generation to the following generation,
- b) Heritage as place, where it imparts a sense of identity and belonging of certain people or groups.
- c) Heritage as material culture, the geographic and human environments, and collective formations and outcomes of nature and man.
- d) Cultural heritage which includes monuments, groups of buildings and sites.
- e) Tangible and intangible heritage encompassing monuments, historic cities or landscapes as tangible heritage, and processes and practices as intangible heritage.

Heritage is understood differently based on organizations and the domain of interest. Important spots, built heritages, cultural heritages, stories, skills and ways of living are among the types of heritage. In other words, heritage can have varied types of content . It is thus important that both cultural and historical heritage assets are conserved to allow learning and appreciation by the following generation (Shahimi et al., 2019).

Using heritage city as a case study as it reflects:



The uniqueness of the heritage city can be used as a model in designing livable cities by studying its physical aspect

### **Public spaces**

Public spaces provide the channel for people to exchange ideas, alliances, abilities, and even material goods. Public spaces also allow people to interact and convey and receive information. Public spaces become the basis and content for the city's public areas. The livability of public spaces is thus important to promote and stimulate the city's social life and increase the life quality

of people and create a livable city. A city is indeed strongly defined by its public places especially when the public spaces have strong livability.

### **Livable city**

Livable means fit to live in (Oxford Advanced Learner Dictionary, 2010), and Heylen (2006) perceived this term (livability) as an umbrella term that carries various meanings, dictated by the objects of measurement and the viewpoint of the person who executes the measurement. Nonetheless, scholars generally agree that livability relates to the environment as viewed by a person. Livability also includes a subjective evaluation of the place in terms of quality. Livability contributes to a high-quality living, which will impact the lifestyle and health state of citizens, and demonstrates the stability of the environment established (EIU, 2011).

It is challenging to preserve the safety of cities, as experienced by all leading city centers all over the world. It is also challenging to improve the health state of the city residents, to provide economic stability, and also to provide outstanding transportation system and network. Scholars all over the world have been discussing over the issue of livability and vibrancy of the built environment. According to the Center for Livable Cities Singapore (2014), livability is a condition of a city that is achieved via complete planning, and through provision of an energetic, pleasant and protected environment for people to be inherent in, work and play; livable city has good governance, competitive economy, and sustainable environment, and promotes high quality living.

As part of sustainability, livability carries six distinct objectives and components, including to accomplish the goal of transportation as in the promotion of walkability, and an increase in accessibility and transportation selection (VTPI, 2010). Clearly, in the creation of a livable place and in the promotion of sustainable environment, walkability is an important component. Furthermore, a city with livability promotes access and connection quality in town center, urban areas and neighborhoods as well. Cities with livability prioritize transportation sustainability, via noise and air pollution reduction, and via encouraging the residents to walk (Lennard, 2008; Shamsuddin et al., 2012).

Equally, livability can be most accurately defined and executed on small communities and neighborhoods. This is because, the people are the ones with the capability in detailing their needs to increase their life quality; people are in fact the best experts in the community. The concept of

livability has been challenging to define, but people are demonstrating an increased awareness towards the unwanted and unlivable aspects of the built environment surrounding them .

Salzano (1997) described a livable city as one in which common spaces become core to social life and the centers of the community as a whole. The author additionally stated that a livable city is one that is established or restored as a nonstop network covering all areas and components, and all available paths merge all the social quality sites and the community life.

People are obviously the basis of livable cities (figure 2.2), and in order to serve their interest and promote their interaction and well-being, the city elements are all shaped based on the new policies and strategies of the cities with the goal of promoting quality living of the people. The urban design protocol for livable cities involves the formation of a context for people engagement with one another. Further, UN-Habitat proposes that the prosperity and livability of cities are demonstrated by the prosperity of their open spaces.



Figure 2.2: People are the basis for designing cities

Lively public space is thus the determining factor in promoting city livability. Such public space is possible through the provision of warm and welcoming environment, and the space is also full



with people who enjoy themselves and the company of others. Also, the space is safe for all, even at night. A lively public space is walkable, and in fact, it gives precedence to pedestrians and/or cyclists, and this encourages physical activity and social interaction, while also endorsing a healthy lifestyle. Keleg et al. (2015) stated that a pedestrian-friendly public place greatly contributes in forming a desirable image of the city.

In promoting a livable space and sustainable environment, walkability is indeed a component of livability. A livable city promotes sustainable access and connection to all its citizens within a neighborhood through pedestrianization. Pedestrianization is hence an effective tool in increasing livability, particularly through increasing accessibility, mobility, and safety, making the city a good quality place to live. Notably, a pedestrian street, aside from being a travel path, can also function as a public space that allows socialization, activities and access, all combined.

Accordingly, Project for Public Spaces organization (PPS) has created a place diagram to evaluate space quality of various places like the street, plaza or playground. Four key criteria quality are included in the diagram namely Accessibility, Comfort & Image, Sociability, and Uses & activities (see Figure 2.3). All criteria carry some measurable quantitative and qualitative aspects both statistically and practically (PPS,2000) Public spaces provide people with the medium to engage in interactions, in addition to promoting social solidity, which consequently leads to the endorsement of democracy, citizenship, cultural richness, pluralism, and also diversity acceptance.

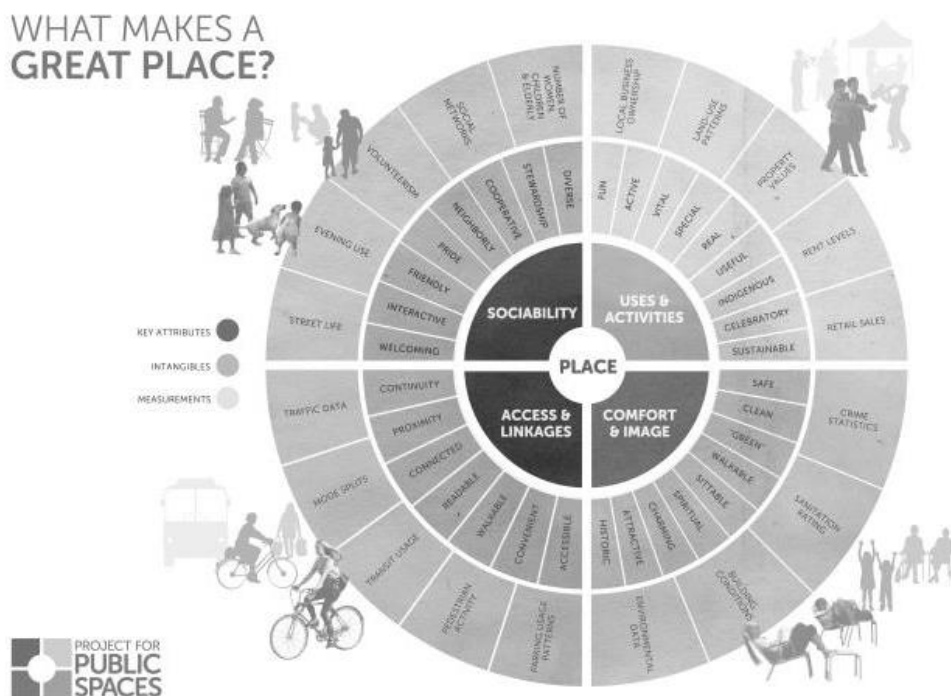


Figure 2.3: What Makes a Successful Place?  
<https://www.pps.org/article/grplacefeat>

The place diagram was applied to street and pedestrian activity and was shown as a core qualitative aspect within the criteria of access and linkage. The mechanism of pedestrianization is hence a vital indicator to a good quality space or street, and thus a component of livability. However, having just pedestrian zones is not sufficient for livability achievement because the street also needs to play other roles simultaneously, for instance, the street needs to also facilitate socialization and community interaction.

The quality of life can considerably be impaired by the traffic volume. Traffic volume is in fact considered as a threat to life quality. In this regard, some cities like Helsinki, Madrid and Hamburg are currently promoting car-free in-city movements to improve livability, while other cities like Los Angeles and New York have begun to create pedestrian-only streets. As such, the link between livability and pedestrianization is spatially and functionally bound in various aspects, either aesthetical and physical or social and environmental. Furthermore, relevant theories have provided evidence that pedestrianization is a major constituent of livability (Shamsuddin et al,2012).

Livability is also an element of sustainability, and in fact, livability and sustainability have the comparable main objectives of attaining the greatest development with minimal use of resource and environmental impact, to assure the welfare of man and the earth (Tang & Lee, 2016). Pedestrianization contributes to livability in various aspects. The concept also adheres to the principles of sustainable urban development. The combination of pedestrianization and livability will increase the quality of life of the citizens. As indicated by Yassin (2019), the integration of both concepts leads to the attainment of the greatest sustainable urban development.

### **Physical elements**

Physical environment includes objects found within a background of environment, including stairwells and street corners, connection between places formed by objects in the environment like walls, distance, windows, adjacencies and barriers, building as well as background qualities like sound and light (Zeisel, 1981). Shamsuddin (1997) stated that physical environment comprises all natural features of geography, climate, and man-made features. All of these features restrict and ease the behaviors, and the "resources" of the environment. Meanwhile, the physical form and appearance comprise features associated with spatial quality like landscaping, spaciousness and enclosure, in addition the way how physical elements are connected is effecting the livability of the place .

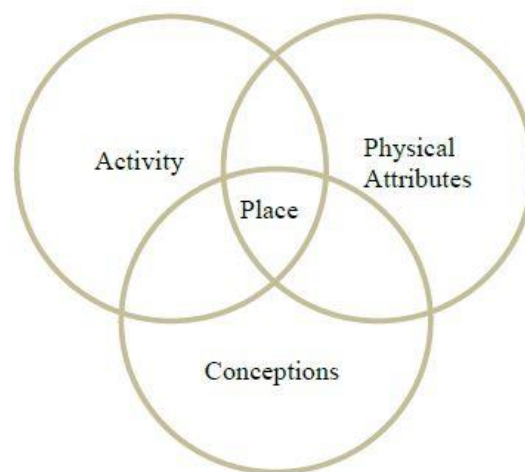


Figure 2.4: Components of place (Montgomery, 1998)

### 2.3 Criteria for livable city

The table below shows a review of researchers and the urban quality that they mentioned in their study, in order to find the criteria for a livable city.

**Table 2.1:** Review of Previous Studies

Quality Researcher	Comfort	Safety	Human scale	Imageability	Attractive	Historical identity	Legibility	& Access linkage	Walkability	& Activities usage
(Shamsuddin, 1997)		/	/		/	/			/	/
(Rahman et al., 2015)		/	/	/			/	/		/
(Al-Asad, 2010)			/	/			/	/	/	/
(Ja'afar, 2014)		/	/		/		/	/		/
(Abdul Rahman, 2013)		/	/		/				/	
(Gehl, 2006)	/	/			/	/				
(Ewing & Clemente, 2013)		/	/	/		/	/		/	
(Nunes, 2015)	/		/		/		/	/	/	
(Abaszadeh, 2011)	/	/		/	/		/		/	/
(Al-Shawabkeh, 2015)		/	/		/	/	/		/	/
(Mehta, 2006)	/		/		/	/	/	/	/	
(Spessot, 2015)		/	/		/			/	/	/

Based on the review of previous studies, the factors of a livable city were categorized under two main factors as demonstrated in figure 2.5.

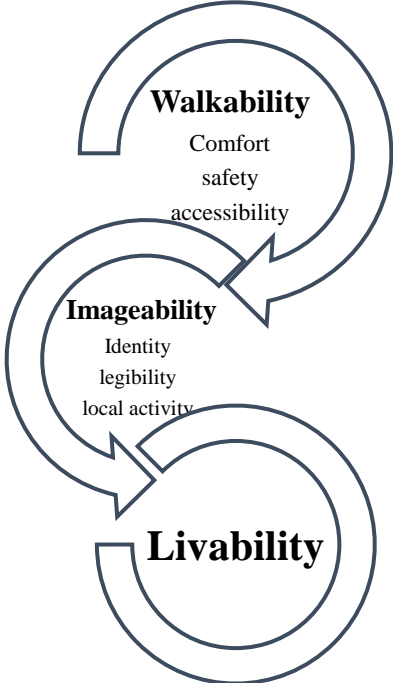


Figure 2.5: livability factors

### 2.3.1 Walkability

Walkable environment could increase the livability of a city (Shamsuddin et al., 2018).

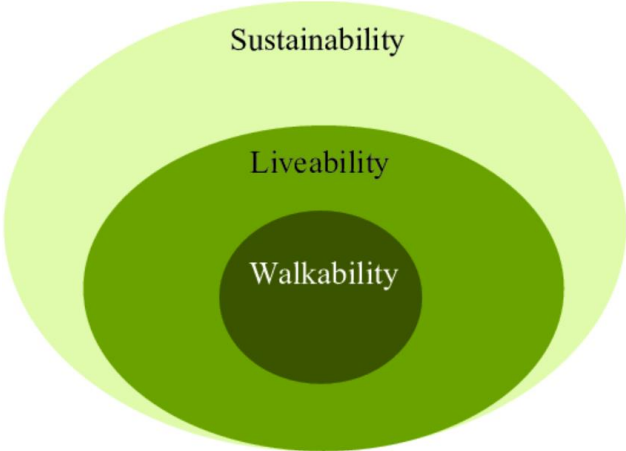


Figure 2.6: Sustainability, Livability and Walkability connection (Shamsuddin et al, 2012)

Ability relates to the statement that one is capable of performing certain act (Oxford University Press Dictionary, 2011). Relevantly, the terms ‘walkability’ and ‘walkable’ can become a measure of something being ‘Walking-Friendly’.

A walkable environment eases the establishment of a warm and welcoming residing place (Shamsuddin et al., 2012).

Walkability as a component of livability promotes sustainable environment and helps creates a livable habitation. A city that is livable encourages quality of access and connections within town Centre, neighborhoods, and urban areas. Lennard (2008) indicated that livable city prioritizes sustainable transportation, that is, one that decreases noise and air pollution, while also stimulating walking activity to the people. Walkability is regarded as walking conditions quality and it involves several factors like the presence of walking facilities, comfort, and some degree of walking safety.

as cited in shamsuddin et al. (2004), defined the notion of walkability as the level of **comfort and safety** experienced by pedestrians, and it is factored by the presence of vehicles, casual surveillance, spaces between pedestrians, and high-quality interconnected pedestrian pathways. Relevantly, Choi (2012) described walkability as the degree to which **walking is perceived as safe, connected, accessible**, and enjoyable transport mode. According to Wheeler (2004), physical planning should not tamper with the human scale, transportation system, natural change, climate change, water flow, networks, park and greenway, and should not impair or adversely affect the natural resources. Hence, the city’s physical development must be integrated with the functions that will ease the local community in their day-to-day undertakings. Also, in achieving sustainable-oriented urban design, the physical development of the city must assure efficient usage of resources.

A sustainable city is one in which the pedestrian network is continuous, safe, and pleasant for the people to walk on. However, Salt city still lacks the efficient public transportation system and the design is also not pedestrian friendly. Hence, it is difficult to encourage walking activities in this city. Carmona et al. (2012) relevantly mentioned that many cities were attempting to stimulate walkability by changing the urban form through erecting buildings that define the streets. This would stimulate a more permeable and comprehensible urban pattern, which would increase the continuity and connectivity of the city, which would increase walkability. Furthermore, **human**

**scale** activities at the street could attract people to walk in the city centers (Shamsuddin et al., 2018).

Pedestrian-friendly Street design may improve the physical health of people through lifestyle change by walking more, because as mentioned by Shimitz and Scully (2006), walking could improve one's life quality. Accordingly, a walkable environment should be created taking into account the streetscapes furniture which should have solid character and be well-managed. This will provide comfort and enjoyment to pedestrians. Hence, planners or architects should create a space that offers convenience and enjoyment to the citizens. This way, citizens could comfortably and joyfully walk within acceptable distance, and the city would become more livable. Walkable environment creation is part of transportation development plans. Here, public transport is the main spine, with pedestrian-friendly street networks as support. Additionally, the hierarchy of importance for users must be taken into account when designing the cities and public spaces.

In fact, many Cities globally have begun to provide more pedestrian friendly access through various plans and measures to shift from car-oriented mobility. For instance, Paris, Copenhagen, and Milan have introduced car free days. These cities have also built pedestrian and cycling infrastructure, while limiting the parking space and increasing public transportations. Meanwhile, Hamburg and Madrid have stated their plans to achieve the status of partially car-free city. Several related approaches have been taken by various cities in the world for different purposes like to decrease the vehicle traffic, increase the active transport, and improve the public health for the short- and long run. Equally, obstacles have been faced by these cities in their pedestrianization attempts and these obstacles were mostly related to finance, politics, society, institutions, and others (Yassin, 2019).

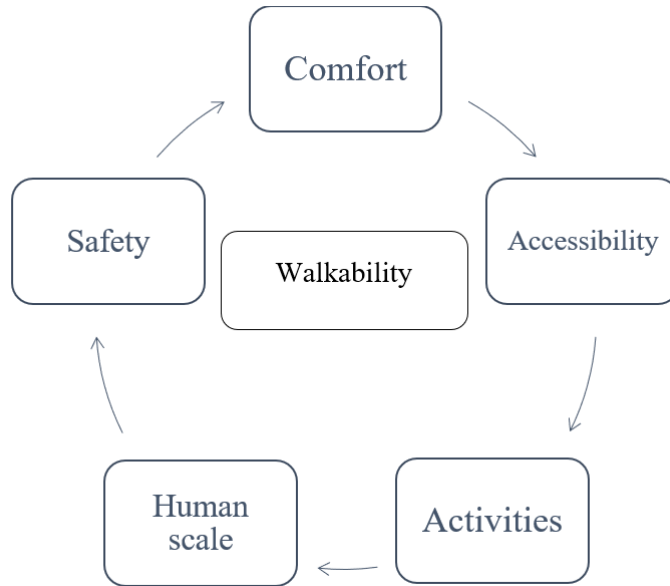


Figure 2.7: Urban quality that connected with walkability

## I. Comfort

Comfort is a main element of successful and good public spaces, and a city that is livable and vibrant offers comfort to its people. According to Carmona and Tiesdell (2003), comfort is affected by social, psychological, environmental, and physical factors. By protecting the people from harsh weather, streets activities could be carried out (Ujang, 2015). The amount of time people spend in using the public spaces is affected by the comfort qualities provided, like water, greenery, trees, and so forth, because all of the aforementioned could make people feel relaxed. Public spaces that offer comfort, safety and security make people spend longer time there (Zakaria & Ujang, 2015). Hence comfort is creating a good feeling and positive city image and perception to people.

Comfort described as a pleasant feeling felt by people during interaction with the environment Zakaria and Ujang (2015) .

meanwhile, Mehta (2007) described comfort as the level of ease, suitability and serenity between people and the environment, the protection from climate elements (e.g., rain, sun, and wind), and the provision of a physiologically appropriate environment at the street that allows various activities and outdoor culture events to be easily and joyfully executed.



In describing the comfort feeling, Ryeng (2002) described it as the sense of being safe and secure, and indicated that good pavement, good lighting conditions during dark hours, good weather (free from air pollution), and the traffic conditions, all affect the comfort feeling. Also, the physical characteristics of street could be identified based on its comfort level. Comfort factors thus affect street walkability and thus should be taken into consideration when building pedestrian facilities, and also when designing a convenient, safe, and friendly street environment.

Comfort and convenience on public spaces and streets can be attributed to the availability of fixtures such as trash cans, canopies, benches, and shelters. In some places, trash cans in different colors and shapes were used to intensify the sense of comfort and convenience to people. Comfort is about how much the needs of pedestrian to walk, rest, eat/drink, and so forth, are being satisfied. In other words, urban open spaces should function like outdoor living rooms, providing comfort to user.

## **II. Human scale & enclosure**

Human scale is about size, texture, and expression of physical elements to correspond with human size and proportions, and human walking speed. Among the physical elements that contribute to human scale include building specifics, pavement texture, and street furniture and foliage (Ameli et al., 2015; Ewing & Handy, 2009). The concept of human scale has been variedly defined by different urban designers. In their study, Ewing et al. (2015) discussed human scale as the viewpoint of a person towards the built environment in terms of its size, scale, height, bulk and/or building massing, and other features.

Citing Blumenfeld, Jacobs opined that three-story or 30-foot buildings with 36 foot building width and 72-foot street width should be the maximum dimension for human scale. Meanwhile, some were of the view that building width is not just about the height. As can be observed in the suburbs, the widths of building must be in proportion with the heights of building, as to fit with the human scale. Buckley (2012) indicated that buildings of more than four stories in height are out of human scale. For such building, the emphasis should be on the architecture expressed at human sight level, and the belt courses and cornices to moderate the scale.

### **III. Safety**

Any urban development would take into account the issue of safety and security. Public space needs to be carefully designed that it would be safe and user friendly, and this will increase the well-being of people (Motloch, 1991). Safe public spaces generate confidence to people to enter and use. Also, the public places would be more approachable and interactive (Shahimi et al., 2019). As well as Safety is a determining factor of a walkable environment. According to Ujang (2015), safety increases the confidence of pedestrians to walk in a given area, and decreases the feeling of fear of pedestrians towards the occurrence of accident or crime. Further, active and passive observations increase safety, for instance, the construction of new buildings to observe public spaces provides the ‘eyes’ for the street establishment, and this frees the city from darkness as lost spaces are reduced. Additionally, clear street network’s structure could provide a clear definition of pedestrian district, and it improves the street environment through safety and security feeling, allowing people to know the places and enhancing everyone’s sense of well-being and making places more user friendly, easy to understand and secure. It is also necessary that the roads and paths are safe for everyone, by making sure that they are consistently well-maintained (Vasilevska, 2012). The separation of space between pedestrians and vehicles is yet another aspect to be concerned about in assuring street safety (Ujang, 2015; Shahideh, 2013).

### **IV. Accessibility**

Accessibility relates to the ability in getting to the targeted destination for all users, or in other words, the access to pedestrian and transport systems (Pasaogullari & Doratli, 2004). Accessibility is influenced by the spatial distribution of potential destinations, and the magnitude, quality, and character of the activities in these destinations (Tal & Handy, 2012). Taking into account the method used for travelling, the distance, the duration of travel, and cost constraints, an accessibility measure approximates the access level to different activity type from the beginning place or home of user, to other location(s). Higher accessibility denotes higher potential locations in a given time or distance area, and closer selected destinations inside a given maximum range. Accessibility

of a place can attract people and increase social interactions in public open spaces, and this increases livability (Rad & Ngah, 2014).

The visual and physical connections to the surroundings demonstrate the accessibility of a public open space. Accessibility therefore demonstrates that a given place can be entered, and the visibility of the place from a near distance impact social interaction (Askari et al., 2014).

Levinson found that accessibility comprises a time-based element (the travel time between two points) and a spatial element which reflect the dispersal of the activities happening in public open spaces (Levinson, 1998).

### 1.1. Access to all (places)

Equally, public open space accessibility refers to its location within a crowded fabric, and an accessible public open space has good connection with the neighboring context and the entire city structure as well. Public open space should be at a strategic location, that is, it is close to the main life activities, and to other important spots like train station and bus stops (see Figure 2.8). This will increase the accessibility and livability of cities, and will become a significant urban factor in

attracting users (Evans, 2015). Public open spaces should thus be noticeable from various access points.

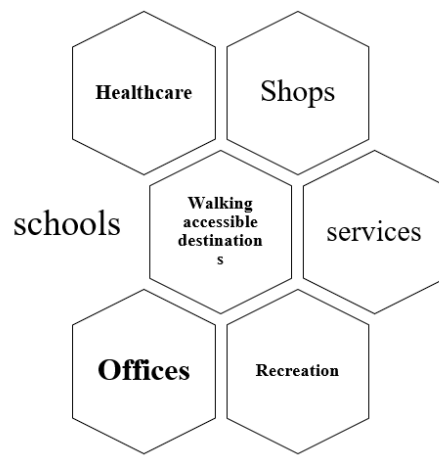


Figure 2.8 Diagram for main walkable facilities

### 1.2. Access for all (people)

The concept of “Access for all” relates to the provision of equivalent access to socio-economic opportunities to everyone no matter their age, race gender, or health status. Considering that public place is designed to fulfil the needs of people, public open spaces should be open to everyone .In other words, public open spaces should be accessible to people irrespective of their ages, gender, social classes, physical conditions, activity, and it should also be accessible to informal organizations as well.

Accessibility relates to the capability in travelling from home to public spaces and to various destinations for purposes like leisure, socializing and working. It also relates to the access to pedestrian and transportation systems such as step-free stations, low-floor buses, dropped curbs, and ambient factors as lighting, auditory and visual information, and way-finding to serve all types of users and ensure their safety. In addition to decreasing physical barriers to demonstrate permeable public spaces, pedestrian-friendly landscaping and useful, well-designed street furniture and amenities, e.g. seating, lighting, restrooms, cycle parking/routes that make local trips easier and more pleasant by foot than by car.

## **Connections of Public Streets**

accessibility, are important element of public spaces, and are made up of the following elements (Davies, 2000):

- a) Walkability – a public space that is attractive, safe, and well cared encourages walking activity;
- b) Public transport – the public transport is available to connect the people, and eases their movement;
- c) Efficient streets and traffic; and
- d) The availability of utilities infrastructure to serve users.

As mentioned by Shahimi et al. (2019), connections of public streets should facilitate people's travel, while also luring them to come and use its facilities.

### **2.3.2 Imageability**

A city's image or environment is a resultant of two-way interactive processes occurring between an observer and the environment; it entails an integration of filtered perceptual input of observer associated with the meaning and purpose of continuous process interaction according to selection, organization and endorsement, and the discrepancies and associations proposed by the environment.

Over time, the image of a place becomes less realistic and may even be misleading in positive or negative manner despite the significant transformations, and manipulations in the general form or culture. The city planners are those manipulating and transforming the physical environment, and essentially, the image relates to the extended interaction agents, and this results in a formation of a common mental picture that most people in the place would carry in their mind, disregarding the personal differences (Pipralia, 2016).

In essence, city image is about the awareness of people according to selective impression to generalize the orientation pattern and system formable via a group of foci, or via fragments such as termed region, or connected by recalled routes, and seems to echo the formal types of image elements of the city categorized by Lynch as paths, land marks, edges, nodes and districts (Pipralia, 2016).

Urban form is essentially a city's physical shape and structure or the surrounding built environment. Urban form includes visual images of the cities, memories of place, thoughts, experiences, feelings, and scholarly constructs that are embedded within art and humanities.

Also, it is a blend of all urban elements. Among the urban elements are: built-up areas and its design such as character and identity; street layout and design including streetscape and urban structure; the physical layout via pattern of subdivision like public and private space; the interconnection of activities and functions of centers or towns or open space; and recreation area and green space. Urban form varies according to place, and is determined by its location and function (Pipralia, 2016).

Image is essentially the mental substance of people, landscape, buildings and open spaces. A place that has perceptual qualities like uniqueness, clarity, differentiation, structure and form, is regarded as a memorable place, and this is termed as imageability by Appleyard (Abu-Ghazze, 1997).

A clear city image has four key functions, the first of which, is the mobility function whereby people could easily move around. Next, image functions as a general reference to the structural knowledge of the city and the activities carried out in it. Image also plays an emotional role, because a clear image allows one to feel comfortable, easy and safe towards moving around in the city. Lastly, urban image is a symbolic function because it presents symbols and solid associations with a given place (Krupat, 1985) (Lynch, 1960). Communication between individuals inside a common environment is facilitated through image. As such, it is important that cities are designed to maximize their imageability as this will maximize the relationship of people with their environment, and so, factors affecting the formation of city image should be considered (Shamsuddin, 1997).

The visual city image presents a visual identity for the city. For tourists, visual city image generates memorable experience, and for the residents, it instills a feeling of civic pride (Jutla, 2000). Additionally, image and the sense of place are strongly affected by the physical features and appearance. They increase the legibility and memorability of the place to the users, and which can be identified, organized and navigated by people (Jiang, 1960).

### **The imageability term**

Imageability relates to the quality of a given place which makes the place different, familiar and unforgettable. Ameli et al. (2015) relevantly described high-imageability place as one whose

detailed physical elements and their arrangement snip people's attention, induce feelings and generate a permanent impression. According to Kevin Lynch (1960), imageability is a physical environment quality which induces a solid image within the mind of an observer, and the shape, color, or composition of the environment eases the formation of intensely identified, robustly structured, and very valuable mental images of the environment. A city with high imageability is one that is well established, comprises discrete divisions, and is instantaneously identifiable to visitors or residents. Such city appeals to the human's inherent competency in detecting and recalling patterns as it comprises elements that are effortlessly identifiable and classable into a general pattern (Ewing & Handy, 2009).

Lynch (1960) described imageability as an attribute of a physical object with high potential in inducing a strong image within an observer. Imageability relates to specific objects, and also places with unique characteristics. A place with imageability is an attractive place and it evokes feelings within the observer, and the feelings and impression towards the place is lasting, and the place becomes memorable to the observer.

Gehl (1987) described imageability as being associated with a sense of place, as the architectural quality support and complete one another for the generation to enhance a memorable overall impression. The positive incorporation of all factors results in physical and psychological well-being whereby the place will be perceived as pleasant to visit and to live in.

Imageability has linkage to various qualities of urban design like Identity, enclosure, legibility, attractiveness, transparency, coherence, and complexity. In some way, imageability becomes the net effect of the aforementioned qualities. It has been found that places with high Identity. Paris and San Francisco are good examples of such places. On the other hand, places rated low on the aforementioned qualities also may create strong images, but people may want to forget such images. Strong image can thus be positive or negative, but when it comes to the subject of imageability and a sense of place, urban designers would be focusing on the strong positive images (Ewing & Handy, 2009). Imageability could be increased through facilitating the identification of the places and its visual structuring (Lynch, 1960; Nunes & Vale, 2015).

### **(i) Imageability and Identity**

The urban image presents symbols and strong connections with a given place, allowing people to interact within a mutual environment with ease. As such, cities should be planned in a manner that optimizes imageability of the city so that the relationship of people and their environment would be optimized. According to Lynch, a clear image has linkage to a feeling of orientation and security. It should be observed that a clear image does not mean a clear identity. Furthermore, urban environment image can be evoked via participating in the city, not just by looking at it. Image is essentially a mental construct formed by a group of visual connections accompanied by known facts concerning the environment. The individual would choose the available data, and delineates his own environment during the process.

Clearly, the identity of a place is about its uniqueness as noticed by people. In other words, identity is a quality that makes a place appear different from other places. Hence, identity makes the physical environment noticeable and memorable. Physical qualities or social meanings induced by the physical structures make the environment noticeable. Furthermore, it was found that identity of a place isn't evidence of place affinity, and a place with identity is not always a revered or despised place. According to Shamsuddin (1997), the quality of a place is only linked to its ability in being recognized and it seeming different from other places.

Identity was found to carry three components namely the physical components (environment, activities and meanings) (Shamsuddin 1997) information, complexity, number of units, details and richness of ornaments and element of surprise. shumsuudin 1997). The interaction of a place with its surroundings builds the character of the place. In addition, the identity of a place is affected by its urban structure, especially during its formation. According to Shamsuddin (1997), the impact of place identity on people is manifested primarily in their abilities of orientation in a city and their sense of belonging to a given place.

Cities that have various street scenes or views have identity and can generate the sense of well-being to the people. According to Shamsuddin (1997), local interpretations of significant historical identity building greatly contributes in the overall impression of a town, while also forming a distinct character for the town, reflecting the character of the city. Meanwhile, local activities can signify the place/street's identity, uniqueness and character. An example is the activity related to religion, which involves worship structures like the mosque, and this becomes part of the local



activities' symbol. In this regard, the mosque can function as a path node that satisfies the spiritual needs of the community.

## **(ii) Legibility**

According to Lynch; imageability of city known as observable objects of urban environment which can be classed into five general categories as follows:

1. **Paths:** Examples of paths are transit lines, pedestrian walkways, roads, and streets system. These paths become the routes or channels for people or observers to travel on (or may travel on) occasionally, or all the time. For the majority of people, paths are considered a major element of imageability.
2. **Edges:** Edges are the unused linear elements, but observer may consider them as paths too. Edges function as borders between two phases, connecting the paths or between two paths, linear break in the continuity such as cuts, edges of development, walls, physical barrier such as mountain or shores, etc. Edges may be penetrable via gaps and breaks.
3. **Districts:** This element may represent sectors in the city. Also, districts can be the medium to large division of the city with two dimensional extents that are usually constrained by permeable and non-permeable edges and paths in which observer mentally enters 'inside of'. A district carries certain identifiable and common distinguishing characters.
4. **Nodes:** These are the points of the concentrated foci along the paths within the city that the observer is traveling upon. Nodes entail the strategic spots in the city into which people can enter, and usually, nodes are represented by junctions, paths intersection or convergence, transportation break spots, moments of shift from one structure to another, and so forth.
5. **Landmarks:** Landmarks refer to reference points that observer usually will not enter. Landmarks are generally defined features or physical objects like mountains, signs, buildings, certain unique monuments, and so forth. Some landmarks are far away, while some display some directional attributes.

## **(iii) Attractiveness (visual richness)**

Attractiveness is a quality associated with human vision, and this includes pleasing attributes, aesthetic values, and entertainment quality. According to Rahman et al. (2015), attractiveness strongly influences people to use the place in question. Meanwhile, Gehl (2007) linked

attractiveness to how interesting or boring a place is, as factored by the activities executed in the place, its architectural elements, its buildings, its attraction spots, and so forth.

Imageability is somehow linked to the capturing of attention, evocation of feelings, and formation of a permanent impression. Tibbalds (1992) relevantly highlighted the need to have attractive public spaces in urban areas, in order to generate a sense of comfort or well-being to the users. Furthermore, livable and vital places generate pleasant conditions, and this will attract people to comfortably and joyfully congregate, interact, and engage in activities. Attractiveness is hence an element of imageability of cities, and should be taken into account in the city identity preservation efforts.

Attraction in building appearance is affected by various elements, and among these elements include material, color, façade, material, articulation, signs with different shapes and colors, fascinating scene details and texture. All these features, among others, make a building pleasantly usable and visually pleasing.

Aesthetic value stresses the elements that attracts users and provides justification on people's usage of public space, particularly in relation to the local style and the sustainable building materials (Almatarneh, 2014). The elements should all appear pleasing, so that the visual image of the place would be improved. Hence, the elements of landscape should have varied types of flowers, pavement and location and quality of greenery (Rehan, 2013; Adkins et al., 2012). Also planting greatly impacts the livability of place because it improves the quality of place and generates pleasant feel by making the place cool, and protecting the place from the heat and light from the sun (Johansson et al., 2016; Mahmoudi & Ahmad, 2015). Also, topography is an element that significantly contributes to the attractiveness of environment, particularly by presenting observer with interesting view to the place (Ewing & Bartholomew, 2013).

Landscape elements are vital in the physical settings of successful and attractive imageable places. Among the elements are hard and soft landscaping, plants, pavements, street furniture, subspaces, public art, shelter lighting, just to name a few (Hajmirsadeghi, 2015). Clearly, the physical element could highlight the non-physical factors as image, meaning, and character for the place (Shamsuddin, 1997).

### **Visual richness**

The complexity and richness of a place is usually affected by the diversity of the physical environment, like the elements of landscape, the number and types of buildings, architectural variety and embellishment, street furniture, signage, and human activity as well (Ameli et al., 2015).

## **2.4 Theoretical Frame Work**

Based on the previous discussions the theoretical framework can be summarized in (Figure 2.9) below, The main elements that affect the livability of city can be divided into two main sections; Imageability and walkability each factor had sup factor as urban quality.

The main elements that contribute towards city character categorized in to physical element (landscape, building and street layout) , In this research the contributions of these elements can be attributes, the imageability of city which contains (attractive, Identity (historical significance) and Legibility). Second factor is the walkability of city that includes (Safety, comfort, human scale and accessibility). In other hand studying the activities that reflect the locals need.

Therefore, the interrelations of all these aspects are important to achieve the livability of city with special character.

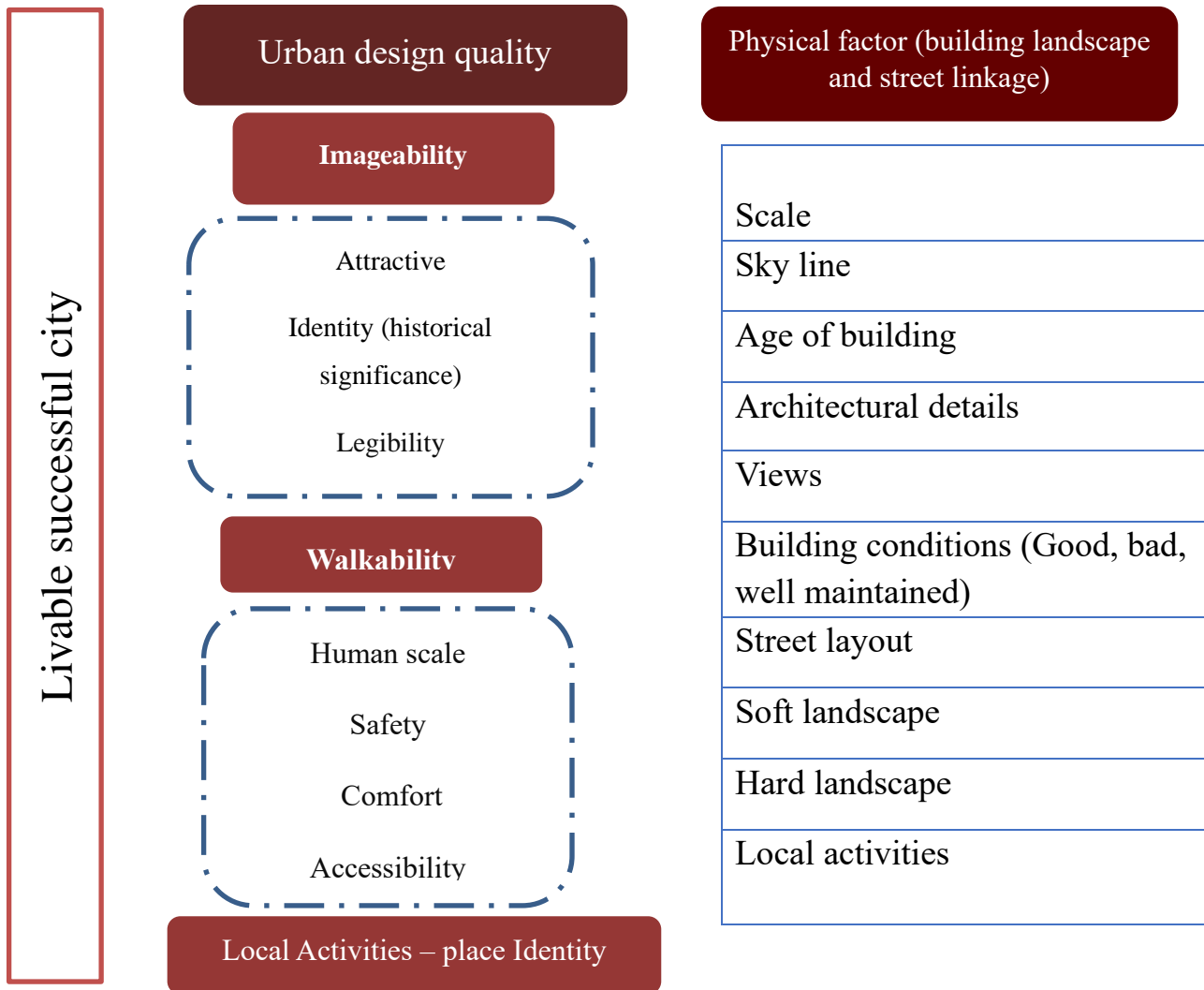


Figure 2.9: Research Framework

## 2.5 Conclusion

Planners are keen to understand the factors that should be used when designing a livable city. Hence, the main purpose of reviewing previous literature were understanding the city definition, character, urban quality, and research area. Hence, the factors that contribute to the city design and its livability, were elicited and summarized briefly. The elicited factors were categorized under two main category which are imageability and walkability, where both categories should be taken into account when planning cities. Therefore, the contribution of this chapter was identifying the main factors that influence the city livability. The next chapter will discuss the case study which included a full discussion of the location that been chosen and brief on its history.

## CHAPTER III

### CASE STUDY AND PHYSICAL CHARACTER ASSOCIATED WITH

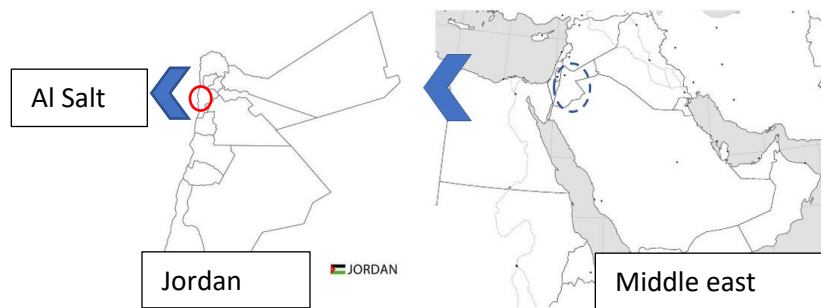


#### 3.1 Introduction

This chapter describe Salt city as a case for this study. Specifically, the description of Salt city is listed in three sections. Section one provides a brief description of Salt city and its significance in the history of Jordan. Section two describes the historical development of Salt city, the city's physical development and the city's primary features. Section three discusses the exclusive features of Salt city.

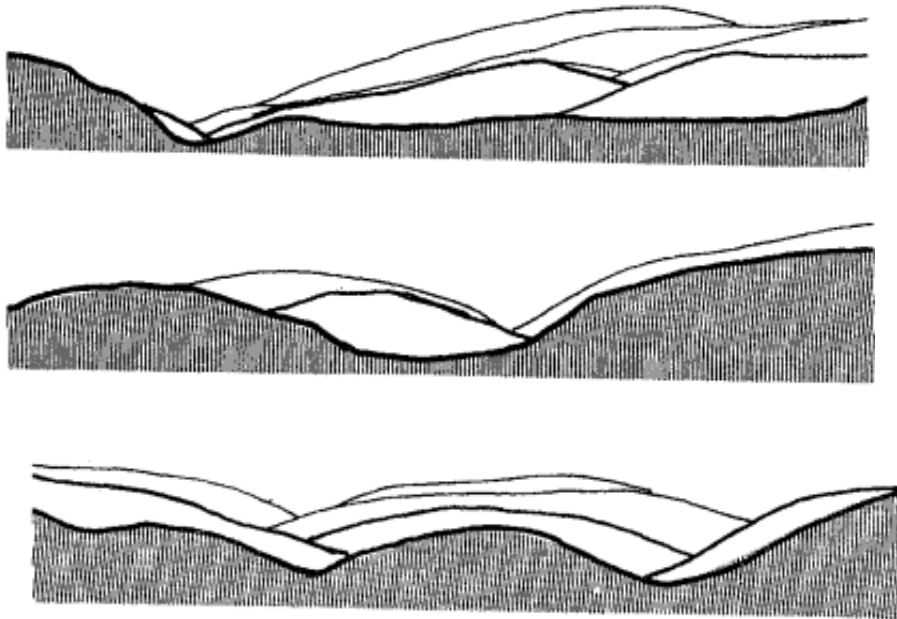
### 3.2 Brief description of Salt city

Al-Salt city which is 48 square Kilometers in size, is the administrative center of the Al Balqa governorate. This oldest city in Jordan is 28 Km northwest of Amman city the capital of Jordan (figure3.1), and it is located in the middle Mountain region roughly 900 meters above sea level. In 2015, the population of Salt city was recorded at 99938 people, representing 21.2% of Al Balqa governorate's overall population of 447,220 (Greater Al-Salt Municipality, 2016).



**Figure 3.1:** Salt location ( Jordan and Salt map)

Salt city located on the east bank of Jordan River, Salt city belongs to the Mediterranean climate, and the rain season is from late October to end of April. Summer in this city is hot and dry. The city is blessed with fertile soil supporting the many types of natural land cover. In terms of topography, this city has varied trains, from open plains to gentle hills, to high mountains and treacherous canyons (Greater Al Salt Municipality, 2016) (figure 3.2)



**Figure 3.2:** Topography of Salt city

### **Salt topography**

As-Salt was a regional capital city in the Ottoman Empire, and it was the major civilized area. Aside from its architectural prosperity (Greater Al-Salt Municipality, 2016), Salt city displays breathtaking scenery and agricultural potential. Al Salalem, Al Jad'a and Al Qala'a hills are the three major hills of Salt city, and the center of Salt city is located at the meeting point of these three hills. (figure3.3.).



**Figure 3.3:** Salt city is located at the meeting point of these three hills

Government institutions, committees, commercial and cultural activities centers, public service institutions and markets can be found at this meeting point (Qtiashat et al., 2018). Salt city also has a historic link with the cities of Jerusalem and Nablus, the two cities in Palestine before 1967. As-Salt topography has significantly affected its urban fabric. As mentioned, As-Salt city is located at the meeting points of Jabal Al-Qalaa, Jabal Al-Jada'a and Jabal Al-Salalam hills, and this meeting point is where the central square or “Al- Ain” is located. This meeting point reaches the Valley of the Kurds and Wadi Al-Salt, greatly affecting the division of the city into detached neighborhoods.

As mentioned by (Almatarneh, 2013b) some of these neighborhoods can be found on the peaks, slopes, and feet of the hills. Hence, these neighborhoods would have differing height and slope proportions, which affects the formation, expansion, and direction of the street. Paths are generally in line with the valleys and the land slope. The paths became street for vehicles, while stairs were built on the slopes (figure 3.4.). Meanwhile, the floor areas for construction are very small, resulting in the overlapping of use of land in the city. Buildings in Salt city have differing heights, floor number and spatial distribution. The city’s morphology exists in three coexisting forms of combined shape, striped shape, and scattered shape (Benghadbane & Khreis, 2021).





**Figure 3.4:** Dealing with topography in Salt city

*The city of As-Salt gained a spot in UNESCO's World Heritage List on 27 July 2021, for being a "Place of tolerance and urban hospitality."*

### **3.3 Historical development of Salt city**

By end of 19<sup>th</sup> century, Salt city became a main source of urban heritage of Jordan. The history of Salt city can be traced back to the 6<sup>th</sup> Century A.D in a book titled Synecdemus written by Herocles, in which a term ‘Saltus Hieraticos’ (sacred Salt) was mentioned, as a town located in Byzantine Palestine(Fakhoury, 1987) . The word ‘Salt’ can be linked to word ‘Saltus’ which is a Latin word that refers to dense forests or the cut mountain of steep slopes. As-Salt is indeed surrounded by hills, and the area was once a vast oak forest. ‘Jadora’ is another name for As-Salt because this city was once a holy city and prophet ‘Jador’ was living in this city (Fakhoury, 1987).

Salt's settlement can be traced back to the ancient Canaan people whom were living in Syria and Palestine. This was based on archeological findings including castle ruins evidencing the presence of the Romans, and the Crusaders. Salt has been inhabited since the Early Bronze Age as evidenced by the archaeological findings (Khleifat, 1984), and Salt has been the center for agriculture and religion. Also, Salt was the center for the bishop's seat as part of the Diocese, of Busra, and later

on, of Petra, during the 5<sup>th</sup> and 6<sup>th</sup> Centuries A.D. Salt had proper sewage, schools, a hospital, as well as religious and administrative organizations.

Prior to the emergence of Islam, Salt city was a renowned town within the East of Jordan, and after the emergence of Islam, Salt became a strategic place for commerce and transport, in addition to functioning as the key source of goods supply to Bedouin in Balqa land. Salt was Jordan's main city during the 19<sup>th</sup> and 20<sup>th</sup> centuries, and in fact, Salt was a district seat of the Ottoman Empire, and in 1922, Salt was the first capital of the newly formed Emirate of Trans-Jordan (SDC, 1990). Salt city was the chosen city among migrators during the 1880s, and these migrators who came from Damascus, Nablus and other cities in Palestine, became permanent residents of Salt. Salt became the wealthiest and the most important city in Jordan between 1850 and 1915, and this was factored by its commercial, social and cultural relations with Nablus of Palestine. During the late 1890s, Salt was both prosperous and stable politically.



**Figure 3.5:** Salt city between 1890-1910

Emir Abdullah changed Salt when he formed the Trans-Jordan on 20 October 1921 (Fakhoury, 1987).

Before Amman became the capital of Jordan, Salt was the capital. Still, Salt remains important to the life of people in Jordan. The first secondary school was built in Salt and the school was built at the summit of a hill, south of the main city. This school has turned Salt into a center for culture and education (Khouri, 1982). Further, the occupation of Israel in Palestine in 1948 has resulted in the second migration of Palestinians into Salt, known as the diaspora. Aside from Salt, these Palestinians also entered other cities in the East Bank of Jordan.

Salt is a city that covers the tops and flanks of a number of steep hills, with deep V-shaped valleys separating it. Most of these valleys emerged from the faults.

There are two parts to Old Salt separated by Wadi Al-Akrad and Al-Deir corridor, namely the northern part that covers Al-Qala and the churches, and the southern part that mostly covers the old mosques of Salt. The Old Salt had adjoining hillside residential areas made of yellow stones. The streets, stairs and footpaths were narrow, and the downtown quarters were busy with people. The aforementioned scenarios are common in hilly cities before the existence of cars (Al-Zoabi, 2004).

Yellow stone buildings were the main appeal of Old Salt and these buildings were erected during the Golden Age of Salt during the 1870-1920 period. During this era, Salt was Jordan's center of commerce. The historic value of yellow stone buildings has been appraised, and for tourism purposes, some restoration projects have been executed, concentrating on landmarks. In this study, the current status of the yellow stone buildings in old Salt is addressed, focusing on the townscape conservation according to the local context (figure 3.6).

A field survey carried out in Old Salt found that nearly half of the buildings (49.7%) in this area were yellow stone buildings, with 24% of these buildings were still in yellow color. Most of these yellow stone buildings (69.4%) became residential buildings rather than being turned into shops and offices, with some changes made to them, like the change to their color. Also, the majority of yellow stone buildings were found in the traditional commercial area like Hamman Street and Suq Al-Sukafiya area. In fact, buildings in both areas retained so much of their originality, and are thus suitable for conservation.



**Figure 3.6:** Type of building material in Salt city (yellow lime stone)

Salt city was at its peak during the 19<sup>th</sup> and early 20<sup>th</sup> century, and its diverse population and trading practice have resulted in a rich culture, and an atmosphere of tolerance and coexistence (Suliman et al., 2015).

The architectural artistry of Salt city denotes a solid relationship with the majority groups living in the city, while also reflecting the various social patterns of its time. Salt city's architectural value demonstrates the adherence of its design to both its past and present, as exemplified by the city's various architecturally tasteful buildings to symbolize different centuries. The history of Salt has linkage to the old and middle stone ages during 3000 years BC. People of ancient Salt were hunters, and they roamed the Salt Valley and its forests. These valley and forests eventually transformed into a city called Salt city, and the people of Salt gradually transformed from hunters and gatherers into farmers and herdsman, performing agricultural works and keeping livestock. The patterns of building structures in this study have progressed from peasant life to today's modern life, and such progression was factored by the immigrants who entered Salt city during the 18<sup>th</sup> and 19<sup>th</sup> centuries. Salt had been described as a small town within the province of Jordan, and there was a castle among the hills east of the Ghour which was dominated by the castle. A bountiful spring was underneath the castle of Salt and the waters would flow through the town. There were many

gardens, and pomegranates were Salt's prized export items. Salt back then was described as prosperous and densely inhabited.

Salt's major features include water springs, and water came from Jabal al-Qal'a in ti Saaha Area. There were three covered springs respectively for men (the spring in front of Abu-Jaber building), women (the spring at the western of Hammam Street), and animals (the spring west of Hammam Street). The water also run under Latin Church court into farms, known back then as Basateen es-Salt (presently called Oqba bin Nafi' school and Salt Cultural Center) located within the south part of Small Mosque.

Several roads and stairways were built by the municipality in 1923 as can be observed at Hammam Street, Khader Street, and Saaha Area. Local Salt stones of 20-25 cm width were the materials used in paving the areas (roads and stairways) overlapping between adjacent courses. The new looks of Salt differed from the traditional Salt city that comprised peasant houses constructed using local materials. In fact, during the last century, houses and buildings in the city of Salt have changed in terms of architectural style and character. Nonetheless, yellow stone with sophisticated masonry details remained the prevailing feature. Salt stone was no longer in use after the 1950s (Salt Development Corporation, 1990; Dabbas, 1999). During the 19<sup>th</sup> century, other new district called Al-Gteeshat was established within the district of Al-Awamich.

### **3.4 Architecture of Old Salt**

The Old Salt was full of buildings arranged in rows. The terrain was rather steep, and the buildings were constructed using yellow square stones with fine and smooth finish. It was common for buildings to have two or three levels. In general, the buildings in Salt city had uniformed look. The openings of the buildings were generally vertical with straight stone lintels or arches of various styles, built during different eras. Proportionally arranged around a central axis, windows of houses in Salt city were generally two or three in number (figure 3.7). As for the proportions of house windows, they vary from 2 vertical to 1 horizontal, to 3 vertical to 1 horizontal.

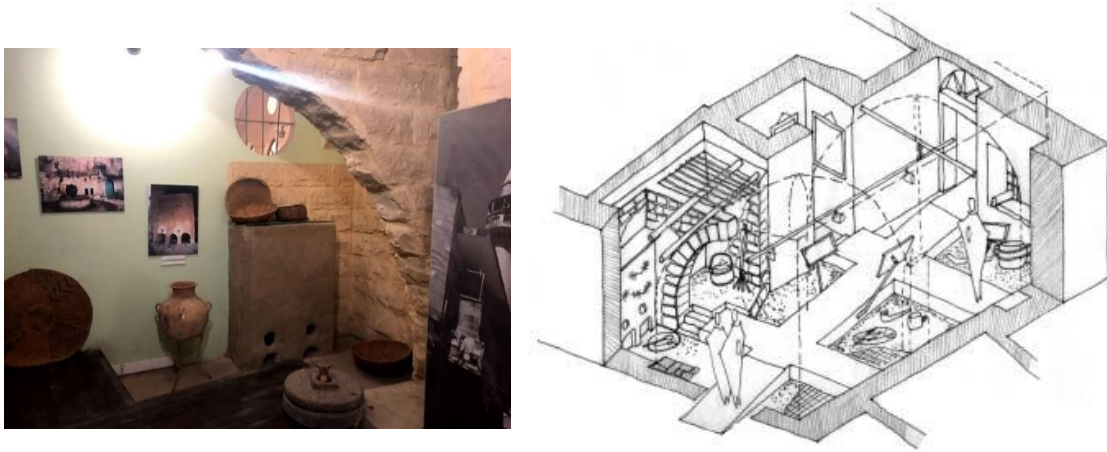


**Figure 3.7:** Type of opening in Salt

For simple houses, the windows were generally symmetrically arranged. Timber and steel were the materials used for the windows. These openings lead to de I-beam construction supporting a concrete slab directly projected to the street at a distance of approximately one meter. Traditional buildings in Old Salt had flat or domed roof, with the exception of public buildings. Some merchant houses have pitched roofs.

#### **As-Salt's Traditional houses topologies:**

The traditional houses in Salt were constructed mainly using local yellow stones obtained from Wadi Shua'yb. These houses had some type of foundation and load-bearing walls with the internal partition walls and barrel vaults as support. Further, several roofing systems were used like pitched roofs, I-beams and stone arches (figure 3.8). The most traditional roofing system employed wooden base with traditional tiles, covering all the way to the verandas on both sides of the house. The traditional houses could be observed in Old Salt. These houses usually would have one or more open courtyard. The courtyard lets out warm air and provides the house interior with sufficient natural light (Almatarneh, 2013a).

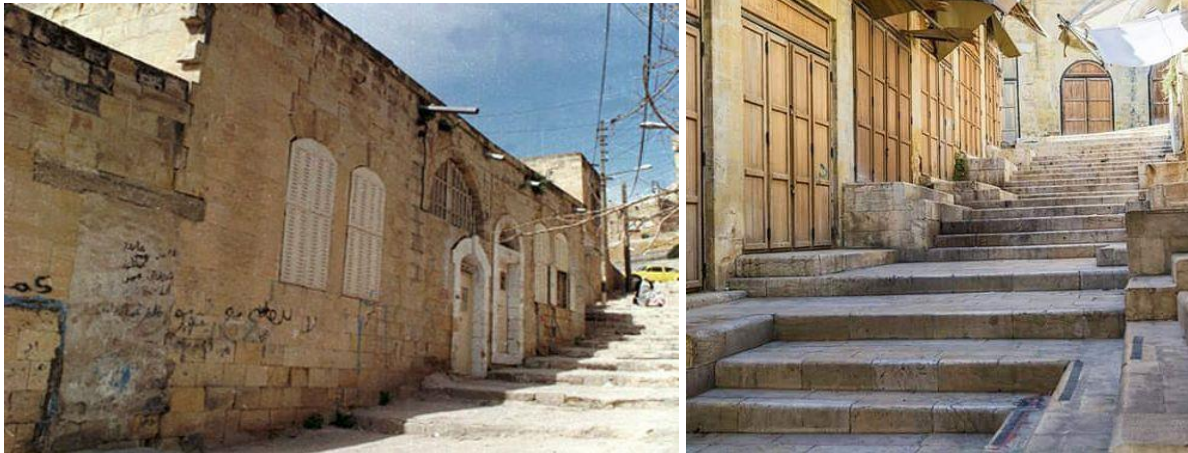


**Figure 3.8:** interior of traditional house in Salt (Almatarneh, 2013b)

People in pre-modern era were living harmoniously with nature because the accessible technology then was no match to the powerful natural forces. Hence, the traditional Jordanian architecture was designed to adapt to the country's natural environment (Almatarneh, 2013).

### **3.5 Urban form- compact city:**

The Old Salt had a dense structure whereby the alleys were narrow and sloped, while the buildings erected on the slopes were linked to one another via stairways reachable from stepped passages (Figure 3.9). Some houses had roofs that also function as the yard for other houses up the slope. The denseness of Old Salt was factored by the efficient and diversified uses of land, where there was overlapping use of land for residential, commerce, and civic uses. Also, the increase in the development and activities in the city has created various opportunities and services constituting a rich urban life. Compact urban space can reduce the transference of water, energy, materials, people, and products, while stimulating social interaction among people. Almataraneh (2013) relevantly found that the traditional cities in Jordan including Salt city all had very strong social networks.



**Figure 3.9:** Narrow winding stairway between buildings

In discussing the urban fabric compactness and containment of Salt city, clearly, a contained and compact city promotes social interactions and availability of services and facilities. In this regard, narrow streets, front porches (Figure 3.10) and public open space all would encourage people to engage in street life.



**Figure 3.10:** Compacted urban plan in Salt city



Additionally, compactness of the cities reduces energy consumption because denseness could support district heating or unite heat and power systems. Also, since all places are close together, trips are shorter and less frequent, and this can decrease the emissions of greenhouse gas as the usage of transport is less, and this is beneficial to the environment. The compact, diverse and highly integrated urban design of Old Salt makes the city sustainable (Almatarneh, 2013).

The general structure of Old Salt reflects the life of its people then in relation to the city's natural environment. The people were really concerned about their natural environment, and this demonstrates their ability to co-exist harmoniously with their surrounding environment in all aspects. The traditional elements in As-Salt promote peace and tranquility in their environment as exemplified explicitly in the functions and meanings of the culture and practices in this city. Almatarneh (2014) indicated that traditional architecture is not always about what was built, because it is more about how certain structure was built and how that structure or design has survived through different eras and generations of community.

### **3.6 Conclusion**

The contribution of this chapter was reviewing the history of Salt city and analyzing the main elements of the city that affect the livability. The research location shows unique identity particularly from the aspect of cultural heritage, location and local activities. These aspects strengthen the identity and the character of Salt city which contribute to the design of a successful liveable city. In general, Salt city has its own identity that reflected in the city architecture that should be saved. Chapter 4 will explain the research methods that have been used in this research.

## **Chapter IV**

### **RESEARCH METHODOLOGY**

#### **4.1 Introduction**

This chapter shows a comprehensive elaboration of the methods used in this research in order to address and give the answer to the research questions. Also, this chapter reviews the previous method for other researchers with a similar concept in the field. Therefore, it discusses the aim of the research, strategy, data gathering, and analysis technique.

#### **4.2 Scope of the Research**

As discussed in chapter 1, the main concept of this study is to identify the qualities (criteria) of livable cities that provide a vibrant, attractive and secure environment for people to live, work and play and high quality of living based on the case study of Salt city.

Thus, the study takes into account the perception of city users whether residents or visitors in determining the main criteria of a livable city.

This study is using a heritage traditional site as a case as traditional derived from the word ‘tradition’ which represents the repetition and knowledge from one generation to another, which relates to the concept of ‘time’ and ‘heritage’ of the place. These two principles are necessary to generate a distinctive environment with a unique character, that the local needs prioritized. (Ja’afar, 2009; Shuhana et al., 2007).

#### **4.3 Choice of Methodology**

The methodology of this study was selected based on two factors:

- (i) Scanning methodologies from research with a similar concept in the field as well as the research questions. below is an explanation for each factor.

A review of the previous research in similar areas assists the researcher to understand and analyze the previous researchers' works. The review shows that there are two approaches to the study of the physical aspect of the urban environment and its influence and character. Qualitative and quantitative methods were found to be appropriate in solving the research issues related to this study.

(ii) Research question:

Choosing techniques according to the research question is critical Charmaz (2006) says: "Let your research problem shape the methods you choose; your research problem may point to one method of data collection".

The goal of this study is to identify the criteria of livable cities in Jordan by connecting the physical elements with urban quality.

As a result, it is the process by which physical elements connect and affect the livability of the city. This study examined the relationships between physical elements that contribute to the character, and methodologies were chosen as stated in Tables 4.1 below.

**Tables 4.1:** The Chosen Research methodologies

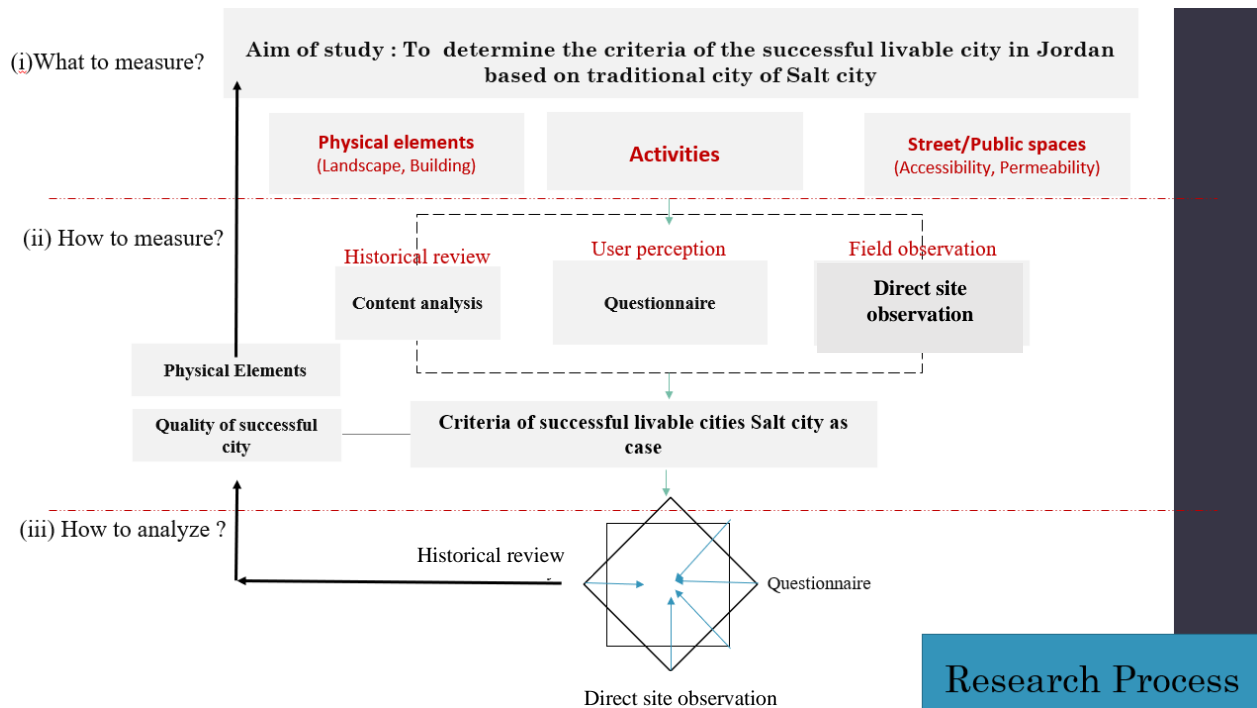
Questionnaire	Examine the users' perception of the building, landscape and elements and main activities that contribute to city characters.
Historical & document review	Study the importance of the historical background of the city, the understanding of how the physical elements contribute to the historical value and vice versa.
Direct site observation	Examine the elements of city quality (appearance & historical importance) contributing to the characters of a livable successful city

#### 4.4 Research procedures

Based on methodological scanning and research questions needs a combination of qualitative/descriptive techniques and quantitative/statistical were applied in this study.

The questionnaire was appropriate for the study to show the users perception and their experience in the city (walking, sitting, living and different type of activities).

The qualitative techniques are used as support to the quantitative data. This combination of technique will the combination of research techniques allows researchers to apply various data analysis techniques or so-called "triangulation" techniques that can avoid "bias" during data collection (Creswell, 2014).



**Figure 4.1: Research Process**

As shown above, the data collection procedures involved three phases; the first phase was establishing the theoretical framework; the second phase was a preliminary investigation, and the final phase was the final investigation and analyzing data that contributed to the city's character to be livable.

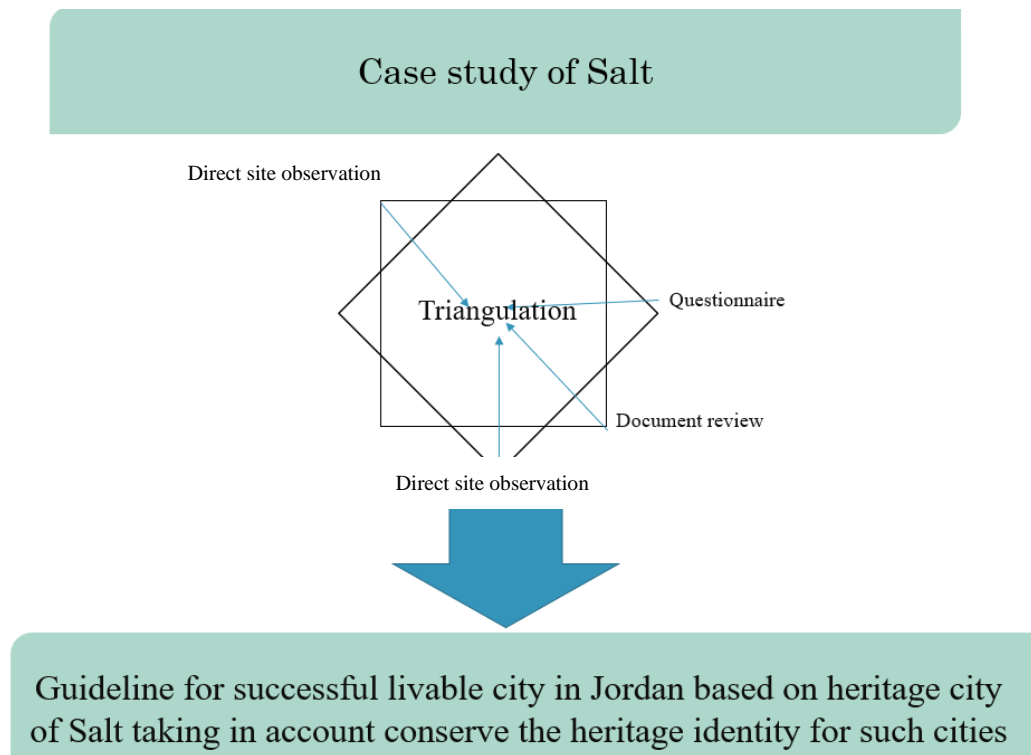
#### **4.5 Triangulations:**

Using these two methods allows triangulation and cross-analysis of the results of this study, where triangulation is the process of gathering data from different periods or sources. It would be useful to employ more than one method for triangulation to enhance the validity (Johansson, 2003);

Each method has its own strengths and weaknesses, so combining them assists with data triangulation and helps to balance out any weaknesses in either method (Gray, 2009). According to the literature, It is better to combine qualitative and quantitative methodologies in an environmental design assessment, such as this one, since it is a more suitable solution to the complex nature of the environment. The quantitative questionnaire approach provides a framework for a questionnaire, but the qualitative approach, which is descriptive, probes deeper into the subject. Methods are most effective if they are able to describe the phenomena and the data in the best way (Krasner, 1980).

Mixing methodologies can reduce the weaknesses of a single method while at the same time strengthening the reliability and validity of the data collected based on multiple sources (Brannen, 2005).

The study is based on a case study. case study is not necessarily qualitative research (Bernasconi, 2009). This case study may involve both quantitative and qualitative data. Thus, the study combines mixed methods: questionnaires, historical reviews and direct site observation. The use of different methods of research is now a standard practice (Gray, 2009).



**Figure 4.2:** Triangulation

#### **4.6 Data Collection Techniques:**

The quantitative data collection technique that was used in this study is a questionnaire while the qualitative data collection techniques used in this study are direct site observation and historical review explained as follows:

(i) **Quantitative Data Collection**

##### **Questionnaire**

A questionnaire is used to provide quantitative descriptions of a population's attitudes, needs or opinions by assessing a sample of that population. According to Creswell (2013), the researcher can generalize or make assumptions about the population as a whole based on the results of a questionnaire. The most significant technique to measure moods, ideas, and attitudes, according to the literature review, is to ask the users (Aimed group) how they feel, what they are thinking, and what they do or have done. Questionnaires and interviews are used to do this. In this research,

the questionnaire includes questions regarding Salt city design qualities, user difficulties, needs, perceptions, feelings about places and aspects that help people recall the main city elements.

Questionnaire in general supported by other methods (Shamsuddin, 1997; Ujang, 2008) in this research it was supported with site observation and historical document review that enhance the reliability. Questionnaires are often used to explore diverse users' experiences, behaviour, and preferences. A questionnaire helps in collecting a significant amount of data, and the results are very manageable, especially when there are ready-to-tick responses or multiple choice.

In this research the questionnaire is divided into two types of questions: open-ended and structured (Oppenheim, 1992; Al-Shawabkeh, 2015). Answers to open-ended questions will come in the form of words and sentences. This allows respondents to convey their actual views, thoughts, and comments in their own words, allowing the researcher to collect more data (Al-Shawabkeh, 2015). Free-response (open-ended) questions, on the other hand, are unique in that they are simple to ask, complex to answer, and even more difficult to evaluate (Oppenheim, 1992; Rastegar et al., 2014). Structured questions, on the other hand, collect data that is easier to code and analyze than open-ended questions. Structured questions provide responders with a variety of answers from which to choose. They also expand the scope/potential for comparing results. They also expand the scope/potential for comparing results. This kind of question is also designed to collect quantitative data. The biggest limitation of these types of inquiries is that they may drive respondents to accept a misleading viewpoint (Parfitt, 1997; Zohrabi, 2013)

The researcher covers both types of questions in this study (open-ended questions and structured questions). The 'list' and 'category' types were used for structured questions because responders could only choose one set from a specific category for 'category' or make many selections from a list of things.

The questionnaire was developed into 19 questions and categorized into two major sections as detailed below:

- The first section is to determine the respondents' socioeconomic status. It asks about the respondents' gender, age, and occupation. The data assists in establishing a general profile of the users of Salt city. The respondent's status will determine who and why they use certain aspects in order to identify the character of the city.

- The second part evaluates the physical elements and the quality of the urban environment in Salt city that contributes toward livability based on the research framework (walkability and imageability criteria).

The respondents will be asked questions about main buildings and city attractions; the type of recalled building, important items, ease to understand, easy to move around by walking, transportation. In addition of safety and comfort using the research area, types of activities taking place on Salt city. The questionnaire concerns about things that make Salt city distinctive according to respondents viewpoints, things that users need, as well as those that are undesirable and should be developed. This type of evaluation of the research area enables the researcher to discover and evaluate the research area according to research aim. The last question will be open-ended; which helps in generating reactions by way of respondents' perception, suggestions and feeling freely.

### Sample size

The sample size was determined by the level of precision necessary for the sample as well as the quantity of variation in the target case study (De Vaus, 2002). Table 4.2 shows the details of the sampling size and error based on De Vaus study (De Vaus, 2002).

**Tables 4.2:** Sampling Size and Error (De Vaus, 2002)

Sampling Error	Sample Size	Sampling Error	Sample Size
1.0	10000	5.5	330
1.5	4500	6.0	277
2.0	2500	6.5	237
2.5	1600	7.0	204
3.0	1100	7.5	178
3.5	816	8.0	156
4.0	625	8.5	138
4.5	494	9.0	110
5.0	400	10	100



The size of the sample is in general influenced by the study cost and time limits (Sudman, 1976). In estimating the maximum sample size required, this study takes into account time constraints. De Vaus' (2001) work was used to determine the sample size for this study since it gives a simple method of estimating the sampling number according to varying degrees of accuracy.

The completed questionnaires were distributed to 330 people as respondents, and De-vaus (2013) provided a sample size calculation with a sampling error of 5.5 percent. The sample size was chosen based on two key reasons. The first consideration is the level of precision necessary. Because the sample size is (n=330), this study does not necessitate a high level of precision. As a result, a 5.5 percent sample error is acceptable in this study because the questionnaire data is backed up by other methodologies (for example, historical review and observation) (Abbazadeh, 2011). The second component is the sample size range between 240-330 which has been employed in previous studies with the same respondent.

As a result, the respondents of the questionnaire were visitors, residents and workers in Salt city, these respondents understood the city and its neighborhoods. City users, according to Wan Abdul manan (2014), are people who frequent using the city and are familiar with the area, whether they are citizens or not. In this scenario, the respondents are essentially the people who frequently visit or live in Salt city. we may divide the population for this technique into two groups: (i) static users and (ii) mobile users.

Total respondents were 330 divided as follows: (130) distributed during the weekdays (Sunday to Thursday) and weekends in the research area (Friday and Saturday). This is due to the fact that the research area's activity pattern and intensity are highest between weekdays and weekends (site observation data),. in addition, the questionnaire was also distributed using google form and it was answered by 200 respondents from salt city users.

Following the check and arrangement of the data gathered from both infield distribution and online in a format that can be analyzed, quantitative data from the questionnaires were analyzed using Statistical Package for Social Sciences (SPSS 25). As a user-friendly method, this method was chosen to analyze the questionnaire data (Kum & Ujang,2012)

This statistical analysis is used to identify the main physical elements that contribute to city character. This study used univariate analysis which involves the most basic descriptive statistics,

such as frequency and percentage. The result will be presented with descriptive results (pie charts, graphs, etc.) resulting from the use of SPSS software using Microsoft Word (De-Vaus, 2014).

## (ii) Qualitative Data Collection

### **Direct site observation**

This technique allows the researchers to gain direct experience and understanding of the case study through direct site observation (Hajmirsadeghi, 2015). According to the Project for Public Spaces (2005), this technique gives an accurate actual scene of the study area by observing the physical elements and how it affects the users' activities in using space (Carmona, 2010).

The movement and interaction of users with the built environment are recorded by observations. This form of observation is valuable for determining the profile and image of the place at the same time how the built environment influences activities by documenting the types of activities that occur with individuals in urban areas. These observations could be arranged by taking notes, photographing, mapping, or using a combination of these techniques to record different types of activity (Michelson, 2011; Fatima, 2011).

The observation documented the main buildings, streets, building use, activities, and landscape characteristics, as well as the overall environment of Salt city.

As a result, using direct observation help the researcher to identify the studying area's strengths, weaknesses, opportunities, and changes that need to be made (SWOT analysis) (Moughtin et al., 2000). this technique enables the researcher to think more broadly and skillfully.

Direct observation involves a researcher being physically in the research area and slowly walking along the streets using notebooks and a complete map to the study area with a camera in addition to move in a different means of transport, as the use of transport help the researcher to comprehensively observe the research area. Gathering data according to this technique include photographing, measuring and observing a different location at a different time (day and night and weather condition) for the studying area, it includes recording the physical context and the social activities that occurred in the urban space (standing, talking, sitting, watching, walking).

During the recording of people's behaviors and reactions to the urban environment, the researcher can determine and connect how the physical elements of the built environment influence the

activities and social interaction of the city users according to that the designers could develop and enhance the urban quality (Carmona, 2010; Hajmirsadeghi, 2015).

### **Historical and document review**

This method focuses on human behaviors or activities over the decades in the studying area that affects the architecture of the city. Human responses to their surroundings are reflected in behavior, which is an expression of cultural values that affect the city's architecture. Behavior and the environment are linked (Shamsuddin 2011). The researcher will examine people's behavior that affects their urban environment over a period of time and in a specified manner, counting and categorizing what can be seen (Abdul Rahman 2012). The goal is to figure out how the physical elements and activity patterns are related. Also, look into the types of activities that are offered in a specific area (Lesan, 2015). Because the observation is conducted in the study area and the researcher spent extensive time in the research area, this technique provides a more in-depth insight into the research issue.

### **4.7 Conclusion**

This chapter basically presented the research methodology employed in this study. The methods are mainly used in studying the physical elements and qualities that form the city's character in order to be livable. Hence, this research employed a mixed-method approach. Historical & document review is a qualitative method that was used to investigate the historical data of Salt city. In addition, a questionnaire which is a quantitative method was used to gather the perceptions of Salt city users. Moreover, a direct site observation which is a qualitative method was adopted to observe the case directly and validate the results gathered using questionnaires and document review. In general, the main contribution of this chapter is the usage of the mixed-method approach which was used to gather robustness and accurate data to assist planners in adopting real data in the real case studies specifically the case study of Salt city. Moreover, the mixed-method approach is considered a proper way of comprehending new results. Hence, the selected methods enrich the data collection and balance the strengths and weaknesses of each.

## Chapter V

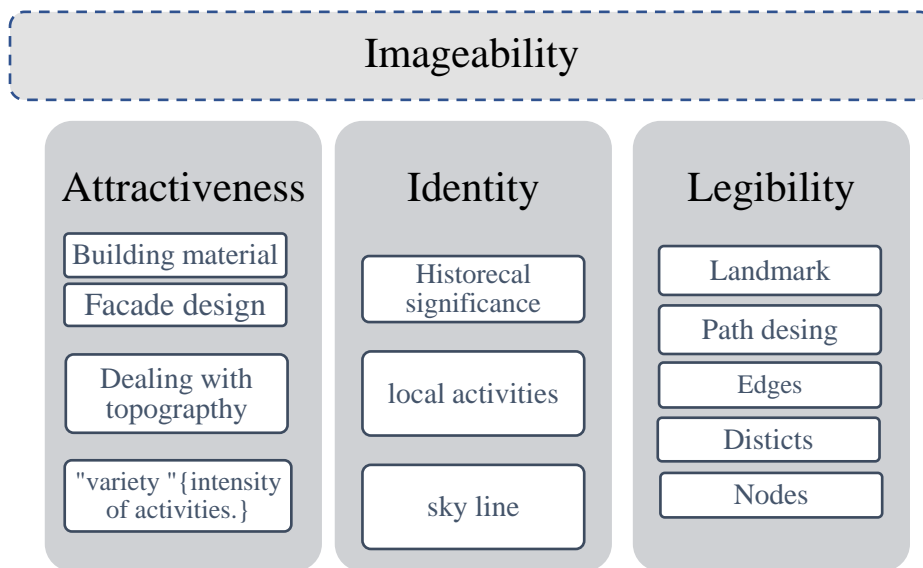
### DATA ANALYSIS AND FINDINGS

#### 5.1 Introduction

This chapter focuses on the analysis of data related to the objectives of the research. This chapter is divided into two main sections:

- Section one explains the results of the analysis that related to the *imageability* character of the city and the urban quality categorized under it, with the main physical element that connects with each quality.
- Section two explains the results of the analysis that related to the *walkability* character of the city and the urban quality categorized under it, with the main physical element that connects with each quality. This chapter aims to achieve these research goals, by examining the urban quality that strongly influences the respondents' use of the urban spaces and their perception of the urban environment that influence their use of the place.

#### 5.2 Physical Element Contributes Toward Imageability



**Figure 5.1:** urban quality connected with imageability

### 5.2.1 Attractiveness

Qualitative and quantitative studies have found that attractiveness connected with imageability involves three main factors, namely: building material, façade design, and a variety of activities.

#### (i) *Building material*

The building material is an important element that gives a special character to the place and reflects the local style's aesthetic value, the appealing stone colour leads to increase the attractiveness of a building. As-Salt is unique in Jordan and probably the whole of the surrounding area. Golden-coloured houses are clustered on the slopes of the mountains, and the unity and historical significance of the architecture date back to the city's golden age. The yellow stone tells a story of the place with its unique form and surreal colour with different texture (Figure 5. 2); a trademark well known by Salt's architecture combining the Nabulsian architectural style as well as the yellow-colored Salt stone as well as buildings made from exceptional yellow stones of the grand Salt . Appealing stone color will be uncovered, leading to an increase in the attractiveness of a building. (Marie 2013)

The visual analysis supported the aesthetic of the material building, which reflects the special character identity of Salt City, the questionnaire showed that 60 % of the city users see that the unique material of building in Salt makes the city more attractive and enhances the unique character of Salt. Hence, building material reflects the local style's aesthetic value. In addition, the variation in texture and pattern of stone serves its aesthetic purpose and gives unique homogeneity while the exchange of shadow and light, reflects the material's beauty.



**Figure 5.2:** Building material in Salt City golden yellow lime stone that makes the city it distinct and recognizable

Moreover, historical review shows that humans since the ancient era have been using stones as building material instinctively. Stones were also used in Jordan in old buildings starting from the stone age, all through the copper age, bronze age, iron age, Hellenistic age, Byzantine age, Islamic ages, middle and modern age, as man used stone to build their houses.

In short, the beauty of building material and the building uniqueness that reflects local identity, they are important in creating the image of the city and create attractive and interesting environment. This study found that building materials that adapt to climate, easy to find and respecting the place character should be considered in the design and development cities to create imageable livable city.

### (ii) *Façade design*

Façade design include the opening pattern, windows configurations, type of glazing the that allows the lighting transmission and allow visual communication with outdoors for the occupants of the building and effects the visual comfort. Designing and detailing the elevations of stone buildings in Jordan is not only functional; it can also be described as a purposeful act of ornamentation.

The art of stone building construction in Salt City plays an important role in enhancing the visual efficiency of buildings and articulating their meaning; as such, it fulfills aesthetic and social functions. It gives a unique view for the city architecture that strengthens the city image.

As it is shown in (Figure5. 3) and (Figure 5.4) , careful attention is paid to the location and size of windows that play both roles functional and aesthetic as it regulates the circulation of air through buildings and the entry of the sun. This is evident in the placement of openings in the walls bordering, in allowing for cross ventilation and in the use of high-level windows to let the hot air out.



**Figure 5.3:** Windows in Salt City



**Figure 5.4:** Type of elevation in Salt City

Direct site observation shows that Salt City known because of its elegant architecture, which reflects the Salt style: its cubic form with beautiful balconies, arched windows and surrounded by mature trees and climbers. Besides that, the historical review shows that this city is famous for its heritage houses; it respects human scale and local environment material and merging trees and landscape with building, which makes the city users enjoy walking in the city and attract more users. Thus, the articulation of building adds attracting value to the city.

In short, façade design with ornamentation that reflects local identity are important in contributing to the character and local environment of the cities; create attractive and interesting environment. This study found these elements that adapt to climate and respecting the place character should be considered in the design and developing the cities to save the city imageability.

### ***(iii) Dealing with topography***

Dealing with topography in Salt City took pride in the topographic nature of their city; they saw it as an integral part salt character, which made the city and its landscape unique.

The overall construction process of the old city of As-Salt city reflects a clear expression in the way of life and understanding of the As-Salt's people themselves in relation to man and the natural environment. The sensitivity of the people there towards the natural environment and the way they plan the city within the special topography of Salt.



**Figure 5.5 A:** dealing with topography in Salt city



**Figure 5.5 B:** Salt City stairs

In other hand, the compacted urban fabric of old city of Salt functioned as climate control as buildings are connected together.



Salt as traditional city deals with topography in a unique way by connecting houses and buildings with other parts of the city with many stone stairs that give Salt special character (imageability) and special views, also the topography this had a major impact on its urban fabric and its commercial and residential functions. Thus, designing new cities or developing old cities must respect the city topography that give the cities special character.

(iv) *Variety of activities:*

Salt city is distinguished by variety of activities as observed at the public spaces and along the city center, as walking, shopping, sitting for entertainment and playing the traditional games (figure 5.6). These activities need well designed public spaces to rest and enjoy, which contributes to the attractiveness and livability.



**Figure 5.6:** Variety of activities in Salt city

## 5.2.2 Identity

### (i) Historical significance

According to the Ministry of Tourism and Antiquities in Jordan, there are about nine hundred heritage buildings and complexes are spread from salt city core, Stairways are built all the way down from the hills to overcome the steep slopes The diverse historic houses vary in style from native, rural peasant houses and Palestinian merchant houses, to classic residential houses; architectural composition is different for each type (Figure 5.7).

Recognizing that the ancient city had distinctive architectural characteristics, the ministry decided to present those to the world and Salt city become world heritage site in 2021. The majority of urban heritage residents and mansions date from between 1890 and the late 1920s.

In Salt, the main heritage buildings include urban merchants' and residents' houses from the turn of the 20th century, commercial linear markets, as well as the oldest modern high school in Jordan built in 1925; Salt city known as city of Pioneers as many of administration building and governmental building start there.

According to questionnaire 75% of the city users see that the historical places make Salt city more attractive as it reflects the Salt city special identity.



Figure 5.7: As Salt city of pioneers



**Figure 5.8:** heritage building in Salt city

**(ii) Skyline**

Imagine the city as a room, with the skylines as the images and tableaux on the walls (Booth, 2012). Skylines can be seen as the outline of buildings or other objects against the sky. Skylines contribute to the beauty, meaning, identity and urban views for the city (Gholami et al., 2019) it contributes memorability, and distinctiveness.

During the day, the "urban skyline" is made up of natural scenes and shadows (Lim and Heath, 1994). (Karimimoshaver et al, 2021). every city skyline can reveal the city's substance and main character. For Salt city it has a special skyline where minarets and church towers shared the skyline to shows a place of tolerance and urban hospitality. In some places of the city the church and mosque share an entrance with each other (Vidal, 2021).

In other hand the city sky line distinguished by Human scale golden limestone houses that spread on the slopes of three mountains.

In short, the skyline can be a symbol of a city and its citizens. it reflects social values, religion and identity that contributed to the city image. it fulfils utilitarian functions as a means of identification and orientation, as it can become a brand or an icon, and be appreciated for its aesthetic qualities.



**Figure 5.9:** Salt city skyline

**(iii) Local activities**

Local activities refer to the activities that related to the local cultural activities. It reflects the local character and identity; as religious and festival activities, also refers to the preferred thing to the local community. All that enrich the sensory quality of the environment which liven up the city environment and contribute to the image of the city that make it memorable for the respondents.

Direct site observation shows some of these activities as showed below that make up the local identity and reflect the city background.

Thus to create a livable city these activities must be saved as it reflect the city identity and contribute toward imageability.



**Figure 5.10:** Variety of local activities that characterize Salt city

### 5.2.3 Legibility

Studies on quality of urban environments, focus on ways to establish harmonious relationships between people and the world outside in order to create a livable environment. Loss of orientation is one of the things destroying this harmony between users and urban environment.

In order to avoid disorientation, it is important to create a distinctive and legible environment that offers safety as well as heightens the depth and intensity of human experience.

Lynch classified physical elements and perceptible objects of an urban environment into five factors: Landmark, path, edges, district and nodes.

The following is analyzing the legibility of Salt city as factor of livable city:

**- Landmark**

As part of the legibility of city design, landmarks influence the clarity of place and enhance the visual quality of the city as it visible from all directions.

a landmark is a point of reference that can be seen from afar and in many directions, and its purpose is to aid in city navigation and wayfinding Kalin & Yilmaz (2012).

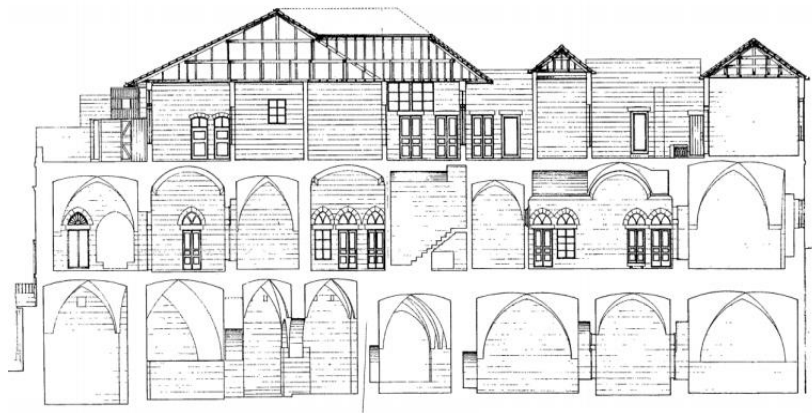
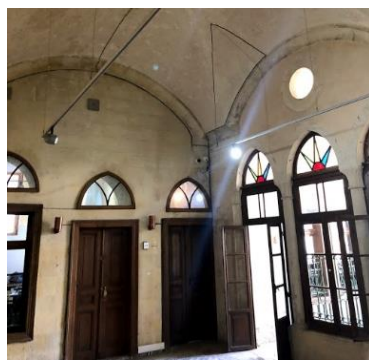
According to Ewing (2013), the place will become clearer and more pleasant for the users when there are specific physical components with different shape and color or unique material that attract the user's attention and trigger sensations. The presence of religious buildings with different architectural styles, and special elements contributes to an environment of 'visibility' and clarity in the cities Jaafar (2014).

The following buildings were mentioned by the most of respondents in the questionnaire as first things come to mind when they hear Salt city, they considered to be a landmark in Salt city:

***Landmark (A): Abu jaber house:***

Located Infront of the main plaza in the city (Sahet al ain), this building is considered a palace for a merchant who called Abu Jaber, it was built by an builder who came from Nabulus and it was built in different stages starting from 1896 as the ground and the first floors were built and the next floor was completed in 1905. first floor was used for guests and the ground floor was used as a khan and stable for the horses.

The house was visited by very important personalities such as the late King Abdallah I of Jordan in 1922 and Prince Shakeeb Arsalan of Lebanon. The building is momentous as its high quality special architectural style; it represents the skillful and the expertise for the builders with fine and significant details. The building is topped with a complex pitched roof made of imported red tiles from Marseille, France. The house had more windows than any other in Salt city, and these windows has a special panoramic lookout to the city. The windows had colored glass and wrought iron work set into finely carved stone lintels, with plaster moldings and painted ceilings framing them. The Abu Jaber House was transformed into a museum in 2010. The Historic Old Salt Museum recounts the history of the city in its Golden Age, between the end of the 19th century and the 1930s. Abu jaber house was mentioned by 62% of respondents in the questionnaire.



**Figure 5.11:** Abu Jaber House

**Landmark (B): Big Mosque of Salt:**



**Figure 5.12: Big Mosque of Salt**

The original building, was built in the 14th century, was the oldest mosque in As-Salt. The first building was made of mud and straw.

The Ottomans rebuilt it in the 1860s and then in 2007.later This mosque was rebuilt from the remnants of the Ottoman structure that were renovated and expanded to reflect traditional and modern architecture.



Across the city, the soothing call to prayer can be heard from the mosque's magnificent minaret. Having a different architectural style from its surroundings makes it stand out and can be seen from various angles over a wide area as shown in (Figure 5.12)

These factor (appearance, location, function presence of sensory quality and architectural style) that have made this mosque prominent in the surrounding area to be reference in addition to .

Architectural styles that are distinctive to religious buildings contribute to a sense of 'visibility' and clarity in their surroundings. Since this city appreciates interfaith coexistence, the mosque's stairs lead to its church. That will be the third landmark:



**Figure 5.13:** landmark elements show the variety and tolerance of Salt city

***Landmark (c):*** Alkhader church:



**Figure 5.14:** Interior of Khader church

The most visited Christian faith site in As-Salt. Named after Al Khader (St. George), is one of the oldest and holiest shrines in the area. The saint is said to have appeared to a shepherd inside a cave, telling him and the residents to build a church on that place. Saint George, syncretized with Al Khader in the region, is highly respected by Muslims and Christians alike, and therefore, members of both communities come here to pray. The church was renovated by the local community in 2004. The remains of the cave are a big opening in the mountain inside the chapel. It characterized with a special interior and location, function presence of sensory quality.



**Figure 5.15:** Staircase to the lower section of Al-Khader Street



**Figure 5.16:** Interior of church

**- Paths**

A path is the channel along which users move regularly, occasionally, or potentially (Azadiah 2015; Lynch 1960). Paths can be natural including rivers or manmade including streets, sidewalks stairs and railroads. The Path is also characterized by its continuity and its focus that guides the user towards a goal or specific location (Shamsuddin 1997).

The following is the main paths that mentioned by the respondent:

***Path (A) Al hamam street:***

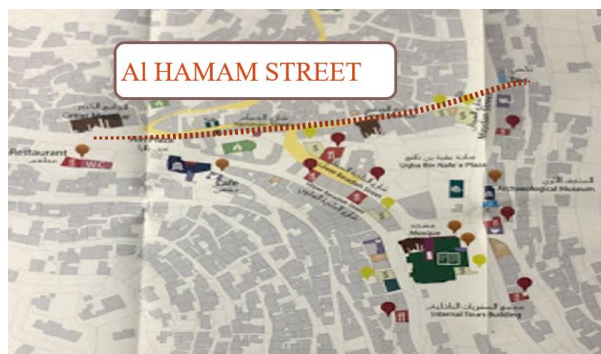
Is the oldest existing commercial area in Salt city. It was developed by Nabuls traders between 1881 -1884; it took the name from the public bath (hamman) that located at the western end of the street. The street is flanked by historical building that has a special façade that represent it age, the ground floor of these building are shops with windows that opening to the street and normally the upper floor are apartment for the merchants. The structural system during that period was based on the unique shapes and forms of archways, thick wall forms and windows with pointed arches and convenes as well as buildings made from exceptional yellow stones of the grand Salt

This street is considered the most significant street in Salt city for the following reasons:

- Represent the real local life and style
- A special memory and nostalgia
- Special façade
- Unique traditional function (public baths) (demolished in the 1930s)
- Local food and produce, clothing, household goods, traditional crafts.

The Hammam Street consists of ground- and upper-floor shops, the architectural style of the buildings reflects the period of 1881-1918, and the structural system is characterized by arches and one-meter walls.

Hammam Street retains a distinctive traditional heritage where shops open directly onto the street through one single entrance. The goods are displayed in a traditional way on the front façade, resulting in a sensory experience in which the users of the street can smell different spices, touch different textiles, and taste different vegetables and fruits, besides enjoying the colorful goods on display.



**Figure 5.17:** Al Hamam Street

***Path (B) Al khader street:***

Al Khader Street is one of the oldest streets of Salt; it extends from Al Ein Plaza until it reaches Al Khader church down till it reaches Maidan Street.

Many religious sites along with the street and also many shops that many of them were established by the end of 9<sup>th</sup> century.



**Figure 5.18:** Al khader Street

***Path (C) Al Eskafiyeh stairways***

an old commercial stairway linking two old main street al hammam street and khader street. this street has a special function as its names derived from (eskafia which mean shoe maker). Its known according to its special frontage and function.



**Figure 5.19:** Eskafiyah Street

## - Nodes

Nodes are strategic spots or areas where activities or themes are concentrated. As squares, junctions, roundabouts, activities such as religious buildings, and others are considered as nodes(Lynch 1960).

### - Main Node in Salt city: Sahet aal ain

Sahet Al-Ain is a physical node of public space that has been used by its local community.

Al-Ain square, which occupied an area of 5000 m<sup>2</sup>, was distinguished among Salt city squares by its centralized location, large size, type of activities that occurred on and association with major civic or religious buildings and stairways. Al- Ain square is located in the heart of the old Salt next to the great Mosque, Al-Khader Street, and Al-Hammam Street that leads up to the square's eastern entrance.

Sahet al ain is significance place that contribute the sense of place, identity, time and culture. It's a meeting point for traders in the city, where many residents spend a few hours of their days discussing news, playing the traditional game of mangaleh, and oftentimes exchanging books.



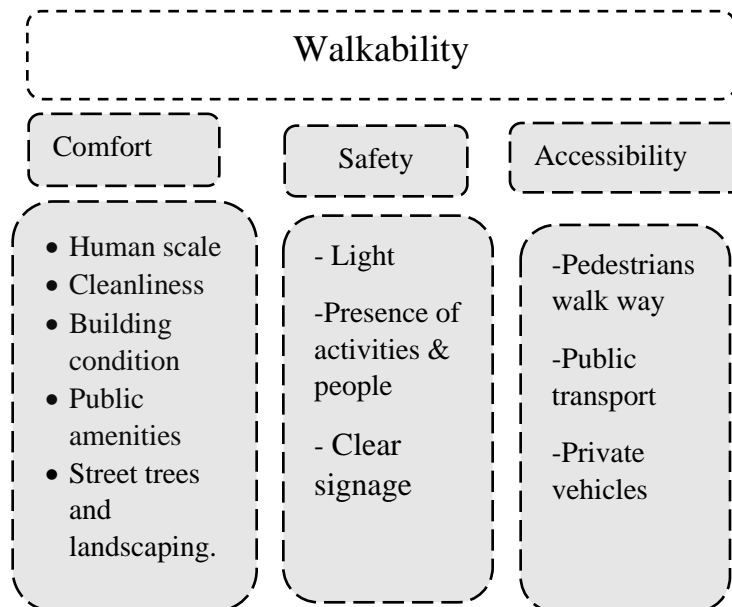
**Figure 5.20:** Sahet Al Ain

### 5.3 Physical Element Contributes Toward Walkability

Walkability is referred to the degree to which the built environment is welcoming to the presence of people living, shopping, visiting, enjoying, or spending time. The quality of pedestrian amenities, street conditions, accessibility, safety and walking comfort are all factors related to walkability as mentioned below in (figure 5.21). Walkability, according to Stephen (2005), is a measure of the quality of the urban form and the availability of pedestrian facilities within a specific area. Several factors are used to assess the walkability of cities will be explained in this section.

This study used questionnaire, direct visual observation, and historical review to define the main physical element that connected with walkability in Salt city.

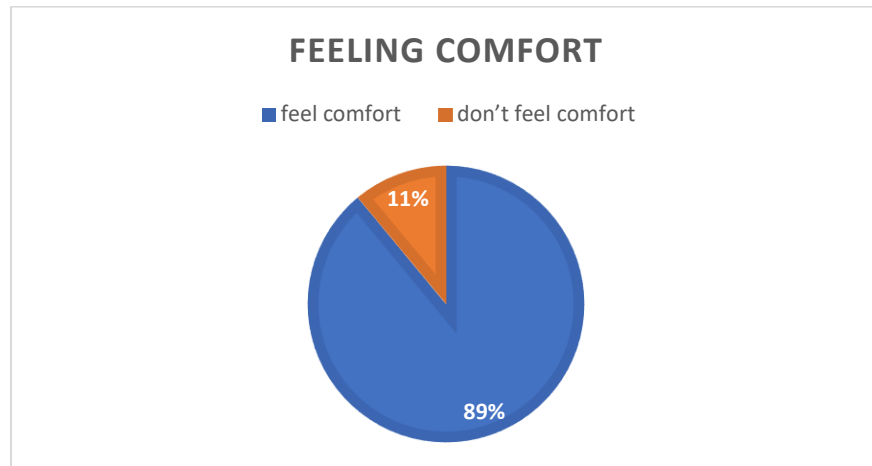
This research summarized the urban quality that is connected with walkability as follows:



**Figure 5.21:** Walkability factors

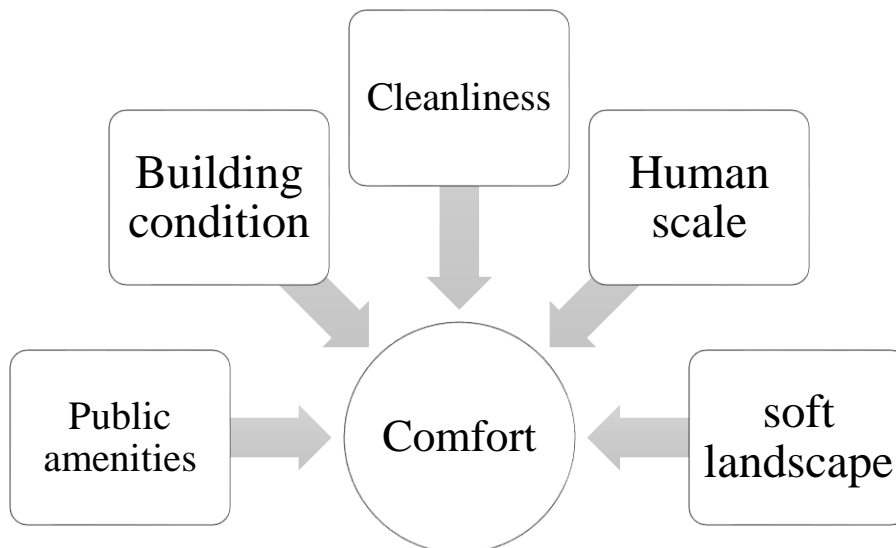
### 5.3.1 COMFORT

Comfort is relevant in creating a vibrant and livable city, according to questionnaire 89% of Salt city users are feeling comfortable while walking in Salt city.



**Figure 5.22:** Percentage of feeling comfortable walking in Salt city

The chart below presents the physical elements that are connected with comfort feeling in Salt City according to this study:



**Figure 5.23:** Elements of Comfortable



**(i) Building condition**

Cleaning and well-maintained buildings, spaces between buildings, building corridors, and building entrances help the city users feel more comfortable and connected to the place (Elsheshtawy, 2013), in salt case, there are about nine hundred heritage buildings; Many residents of these old buildings have left and moved to Amman, the capital of Jordan, following the trend of notable Jordanian families all over the country during the fifties and sixties of the twentieth century. The old stone houses are often left vacant as their owners moved and are ignorant to maintain them. These buildings become nodes of waste collections and uncomfortable for the neighbors, the questionnaire shows (28%) of respondents feel uncomfortable with these abandoned buildings.

According to one of the respondents in the questionnaire mentioned: ‘rehabilitation and reuse of old and historical places and buildings and make it Salt city more attractive and more comfortable to walk’

The direct site observation shows that these buildings (abandoned) are located in the inner streets and many of them are unsafe for the neighbors as shown in (figure 5.24)

This study suggests finding solutions for abandoned buildings by conserving them or adaptive reuse, converting heritage buildings into new or compatible uses, including accommodation with authentic characteristics, can assist in saving them, benefit the local economy, and improve the quality of life for local residents. Thus, creating livable and healthier cities contributing comfort feeling.



**Figure 5.24:** abandoned building inner alleys in Salt city

**Cleaned façade;**

On the other hand, cleaned building's façade contributes to belonging and identity for the communities that related to comfort and safety feeling, many city users complain of graffiti and damage caused by the vandalism of main historical places (figure5.25)

35% of Respondent suggested cleaning façade and open spaces from graffiti will improve the city and make it more comfortable.

Thus, cleaned façade are essential for the public to feel confident while walking in the city. As these places have a great potential to be attraction for the local and visitors.



**Figure 5.25:** Example of graffiti on the façade in Salt city  
<https://omamjo.com/archives/49838>

## (ii) Public amenities and street furniture

Public amenities are resources, conveniences, and facilities that continuously benefit the public for the enjoyment, comfortability and use of the general public. These amenities are measured through the quality of street furniture (design, scale, and location). The facilities include seating shelters, lights and public toilets.

These public facilities are providing comfortable areas for the city users as the city could be as outdoor living rooms that offers places to sit, eat, gather and use public toilet easily for all type of users. In Salt's case, the respondent complained in the open-ended question of unavailable public toilets in the main city areas, in addition, the seating is not available in most of the city areas, its concentrated in plaza area.

Hence Street furniture and public toilets are significant elements in order to create a more comfortable walkable environment. Thus, to enhance walkability, these amenities must be clean, well maintained and accessible to all users are an important element for the urban environment to ensure the comfort character.

### (iii) Cleanliness

Providing clean and tidy urban environment will improve the safety, aesthetics and comfortability for city users, in other hand ensuring urban cleanliness is one of the primary responsibilities of a local authority according to literature for a clean city there should be a litter bins each 200 meters. For Salt case the site observation shows that's this factor should take in account especially in the inner place of the city.

### (iv) Landscape and street planting

The trees contribute to a pleasant and attractive environment, comfortable environment with shading and a gentle breeze in the seating area (Peschardt et al. 2012) and attract more people to the place through their natural sense, it optimizes brain performance and restore our energies. Greenery provides a number of benefits to city residents, including Enhancing productivity, improving air quality Reducing traffic stress and reducing emotional stress (Kaplan, 1992), historically Salt city is known as the fertile grain land.



**Figure 5.26:** street trees in Salt city

The direct visual observation in Salt found that in small shading tree lines down the sidewalk. Creepers, and floral pots in used in the front of residences and shops that offer identity and unique character for the owner.

55% of respondents in the questionnaire were asking for green open parks to improve Salt city.

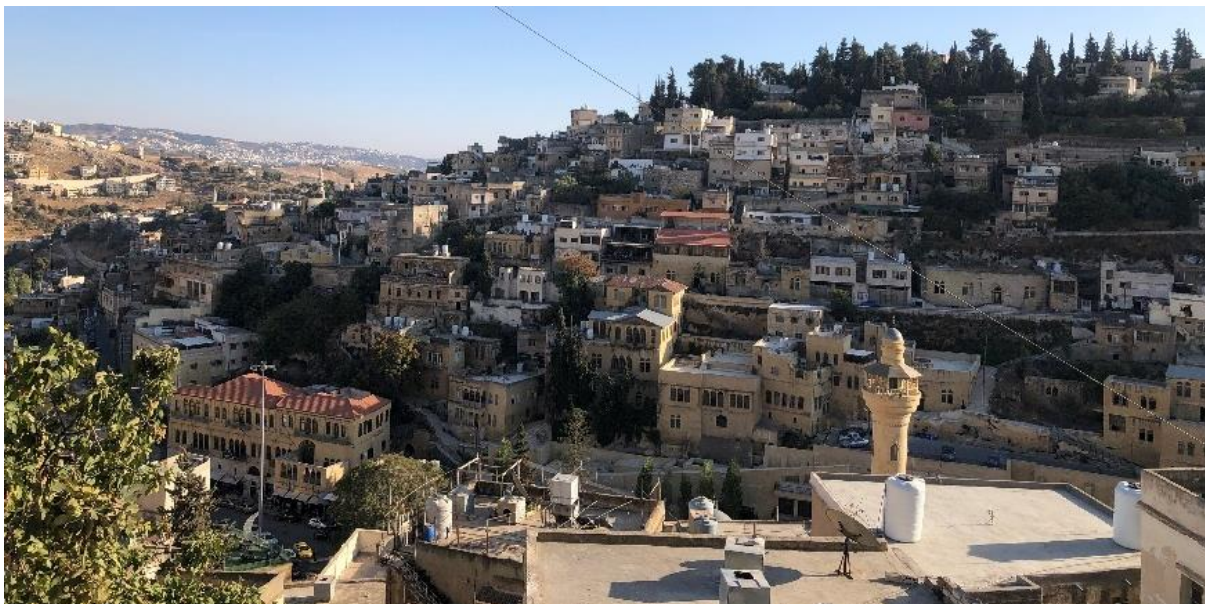
As a result, the location and type of trees play an essential part in providing a pleasing and comfortable atmosphere for city users, as well as adding to the visual attractiveness.

(v) **Human scale**

The size, texture, and articulation of physical elements that correlate to the size and proportions of humans, as well as the speed at which humans walk, is referred to as human scale. Building details, surface texture, street trees, and street furniture are all present and accounted for. For building to be a human scale there are many scenarios, some scholars said that any building taller than four stories is out to be human scale and the other scholar depend on six stories. In both ways, there are many ways to keep a human scale environment even. In high buildings such as providing a wide window display to visually connect the inside of a building, high levels could step back and the lower one spread out, belt course, also using plans plots and emphasizes the articulated architecture and cornices in massive building.

In addition, human scale is connected to the intricacy of paving patterns, amount of street furniture, presence of parked cars, ornamentation of buildings and spacing of windows and doors.

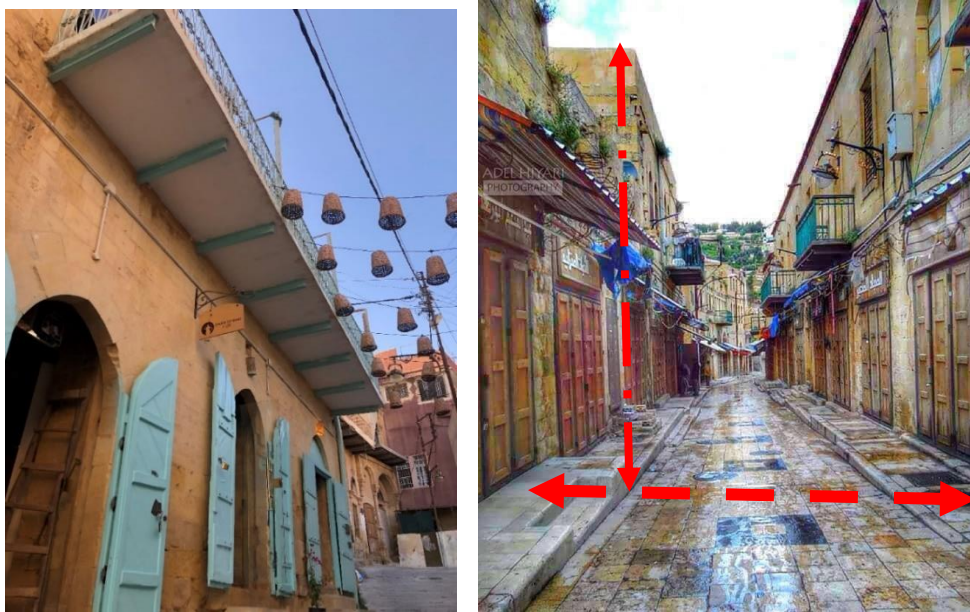
The questionnaire shows that around 65% of the respondents in Salt city felt more comfortable when they walked between buildings with low heights as there in the city. This was supported by the direct site observation as most buildings in Salt city on the eye level are not more than 3 or 4 stories and are connected in harmony with topography (Figure 5.27).



**Figure 5.27:** building in Salt city on the eye level

Also, type of activities, building ornamentation and personalize details in addition to the ratio between building height and width of paths between these buildings in the inner alleys of cities all these elements support the human scale in Salt city as shown in figure below.

Thus, hence human-scale create comfort and a sense of welcoming in the urban environment that had the strongest relationship to walkability in the city that is main element to create livable city.



**Figure 5.28:** (a) Personalized details create human-scale sense (b) the ratio between the width of street and building height create enclosed feeling

### 5.3.2 Safety

A safe pedestrian environment is one of the most important factors to encourage people to walk and create a walkable environment in the city, A safe pedestrian environment allows the pedestrians to walk comfortably and reduces the sense of fear from accidents or crime.

The literature found that feeling safe is related to the basic level of human need as shown in figure below (figure5.29).



**Figure 5.29:** Walking needs (Alfonzo 2005)

In Salt city, the questionnaire shows that 96% of respondents felt safe while walking in Salt city.

<b>Questionnaire</b>	
<b>Yes</b>	316 (96%)
<b>No</b>	14 (4 %)

Feeling safe in Salt city

According to qualitative and quantitative data, the presence of people and activities along main places in the city, clear signage and appropriate amount of lighting is the main physical elements that contribute toward safety in Salt city. Thus, these elements should be taken in account in deign and development cities in order to create safe environment that is essential to create livable city.



**Figure 5.30:** Salt city at night

### **5.3.3 Accessibility**

The result of the study accessibility is divided to three main groups: pedestrian, public transport and private vehicles.

The study suggests the hierarchy of importance for users by offering continuous, connected, visible and well-maintained paths and facilities for each group mentioned.

#### **1. Pedestrians**

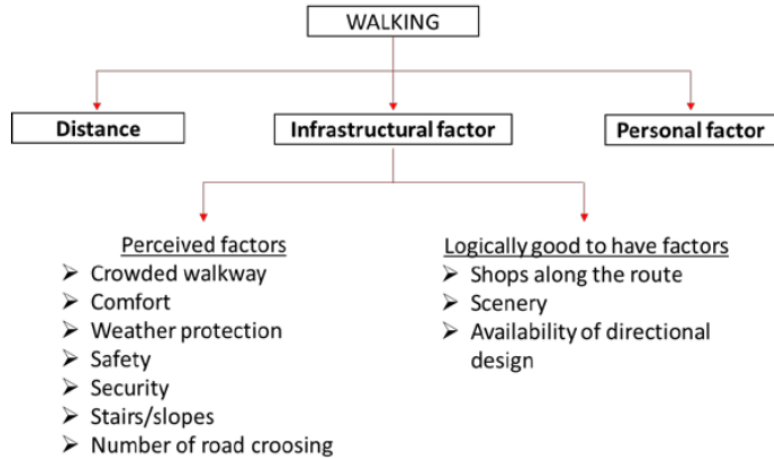
Accessibility offers good connectivity and well-maintained footpaths provide pedestrians easy access to key destinations.

A highly permeable network has many short links, numerous intersections, and minimal dead-ends. The type and density of intersections in the network and excellent connectivity have a significant impact on how people move around actively and seeks to discourage car use by making local trips easier and more pleasant by foot than by car.

Pedestrians must feel safe and comfort therefore the walk must be simultaneously useful, safe, comfortable, and interesting to create walkable accessible place.

Then, accessibility could be mentioned as the most necessary quality of a public setting in offering well-used spaces that increase social interaction.





**Figure 5.31:** Walking factors

The factors that influence people to walk are categorized in three aspects which are distance, infrastructural and personal factors as shown in Figure below. Those factors are affecting people's decision to walk.

For Salt case: The results of the direct site observation indicated that public spaces should give more attention for pedestrian in Salt city are

- Physical structure of the sidewalk of some internal streets being inappropriate for pedestrians;
- Lack of continuous maintained sidewalks;
- No alternate routes for pedestrians

One of the respondents in the questionnaire mentioned '*Pedestrians must be careful while using sidewalk according to narrow unmaintained paths, they should offer good sidewalk in all places in the city not just in the center even we can't find zebra crossing to cross trafficked streets during the day*'.

Only certain areas at the city center have been provided safe and wide walkways. The observations of the physical condition of the walkways in the city show that some areas are pedestrianized areas, and the most are not, as they were unsafe with inconvenient sidewalk conditions, inadequate signage, improper paving and flooring.

This study found that to provide a walkable accessible environment along the city not only in the city center; at the same time the following elements must be taken into account in the planning for cities:

- Continuous and well-maintained pedestrian walkway, and using type of pavement that not slipping with efficient amount of lighting.
- Offer a visual interest (example: wall articulation or flower pots) and a high volume of pedestrian activity in the walking journey.
- Reduce cars speed by using traffic calming techniques mainly in the inner roads , such as:  
(1) using speed bumps (2) using rumble strips (3) changing surface material, (4) narrowing lanes and widening sidewalks, (5) using single lane and (7) using speed camera.





**Figure 5.32:** The differences between sidewalk in the city center and in the internal streets (A,B internal and C city center)

On other hand, The direct site observation shows many stairs on the city that connected areas and neighbors are not safe and inaccessible as showed in figure below:



**Figure 5.33:** Dangerous stairs in Salt city

## 2. Public transport

Public transportation is more cost-effective, safe and efficient way of moving people than the private automobile. Thus, providing good public transportation allows all type of users to reach its different activities and needs.

60% of respondents in the questionnaire complain lacking of well-maintained public transport services and bad facilities with no attention for disable users.

Therefore, this element should be taken into account for design livable accessible cities:

- Availability public transport that's means the public transport services must be well maintained and able for all type of users and within a suitable distance from where they are and where they want to be,
- Bus stops must be placed at an acceptable walking distance (max 400 m) of a bus stop with public function.



**Figure 5.34:** Public transportation in Salt city

### 3. Private vehicle

In the case of Salt city, there is an urgent need to reduce the traffic pressure on the historic cores and the main city activities. Congestion and dense traffic during the day an additional lack of parking and triple car sparking practices leads to serious traffic congestion.

Also, direct visual observation shows that many inner and main street need to be maintained (figure 5.34)

Hence this study suggests:

- Continuous maintenance of streets to achieve safety for city users.
- For parking facilities (i) diversity of types with sufficient number of parking, (ii) suitability of the location of the parking with a walking distance (500m maximum) to any distention inside the street, (iii) the design of the walkway to the parking must be paved, well maintained and has sufficient lighting to ensure safety and comfort to the street users.



**Figure 5.35:** Unmaintained Street in Salt city cause dangerous accident

Thus, walkability is essential for a sustainable livable city. Cities that are walkable have public corridors and public transportation so that people can live without using their own cars. By providing a pedestrian network and a public transit system that is accessible, visitors and city users can walk through a city and have an enjoyable, comfortable experience that contributes to livability. Walkable places are safe and have short comfort distances to places they serve. It provides proximity, connectivity and accessibility for pedestrian to reach their destinations.

## **5.4 Conclusion**

The findings in this chapter have been identified according to the objectives of the study, namely, determining the physical elements that are connected with walkability and imageability as criteria for the livable city in Jordan. The main contribution of this study demonstrates that the urban quality that connected with imageability are attractive, historical identity and legibility. Moreover, the urban quality that are connected with walkability are accessibility, comfortable and safety. This finding can be used as a guideline for the planner in order to design a livable city.

## Chapter VI

### CONCLUSION

#### 6.1 Introduction

This chapter summarized the result of the analysis, and presents the recommendations and a general conclusion to the thesis.

The chapter contains three main sections. The first section presents the research statement. The second section is the emergent concept achieved from the findings. This is followed by suggestions for further research, research contribution and recommendations in regards to planning and urban design implication of the research.

#### 6.2 Research Statement

According to Moughtin, 2003; The main goal of cities is to create a context for people from very diverse backgrounds to engage and live with each other. On the other hand, livability is the physical quality of cities that is required to make a great city and to make the city fit to live. (Jacobs, 1996); hence this research aimed to find the criteria of livable cities depending on the traditional city as a case study, by connecting physical elements that shaped cities with urban qualities to create a guideline for developing and designing livable cities. This research categorized these criteria under two main factors; walkability & imageability, each factor has a sub-factor as in the following section.

#### 6.3 Research Findings

The main findings of this research were provided based on the work that has been done and the result founded summarized as follows:

- I have investigated the main criteria for a livable successful city from the literature and I found that the main criteria can be categorized under two main factors which are

imageability and walkability. In addition, I found that both factors should be studied in detail to be able to provide proper guidance for the planners as explained below.

- I have investigated the appropriate research methods to be used in my study and I found that a mixed-method approach (Questionnaire, Historical Reviews and Direct Site Observations) is very suitable for gathering accurate and robust data related to my research.
- I have determined the physical elements that are connected with imageability as criteria for a livable city and I found that the main urban qualities related to imageability are attractiveness, identity and legibility. In addition, I found that each factor contains the sub-physical elements as explained in table 6.1, table 6.2 and table 6.3:

**Table 6.1:** The physical elements of attractiveness

<b>Attractiveness</b>	
I have investigated the physical elements that contribute to the attractive character connected with the city image and I found that the main physical elements under attractiveness are: (i) building material, (ii) façade design and (iii) dealing with topography and (iv) variety of activities explained below. In addition, I found that these factors need to be considered in planning and designing attractive imageable cities.	
<b>i. Building material</b>	I have investigated this factor and I found that building materials (adapt to climate, easy to find and respect the place’s character) should be considered in the design and development of cities since the beauty of building materials reflects the local identity and uniqueness are important in contributing to the imageability of cities.
<b>ii. Facade design</b>	I have investigated this factor and I found that the façade design that respects the place’s character and reflects the local identity should be considered in the design and development of the cities to save the city’s imageability as they are important in contributing to the city character and local environment; which create attractive and interesting environments.
<b>iii. Topography</b>	I have studied the topography of the city and I found that the respect the city’s topography and dealing in harmony with it gives the city special character and unique views that contribute to the imageability of the city.
<b>iv. Variety of activities</b>	I have investigated the variation of activities and I found that the variety of activities is a main factor that attracts users to the cities, and should be considered in order to create imageable livable city.



**Table 6.2:** The physical elements of identity

<b>Identity</b>	
I have investigated the physical elements that contribute to the identity character connected with the city image and I found that the main physical elements under identity are (i) Historical significance, (ii) Skyline and (iii) Local activities as explained below. In addition, I found that these factors need to be considered in planning and designing imageable cities with their special identity.	
<b>i. Historical significance</b>	I have studied this factor and I have found that to create an imageable livable city the historical significance of city must be respected and reserved to maintain the city's character.
<b>ii. Skyline</b>	I have investigated the skyline of the city and I found that the in order to save the city identity and create a livable city this factor should be respected as it reflects social values, religion and identity of city.
<b>iii. Local activities</b>	I investigated the local activities in association with the city character and I found that the local activities must be maintained and emphasized by creating places for these activities in order to create a livable city.

**Table 6.3:** The physical elements of legibility

<b>Legibility</b>
I have investigated the legible factor and I have found that the presence of city elements (landmark, path, district, nodes and edges) had influenced the clarity of the city and it is important in contributing to the legibility consideration of the physical elements that connected with each element as explained in chapter 5 that enhance the visual quality of the city and make it clearer and livable.

- I have determined the physical elements that are connected with walkability as criteria for a livable city and I found that the main urban qualities related to walkability are comfort, safety and accessibility. In addition, I found that each factor contains the sub-physical elements as explained in table 6.4, table 6.5 and table 6.6:

**Table 6.4:** The physical elements of comfort

<b>Comfort</b>	
<p>I have investigated the physical elements that contribute to the comfort character connected that with the walkability, I found that the main physical elements under comfort are: (i) building condition, (ii) public amenities and street furniture (iii) landscape and public parks (iv) cleanness and (v) human scale explained below. In addition, I found that these factors need to be considered in planning and designing comfortable walkable cities.</p>	
<p><b>i. Building condition</b></p>	<p>I have investigated this factor and I found that well-maintained building and finding solutions for abandoned buildings by conserving them or adaptive re-use, converting heritage buildings into new or compatible uses, can assist in saving them, benefit the local economy and improve the quality life for local residents that create a comfortable environment in the city.</p>
<p><b>ii. Public amenities &amp; street furniture</b></p>	<p>I have investigated this factor and I found that street furniture and public toilets are significant elements in order to create a comfortable walkable environment. Thus, to enhance walkability, these amenities must be clean, well maintained and accessible to all users.</p>
<p><b>iii. Landscaping and public parks</b></p>	<p>I have investigated this factor and I found that location and type of trees play an essential part in providing a pleasing and comfortable atmosphere for city users. In addition to create comfortable city need to provide a public park for each neighborhood.</p>
<p><b>iv. Cleanness</b></p>	<p>I have investigated the cleanness in the city and I have found that cleaned façades and public spaces are essential for the public to feel confident and comfortable while walking in the city. In the other hand the authority should provide a litter bins each 200 meters.</p>
<p><b>v. Human Scale</b></p>	<p>I have investigated this factor and I have found that maintain the human scale in designing and developing walkable cities is essential to create a comfortable environment, hence these elements can provide a human scale environment (1) Building decoration and ornamentation (2) Plantings and tree’s branches (3) Small lettering signs.</p>

**Table 6.5:** The physical elements of safety

<b>Safety</b>
I have investigated the safety factor and I have found that the physical elements that contribute to the safety character and create a walkable environment are (i) Presence of people and activities along with main places in the city, (ii) Clear signage and (iii) an appropriate amount of lighting.

**Table 6.6:** The physical elements of accessibility

<b>Accessibility</b>
I have investigated the accessibility factor as a main factor to create a walkable city, I have found that the physical elements that contribute to accessibility factor are (i) Quality pedestrian walkways, linkages in the city Centre and urban areas (ii) the quality of public transportation facilities and finally (iii) road maintenance and parking facilities for vehicles. These elements need to be considered in future guidelines and policies for planning a livable accessible city.

#### **6.4 Research Contribution**

This study contributes to the field of criteria for liveable cities based on heritage sites. The main contributions can be categorized under the two objectives. The first objective contains two contributions as follows:

1. Local building materials and façade design that adapt to climate and respect the place's character should be considered in the design and development of cities in order to create an attractive imageable city.
2. Local activities, city skyline and historical significance are the main elements that define and create the city's identity. These elements should be preserved in any development or design of new cities in order to create an imageable livable city.

In addition, the second objective contains six contributions as follows:

1. To create a comfortable walkable city this study suggests finding a solution for abandoned buildings in old cities such as Salt city. This can be achieved by conserving or adaptive re-use including accommodation with authentic characteristics. Saving these buildings benefits the local economy and improves the quality of life for local residents. Thus, creating livable and healthier cities.
2. Street furniture and public amenities are significant elements in order to create a comfortable walkable environment. Hence, these amenities must be clean, well maintained and accessible to all users.
3. Providing public parks for each neighborhood that have a playground and shaded seating areas are basic units in designing a livable city. They serve as social and recreational focal areas for locals that create a livable community.
4. The location and type of trees play an essential part in providing a pleasing attractive and comfortable atmosphere for street users.
5. Maintain the human-scale design in old cities creates a comfortable and a sense of welcome in the urban environment. Hence, enhancing the walkability in the city.
6. The accessible city factor was divided into three sub-factors that should be considered while designing a livable city summarized as follows:
  - i. Accessibility for pedestrians: Continuous and well-maintained pedestrian walkway, using a type of pavement that prevents slipping and provide an efficient amount of lighting. In addition, offering visual interest and a high volume of pedestrian activity in the walking journey. Finally, reducing cars' speed by using traffic calming techniques mainly on the inner roads.
  - ii. Accessibility and Availability of public transportation: Public transport services must be able to use by all people and within a suitable distance from where they are and where they want to be. Hence, bus stops must be placed at an acceptable walking distance (max 400m) of a bus stop with public functions and attractions.
  - iii. Accessibility for vehicles: Continuous maintenance of streets is a must to achieve safety. In addition, diverse types with a sufficient number of parking near the city attraction must be available within a walking distance (maximum 500m). Finally,

the design of the walkway to the parking must be paved, well maintained and has sufficient lighting to ensure safety and comfort to the street users.

## **6.5 Research Implications**

This research contributes to serving as a general guide for developing and designing livable cities from the aspect of physical elements that are connected with urban quality in the context of urban space in Jordan, where the heritage city of Salt is taken as a model as its design meets the needs of the local community.

The findings of this study help the planners by guiding them in developing a livable city by saving its character and meeting the needs of local community as this study takes the local views into account by using questionnaires as their views are important in shaping a successful livable city and enhancing the public environment through tradition and legacy conservation.

Lastly, this research used qualitative and quantitative data to provide guidelines for livable city design and help policymakers understand the problems of cities today that play important roles in attracting more users and activities to the city. Hence, this guideline can help the policymakers to design and improve more livable attractive and comfortable cities and fill the gap between such policies and local needs in Jordan.

In conclusion, a livable city affects the quality of life of every individual in the city as it affects behavior patterns as well. Hence, the need for the involvement of all city components in the design of a livable city will contribute positively to the environment and give city users a belonging feeling to their city.

## **6.6 Conclusion**

In this chapter, the criteria and contributions were enumerated including the research statement, research findings, contributions and implications to theory and practice in the field of criteria for liveable cities. The chapter also described how the study's objectives were met in detail.

A details literature review was undertaken to identify the main criteria which affect designing a liveable successful city. The results assist in building a theoretical framework which was validated using direct site observation and a questionnaire. The questionnaire and observations assist in determining the physical elements that are connected with walkability and imageability as criteria for a livable city. Overall, the chapter provided an overview of the study processes undergone and the outcomes obtained.

## REFERENCES

- Abaszadeh, F. (2011). *Characterization of Street Physical Elements in Iran*. Universiti Teknologi Malaysia.
- Abdul Rahman, N., Shamsuddin, S., & Ghani, I. (2015). What Makes People Use the Street?: Towards a Liveable Urban Environment in Kuala Lumpur City Centre. *Procedia - Social and Behavioral Sciences*, 170, 624–632. <https://doi.org/10.1016/j.sbspro.2015.01.064>
- Adkins, A., Dill, J., Luhr, G., & Neal, M. (2012). Unpacking walkability: Testing the influence of urban design features on perceptions of walking environment attractiveness. *Journal of Urban Design*, 17(4), 499–510.
- Al-Shawabkeh, R. (2015). *The role of sustainable urban design principles in delivering high density mixed use schemes in Jordan : Using Amman as a case study Rami Al-Shawabkeh A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy Th. December.*
- Al-Zoabi, A. (2004). The influence of building attributes on residents' "images of the past" in the architecture of salt city, Jordan. *International Journal of Heritage Studies*, 10(3), 253–275. <https://doi.org/10.1080/1352725042000234442>
- Almatarneh, R. (2014). Analysis of Activity Patterns and Design Features Relationships in Urban Public Spaces : A Case Study of the Old City Of As-Salt. *International Journal of Computational Engineering Research*, 4(2), 34–51.
- Almatarneh, R. T. (2013a). Energy-Efficient Building Design: towards climate-responsive architecture - A case study of As-Salt, Jordan. *Advanced Research in Engineering Sciences*, 1(2), 2347–4130.
- Almatarneh, R. T. (2013b). Sustainability lessons learnt from traditional architecture: a case study of the old city of As-Salt, Jordan. *IOSR Journal Of Environmental Science, Toxicology And Food Technology (IOSR-JESTFT)*, 5(3), 100–109. [https://www.academia.edu/5333384/Sustainability\\_lessons\\_learned\\_from\\_traditional\\_architecture\\_a\\_case\\_study\\_of\\_the\\_old\\_city\\_of\\_As-Salt\\_Jordan](https://www.academia.edu/5333384/Sustainability_lessons_learned_from_traditional_architecture_a_case_study_of_the_old_city_of_As-Salt_Jordan)
- Ameli, S. H., Hamidi, S., Garfinkel-Castro, A., & Ewing, R. (2015). Do Better Urban Design Qualities Lead to More Walking in Salt Lake City, Utah? *Journal of Urban Design*, 20(March), 393–410. <https://doi.org/10.1080/13574809.2015.1041894>
- Askari, A. H. (2014). *Assessment of Urban Public Spaces : Cases of Kuala Lumpur City Center Thesis Submitted in Fulfilment of the Requirement.*
- Atiyat, D., Bataineh, R., Matar, A., Jordan, A., & Jordan, A. (2015). Architectural Building Treatments in the Mediterranean Climate from an Environmental Perspective; Case study of Amman City - Jordan. *liste*, 7(3), 90–98. <https://doi.org/10.4172/2168-9717.1000151>
- Azadiah. (2015). Jurnal Teknologi. *Jurnal Teknologi*, 75, 101–105.
- BENGHADBANE, F., & KHREIS, S. (2021). The urban profiles of peace tourism in arab cities: Opportunities for change towards sustainability. case study: As-salt (jordan) and constantine (algeria) cities. *Geojournal of Tourism and Geosites*, 38(4), 1175–1188. <https://doi.org/10.30892/gtg.38424-758>
- Buckley, A. H. (2012). *understanding human scale and the importance of its relationship with enclosure*. Victoria University of Wellington in.
- Carmona, M. (2010). Contemporary Public Space: Critique and Classification, Part One: Critique. *Journal*

of *Urban Design*, 15(May 2014), 123–148. <https://doi.org/10.1080/13574800903435651>

- Carmona, M., Heath, T., Oc, T., Tiesdell, S., & Carmona, M. (2012). Public Places - Urban Spaces. In *Public Places - Urban Spaces*. <https://doi.org/10.4324/9780080515427>
- Çelik, A., Yaman, H., Turan, S., Kara, A., Kara, F., Zhu, B., Qu, X., Tao, Y., Zhu, Z., Dhokia, V., Nassehi, A., Newman, S. T., Zheng, L., Neville, A., Gledhill, A., Johnston, D., Zhang, H., Xu, J. J., Wang, G., ... Dutta, D. (2018). No 主観的健康感を中心とした在宅高齢者における健康関連指標に関する共分散構造分析Title. In *Journal of Materials Processing Technology* (Vol. 1, Issue 1). <http://dx.doi.org/10.1016/j.cirp.2016.06.001><http://dx.doi.org/10.1016/j.powtec.2016.12.055><https://doi.org/10.1016/j.ijfatigue.2019.02.006><https://doi.org/10.1016/j.matlet.2019.04.024><https://doi.org/10.1016/j.matlet.2019.127252><http://dx.doi.org/10.1016/j.cirp.2016.06.001>
- Charmaz, K. (2006). *Constructing grounded theory: A practical guide through qualitative research*. Sage Publications Ltd, London.
- Choi, E. (2012). *Walkability as an Urban Design Problem: Understanding the activity of walking in the urban environment*. KTH Royal Institute of Technology.
- Creswell, J. W. (2014). *Research design: qualitative, quantitative, and mixed methods approaches*.
- De Vaus, D. (n.d.). *Analyzing social science data: 50 key problems in data analysis*. sage.
- De Vaus, David. (2016). What Is a Survey? *Research Methods for Postgraduates*, 202.
- Elsheshtawy, Y. (2013). Where the sidewalk ends : Informal street corner encounters in Dubai. *Cities*, 31, 382–393. <https://doi.org/10.1016/j.cities.2012.12.001>
- Ewing, R., & Bartholomew, K. (2013). *Pedestrian & Transit-Oriented Design*.
- Ewing, R., Handy, S., Brownson, R. C., Clemente, O., & Winston, E. (2006). Identifying and Measuring Urban Design Qualities Related to Walkability. *Journal of Physical Activity and Health*, 3, 223–240.
- Fakhouri, L. A., & Haddad, N. A. (2017). Aspects of the architectural and urban heritage: From registers to conservation for adaptive and modern use at the historic cores of salt and Irbid, Jordan. *Archnet-IJAR*, 11(2), 190–218. <https://doi.org/10.26687/archnet-ijar.v11i2.1256>
- Fakhoury, L., & Haddad, N. (2014). *Rehabilitation Manual for As Salt (Jordan)*. <http://www.rehabimed.net/2015/11/rehabilitation-manual-for-as-salt-jordan/>[https://issuu.com/asociacionrehabimed/docs/manual\\_as\\_salt](https://issuu.com/asociacionrehabimed/docs/manual_as_salt)
- Gebel, K., King, L., Bauman, A., Vita, P., Gill, T., Rigby, A., & Capon, A. (2005). *Creating Healthy Environments-a review of links between the physical environment, physical activity and obesity*. NSW Centre for Overweight and Obesity, NSW Centre for Physical Activity and Health, NSW Centre for Public Health Nutrition.
- Hajmirsadeghi, reihaneh sadat. (2015). *Design factors that influence the effective use of public square for social interaction in iran*. 317.
- Heylen, K. (2006). Liveability in social housing: three case studies in Flanders. In *ENHR Conference'Housing in an Expanding Europe*.
- Ja'afar, N. H., Sulaiman, A. B., & Shamsuddin, S. (2013). Landscape Features and Traditional Streets Character in Malaysia. *Asian Journal of Environment Behaviour Studies (AjE-Bs)*, 4, Number(2011).



- Ja'afar, N., & Usman, I. (2009). Physical and transportation elements of traditional street in Malaysia. *European Journal of Social Sciences*, 9(4), 669–676. <http://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:Physical+and+Transportation+Elements+of+Traditional+Street+in+Malaysia#0>
- Jacobs, A. B. (1993). Great streets. *ACCESS Magazine*, 1(3).
- Johansson, M., Sternudd, C., & Kärrholm, M. (2016). Perceived urban design qualities and affective experiences of walking. *Journal of Urban Design*, 4809(February). <https://doi.org/10.1080/13574809.2015.1133225>
- Jordan, A.-. (2015). Transformation of the urban character of Arab Cities since the late last century. In *Proceedings of the International Conference held at German Jordanian University* (Issue September). [https://www.researchgate.net/profile/Merham\\_Keleg/publication/284284620\\_Understanding\\_people's\\_needs\\_for\\_vivid\\_public\\_realm\\_as\\_a\\_key\\_towards\\_enhancing\\_modern\\_Arab\\_cities'\\_identity/links/5650d51008ae1ef92972118c/Understanding-peoples-needs-for-vivid-public](https://www.researchgate.net/profile/Merham_Keleg/publication/284284620_Understanding_people's_needs_for_vivid_public_realm_as_a_key_towards_enhancing_modern_Arab_cities'_identity/links/5650d51008ae1ef92972118c/Understanding-peoples-needs-for-vivid-public)
- Jutla, R. S. (2000). Tourism Geographies : An International Journal of Tourism Space , Place and Environment Visual image of the city : Tourists ' versus residents ' perception of Simla , a hill station in northern India. *Place and Environment*, 2(4), 404–420.
- Kalin, A., & Yilmaz, D. (2012). A study on visibility analysis of urban landmarks: The case of hagia sophia (ayasofya) in trabzon. *Metu Journal of the Faculty of Architecture*, 29(2005), 241–271. <https://doi.org/10.4305/METU.JFA.2012.1.14>
- Karimimoshaver, M., & Winkemann, P. (2018). A framework for assessing tall buildings' impact on the city skyline: Aesthetic, visibility, and meaning dimensions. *Environmental Impact Assessment Review*, 73(July), 164–176. <https://doi.org/10.1016/j.eiar.2018.08.007>
- Keleg, E. M. M., Salheen, M. A., & Abdellatif, M. (2015). Understanding people's needs for a vivid public realm as a key step towards enhancing the modern Arab cities' identity. *Transformation of the Urban Character of Arab Cities since the Late Last Century*, 201, 201.
- khleifat, nael. (1984). *Al-Salt in history: Loci and Human being. Al-Majala Al-Thaqaafieh*.
- Krupat, E. (1985). *People in Cities: The Urban Environment and Its Effects*. Cambridge University Press.
- Kum, T. L., & Ujang, N. (2012). THE APPLICATION OF MENTAL MAPPING TECHNIQUE IN IDENTIFYING THE LEGIBLE ELEMENTS WITHIN HISTORICAL DISTRICT OF KUALA LUMPUR CITY CENTRE. *Alam Cipta*, 5(June), 55–62.
- Lennard, S. H. C., Lennard, H. L., & Bert, P. (2008). *Livable Cities: People and Places: Social and Design Principles for the Future of the City*. Center for Urban Well-Being.
- Lesan, M. (2015). *Public Streets for Multicultural Use: Exploring the Relationship between Cultural Background, Built Environment, and Social Behaviour*. Victoria University of Wellington.
- Mahmoudi, M., & Ahmad, F. (2015). Determinants of livable streets in Malaysia: A study of physical attributes of two streets in Kuala Lumpur. *URBAN DESIGN International*, 20(2), 1–17. <https://doi.org/10.1057/udi.2015.3>
- Marie, I. (2013). Perception of darkening of stone façades and the need for cleaning. *International Journal of Sustainable Built Environment*, 2(1), 65–72. <https://doi.org/10.1016/j.ijsbe.2013.09.001>

- Mehta, V. (2007). Lively Streets: Determining Environmental Characteristics to Support Social Behavior. *Journal of Planning Education and Research*, 27, 165–187. <https://doi.org/10.1177/0739456X07307947>
- Mohd, W., Ibrahim, W., Samuel, D., Alex, A., & Manan, W. A. (2014). *Walkability Spatial Mapping Using Analytical Hierarchy Process ( AHP ) in Northeast Penang . 1*, 641–646.
- Montgomery, J. (1998). Making a city: Urbanity, vitality and urban design. *Journal of Urban Design*, 3(April 2014), 93–116. <https://doi.org/10.1080/13574809808724418>
- Motloch, J. L. (2000). *Introduction to landscape design*. John Wiley & Sons.
- Mushtaha, E., Shamsuzzaman, M., Abdouli, S. A., Hamdan, S., & Soares, T. G. (2020). Application of the analytic hierarchy process to developing sustainability criteria and assessing heritage and modern buildings in the UAE. *Architectural Engineering and Design Management*, 16(5), 329–355. <https://doi.org/10.1080/17452007.2019.1693335>
- Paper, C., Jai, T., Jai, T., & Jai, T. (2016). *Exploring the Imageability of Urban Form in Exploring the Imageability of Urban Form in Walled City Jaipur. April*. <https://doi.org/10.5176/2301-394X>
- Pasaogullari, N., & Doratli, N. (2004). Measuring accessibility and utilization of public spaces in Famagusta. *Cities*, 21(3), 225–232. <https://doi.org/10.1016/j.cities.2004.03.003>
- Peschardt, K. K., Schipperijn, J., & Stigsdotter, U. K. (2012). Use of small public urban green spaces (SPUGS). *Urban Forestry & Urban Greening*, 11(3), 235–244.
- PPS project for public space. (2000). *How to Turn a Place Around: A Handbook for Creating Successful Public Spaces*.
- Qtiashat, D., Makhmreh, Z., Taleb, H. A., & Khlaifat, A. (2018). Urban Land Use Pattern and Road Network Characteristics Using GIS in Al Salt City, Jordan. *Modern Applied Science*, 12(4), 128. <https://doi.org/10.5539/mas.v12n4p128>
- Rahman, N. A., Shamsuddin, S., & Heath, T. (2012). PEOPLES' CHOICES AnD BEHAVIOUR In URBAN STREETS ? *International Conference on Innovation and Technology for Sustainable Built Environment 2012 (ICITSBE 2012)*.
- Rehan, R. M. (2013). Sustainable streetscape as an effective tool in sustainable urban design. *HBRC Journal*, 9(2), 173–186. <https://doi.org/10.1016/j.hbrcj.2013.03.001>
- Salzano, E. (1997). Seven aims for the livable city." Making Cities Livable. *Livable—Wege Zur Menschlichen Stadt; Lennard, SHC, von Ungern-Sternberg,*.
- Schmitz, Adrienne, and J. S. (2006). *Creating walkable places: compact mixed-use solutions*.
- Shamsuddin, S. (1997). IDENTITY OF PLACE A Case Study Of Kuantan town centre, Malaysia. *THESIS, October*.
- Shamsuddin, S. (2011). *Townscape Revisited: Unravelling the character of the historic townscape in Malaysia*. Penerbit UTM Press.
- Shamsuddin, S., Abu Hassan, N. R., & Ilani Bilyamin, S. F. (2018). Walkable in Order to be Liveable. *Journal of ASIAN Behavioural Studies*, 3(7), 165. <https://doi.org/10.21834/jabs.v3i7.269>
- Shamsuddin, S., & Sulaiman, A. B. (2002). *The role of streets in influencing the sense of place of Malaysian*

*towns and cities*. Universiti Teknologi Malaysia.

- Shamsuddin, S., Sulaiman, A. B., & Amat, R. C. (2012). Urban Landscape Factors That Influenced the Character of George Town, Penang Unesco World Heritage Site. *Procedia - Social and Behavioral Sciences*, 50(July), 238–253. <https://doi.org/10.1016/j.sbspro.2012.08.031>
- Singapore, C. for L. C. (2014). *Liveable sustainable cities* (S. National Library Board (ed.)). Civil Service College.
- Smith, D. M. (1979). *The identification of problems in cities: applications of social indicators*.
- Smith, S. J. (1989). *ousing and health: a review and research agenda*.
- Suliman, M. R., Abu-Hammad, N. O., Al-Shawabkeh, A. F., Abu-Hamattah, Z. S. H., & Al-Azab, T. A. (2015). A Quantitative Approach to Estimate the Damage Inflicted by Traffic Pollution on Historic Buildings in Al-Salt City, Jordan. *Civil and Environmental Research*, 7(1), 1–11.
- Tal, G., & Handy, S. (2012). Measuring Nonmotorized Accessibility and Connectivity in a Robust Pedestrian Network. *Transportation Research Record: Journal of the Transportation Research Board*, 2299, 48–56. <https://doi.org/10.3141/2299-06>
- Tibbalds, F. (1992). *Making people-friendly towns: Improving the public environment in towns and cities*. Taylor & Francis.
- Trillo, C., Aburamadan, R., Udejaja, C., Moustaka, A., Baffour, K. G., & Makore, B. C. N. (2020). Enhancing heritage and traditional architecture conservation through digital technologies. Developing a digital conservation handbook for As-Salt, Jordan. *International Symposium: New Metropolitan Perspectives*, (pp. 211-219).
- Tukiman, I., Shahimi, S. S., & 3, M. R. M. H. (2019). *People ' s Experiences in Relation to the City Liveliness of Urban Heritage Trail PEOPLE ' S EXPERIENCES IN RELATION TO THE CITY LIVELINESS*. January. <https://doi.org/10.20944/preprints201901.0322.v1>
- Ujang, N. (2012). *Place Attachment and Attitude Towards Changes and Improvement of the Traditional Shopping Streets in*. 1–16.
- Vasilevska, L., & others. (2012). *Towards more user-friendly public open space in low-rise high density housing areas*.
- Wheeler, S. M. (2008). The Evolution of Built Landscapes in Metropolitan Regions. *Journal of Planning Education and Research*, 27, 400–416. <https://doi.org/10.1177/0739456X08315889>
- Yasser Elsheshtawy. (2004). *An urban kaleidoscope in a globalizing world*.
- Yassin, H. H. (2019). Livable city: An approach to pedestrianization through tactical urbanism. *Alexandria Engineering Journal*, 58(1), 251–259. <https://doi.org/10.1016/j.aej.2019.02.005>
- Zaidin, N., Hussain, M. R. M., Tukiman, I., & Shahli, M. F. (2015). *American Transactions on Place Attachment in Relation to Urban Street Vitality*. 4(4), 219–230.
- Zaidin, N., Ramzi, M., Hussain, M., Tukiman, I., & Shahli, F. M. (2015). *Place Attachment in Relation to Urban Street Vitality Place Attachment in Relation to Urban Street Vitality*. AUGUST.
- Zakaria, J., & Ujang, N. (2015). Comfort of walking in the city center of Kuala Lumpur. *Procedia-Social and Behavioral Sciences*, 170, 642–652.

<https://www.bbc.com/travel/article/20211213-as-salt-the-middle-east-city-of-tolerance-and-generosity>

<https://www.dreamstime.com/skyline-salt-town-skyline-salt-town-jordan-image187544061>

<https://alrai.com/article/10449966>

<http://www.jebalalbalqa.com/loadcontrol.aspx?pg=7&si=1&ni=8040&md=printnews>

<https://whc.unesco.org/en/list/689>

[\[salt.com/en/Experinces/51#:~:text=Many%20residents%20gather%20for%20prayer,made%20of%20mud%20and%20straw.&text=From%20the%20mosque's%20glorious%20minaret,prayer%20resonate%20across%20the%20city\]\(http://www.visitas-salt.com/en/Experinces/51#:~:text=Many%20residents%20gather%20for%20prayer,made%20of%20mud%20and%20straw.&text=From%20the%20mosque's%20glorious%20minaret,prayer%20resonate%20across%20the%20city\)](http://www.visitas-</a></p></div><div data-bbox=)

# Appendix

## Questionnaire

### Social demographic

#### 1. Gender

Male

Female

#### 2. Age

1 - 7 to 12 years old

2 - 13 to 17 years old

3 - 18 to 25 years old

4 - 26 to 35 years old

5 - 36 to 45 years old

6 - 46 to 55 years old

7 - 56 to 65 years old

8 - Above 65 years old

#### 3. Occupation

1 - Unemployed

2 - Self-employed

3 - Retired/Pensioner

4 - Student

5 - Governmental employee

6 - private employee

7 - Factory worker

8 -Housewife

9- Others (please state)

How often do you visit Salt city? (Frequency of visit)

- Living there
- Every day
- Twice a week
- Every other day
- Other...

## Imageability

### 1a. Do you think salt city (city center) is a beautiful place?

Yes (go to the next question)

No (state reason then skip the next question)

.....)

### 1 b. why do you think it's a beautiful place? (You can tick more than one answer)

1. building material

2. Type of activity (shopping, cafes, cultural activities)

3. Paving material

4-Historical views

5.

Type vegetation (pot plantation)

6. Beautiful sceneries

7. The scene of street frontage

7. Others (please state).....

### 3 a. Name a building that you think it's attractive in salt city center or nearby?

.....  
.....  
.....

**2 b. Why is it attractive to you? (You can tick more than one answer)**

- 1. material used in building
- 2. Condition of building
- 3. Texture of building material
- 4. Building Age
- 5- decorations/ornamentation 3
- 7. roof form building use
- 8. Others (please state).....

**3. Mention first thing\building comes into your mind when you hear Salt for you to describe the uniqueness of salt? Why?**

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- 1. Building function (e.g. residential, grocery shop, restaurant, book shop ...)
- 2. Privilege/unique building façade
- 3. Special architectural elements (e.g. pavement)
- 4. Presence of building near the street
- 5. Building Signage
- 6. Vegetation
- 7. Presence of activity near the street
- 8. Presence of smell from activity (e.g. Bakery)
- 9. Others {please state}

**4. Name 3 streets\stairway that you know in the town center.**

.....

**5a. Which street do you find to be most distinctive in Salt city center?**

..... 22.

**5b. Why is it unique to you?**

- 1- the name of the street
- 2- size of the street.
- 3- length of the street.
- 4- activities occurring along the street.
- 5- tree plantings and landscaping on the street
- 6- row of interesting buildings lining the street
- 7- presence of shops on the street. 8-
- 8- . shape of the street.
- 9- interesting view and scenery.
- 10- 11- Others {please state}

**Walkability & accessibility**

6a. **Do you feel comfortable while walking in salt city center?**

Yes (go to next question: .....)

No (state reason: .....)

6b. **If yes why?** (You can tick more than one answer)

- 1- Low Height of building
- 2- Most of the shop/services are nearby
- 3- Building condition (e.g. degree of cleanness, maintenance)
- 4- Type of building material surface (e.g.: stone texture)
- 5- Architectural style with traditional local identity
- 6- Interesting building frontage
- 7- Type of vegetation (e.g. flowering pots in front of buildings, shading trees)
- 8- Continue pedestrian path between car parking and place destination
- 9- Variety places and activates (e.g. Food stall, supermarket)
- 10- Suitable for all type of users (disable, old, strolls.....)
- 11- Others (please state.....)

7a. **Do you feel safe while walking on salt city center ?**

Yes (go to next question)

No (state reason:

.....)

7b. **Why?** (You can tick more than one answer)

- 1. Type of pavement is not slipping
- 2. The condition of the pavement is well maintained
- 3. Zebra crossing facilities allow crossing the street safety
- 4. Presence of clear signage as the direction
- 5. Appropriate amount of lighting during the night
- 6. Presence of people along street
- 7. Presence of activity along the street
- 8. Others (please state.....)

8a. **what is best way to travel inside salt city?** (You can tick more than one answer)

- 1. Walking
- 2. Cars/ van
- 3. Taxi
- 4. Bus
- 6. Others (specify) .....

8 b. **Why?** (You can tick more than one answer)

- 1. Faster
- 2. Cheaper
- 3. No traffic jam \ the speed of the car is slow
- 4. The pedestrian walkway is continuing
- 5. The width of the pedestrian walkway is not appropriate
- 6. Variety of access from a different location

- 7. The width of street
- 8. Public transit is nearby.
- 9. Good service of public transport
- 10. There is car parking facilities.
- 11. near car parking to the destination point
- 12. The continuity of pedestrian walkway from
- 13. Others (specify) ..... parking area to the place.

**9. . What need to be improved in Salt city to make it attractive?**

.....