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**TECHNICAL UNIVERSITY**  
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THE FACULTY OF ARCHITECTURE AND URBANISM  
ARCHITECTURE DEPARTEMENT

# **PhD THESIS**

## **- ABSTRACT -**

### **Assessing the Quality of Life in Public Affordable Housing Projects in Amman, the Capital of the Hashemite Kingdom of Jordan**

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## **1. Introduction**

Housing is a basic human right and one of the physiological and psychological needs in Maslow's hierarchy. It can affect how people get around, choose jobs, organize their families, and make friends. Given the importance of housing in an individual's life, research has explored the impact of housing on occupants' quality of life.

Governments and state institutions play a major role in securing housing and addressing the escalating demand for housing. This is particularly essential in a country such as Jordan, where rapid population expansion and waves of forced migration from neighboring nations have intensified the need for housing. Over the previous 22 years, Jordan's population has increased from five million in 2000 to more than 11.2 million today. In 2014, the annual population growth rate approached 12.5%. Projections indicate that by 2050, Jordan's population could reach at least fifteen million, an increase of four million since 2010 (United Nations, 2022).

More than 1.1 million additional housing units were constructed in Jordan between 2004 and 2015, doubling the total number of units from 1.2 to more than 2.3 million. Despite this remarkable expansion, the housing shortage has increased to 15.9% of all households, and poverty and residential property prices have increased, making it more difficult for low- and middle-income families to afford housing (World Bank, 2018), which comprises approximately 45% of all households in Jordan in need of affordable housing (Alnsour, 2016).

To address the housing issue, the Jordanian government initiated several projects dating back to 1965, when they first started implementing projects for people with low incomes. Then, under the supervision of the Housing and Urban Development Corporation, they worked on 334 projects that included up to 121,000 housing units funded by the state (HUDC, 2017). Despite these initiatives, the demand for affordable housing remains a pressing challenge, underscoring the need for continued efforts and innovative solutions to ensure housing accessibility for all segments of society.

Recently, after several projects of this kind, accompanied by various opinions about their outcomes and the factors and reasons behind the success of some or the failure of others, the need arose to study such types of projects. This is because they continue to be in demand, and their efficiency and suitability are the subject of varied opinions.

The purpose of this research is to identify the architectural factors that affect how satisfied people are with their homes. This will be done by developing indicators that assess what affects the quality of life in affordable housing and then using these indicators to evaluate how much affordable housing in Amman meets these criteria.

Measuring housing quality has become an important way to assess the efficiency of housing provision and the extent to which people are satisfied with it.

This research delves into the quality of affordable housing projects in Amman, Jordan, and their impact on residents' quality of life. With the increasing need for affordable housing worldwide, understanding the dynamics of housing quality has become imperative. This study aims to fill the gap in the literature regarding the evaluation of housing quality and its correlation with residents' satisfaction and well-being, particularly in the context of Jordan.

### **Research Motivation**

The motivation behind this research stems from various factors, including the growing need for affordable housing in the future. We can assess the housing quality of existing projects and determine how constructing affordable housing contributes to increasing the quality of life for residents.

Additionally, there has been relatively little published research on the issue of housing quality and quality of life in these houses in Jordan; hence, this research addresses a knowledge gap on this subject.

Another reason that has heightened the necessity of this study is the recent global COVID-19 pandemic. The responses of governments and officials to cope with new conditions, including implementing severe restrictions such as quarantine, not leaving the home area, and avoiding social mixing, have significantly impacted the dynamics of housing and living conditions. People had to spend more time at home and in their neighborhoods. Individuals are becoming more devoted to their houses, spending most of their time in the neighborhood and surrounding areas. As a result, this research investigated the significance of housing and its influence on the lives of individuals, particularly those who live in affordable housing and who do not have the choice of changing housing due to their financial situation.

As a personal motive, the time I spent residing in the Gheorgheni neighborhood in Cluj, which was an affordable housing project for a period, inspired me to conduct this research. Residing in this neighborhood gave me a strong desire to understand the factors contributing to the positive living experience in this community, which motivated me to study the reasons behind these feelings of satisfaction and happiness in this place and to transfer this experience to my home country, Jordan.

## **Research Hypothesis**

This study's hypothesis revolves around the relevance of architectural decisions made while constructing affordable housing, their effect on housing quality, and how they affect occupants' quality of life. To address this hypothesis, this research poses several key questions:

How do residents of affordable housing projects perceive their housing, and how does it affect their lives? Did these housing projects succeed in providing residents with a feeling of satisfaction? Did it enable its residents to enjoy an abundant life and comfort in housing despite the challenges of life that they face because of their low income? What are the factors that influence residents' level of satisfaction?

How was Jordan's approach to providing affordable housing in terms of its design patterns, site selection, services, and all the architectural determinants surrounding these projects?

What architectural elements contribute to "housing quality" in the Jordanian context?

1. How can architecture affect inhabitants' quality of life through housing?
2. How can architects improve people's lives by planning and designing homes and neighborhoods?
3. What architectural indicators affect the quality of life of the inhabitants of affordable housing projects?

## **Research Objectives**

This study aimed to develop architectural indicators of housing quality that can be used to assess the quality of life in housing in Amman.

The study also intends to document affordable housing projects in Amman, Jordan. This is the first study and analysis of such dwelling types from both architectural and occupant perspectives.

Insight and recommendations can contribute to future affordable housing design and decision-making processes to enhance living conditions and opportunities for residents in economically challenging environments.

This study highlights the significance of residents' involvement in determining the indicators impacting their satisfaction with affordable housing projects.

## **Methodology**

This study used a mixed-methods strategy incorporating both primary and secondary data with qualitative and quantitative techniques.

**"Secondary Data Collection"** includes literature reviews, international case studies, systems for evaluating the quality of housing, and other sources.

Prior research has included both topics to explore the impact of housing quality on quality of life. International case studies were selected to highlight successful affordable housing projects that contribute to improving the quality of life of residents. Due to Austria's reputation and international distinction for its affordable housing developments, some innovative case studies were selected as examples from the West.

A Moroccan project from the Middle East and North Africa region, Dar Laman, is highlighted; because of its similar climatic and geographical nature to Jordan, the project also won an international award.

In Cluj, Romania, where doctoral study took place, a major housing development that is still operational today and is regarded as one of the most successful affordable housing projects in the city, called the Gheorgheni neighborhood, was the source of inspiration for the researcher.

Five international systems of housing quality indicators were used to determine the indicators for affordable housing projects in Jordan.

The **"Primary Data Collection"** section included interviews with Jordanian specialists, site visits, and observations and a questionnaire among the residents of the Jordanian-selected projects.

- **Expert interviews** were conducted with decision-makers, engineers, and architects related to the Jordanian housing sector to determine the relevant indicators for affordable housing projects in Jordan.
- **A questionnaire survey** was administered face-to-face over two months (July and August 2022), which generated 217 responses from randomly selected residents living in affordable housing projects in Amman, especially in the selected local case studies.
- **Site visits and observations** were conducted on selected affordable housing projects in Amman to observe architectural features, neighborhood amenities, and maintenance practices. These visits facilitated the analysis of housing quality indicators and their impact on residents' quality of life.

**Data Analysis:** Qualitative data from international case studies, interviews, and observations were analysed thematically to identify key architectural indicators and their significance for housing quality. Quantitative data from the questionnaire survey were analysed using statistical methods to assess residents' satisfaction levels and correlations with housing characteristics.

The indicators for affordable housing were investigated on-site during affordable housing developments in Amman, Jordan, as well as during site inspections to observe and analyse the quality of the projects and neighborhoods.

## **Thesis Structure**

***The study comprises six primary chapters that explore the quality of life in affordable housing.***

The first chapter serves as an introduction to the research and outlines the thesis's objectives as well as the problem it aims to address and the questions it attempts to answer. This chapter concludes with a detailed explanation of the structure of the thesis, as well as a thorough discussion of the research's motivation and constraints.

***"The study is organized into three main sections."***

### ***Literature review***

This section, encompassing the second and third chapters, delves into the theoretical underpinnings of the study, with a focus on two primary subjects: quality of life and housing.

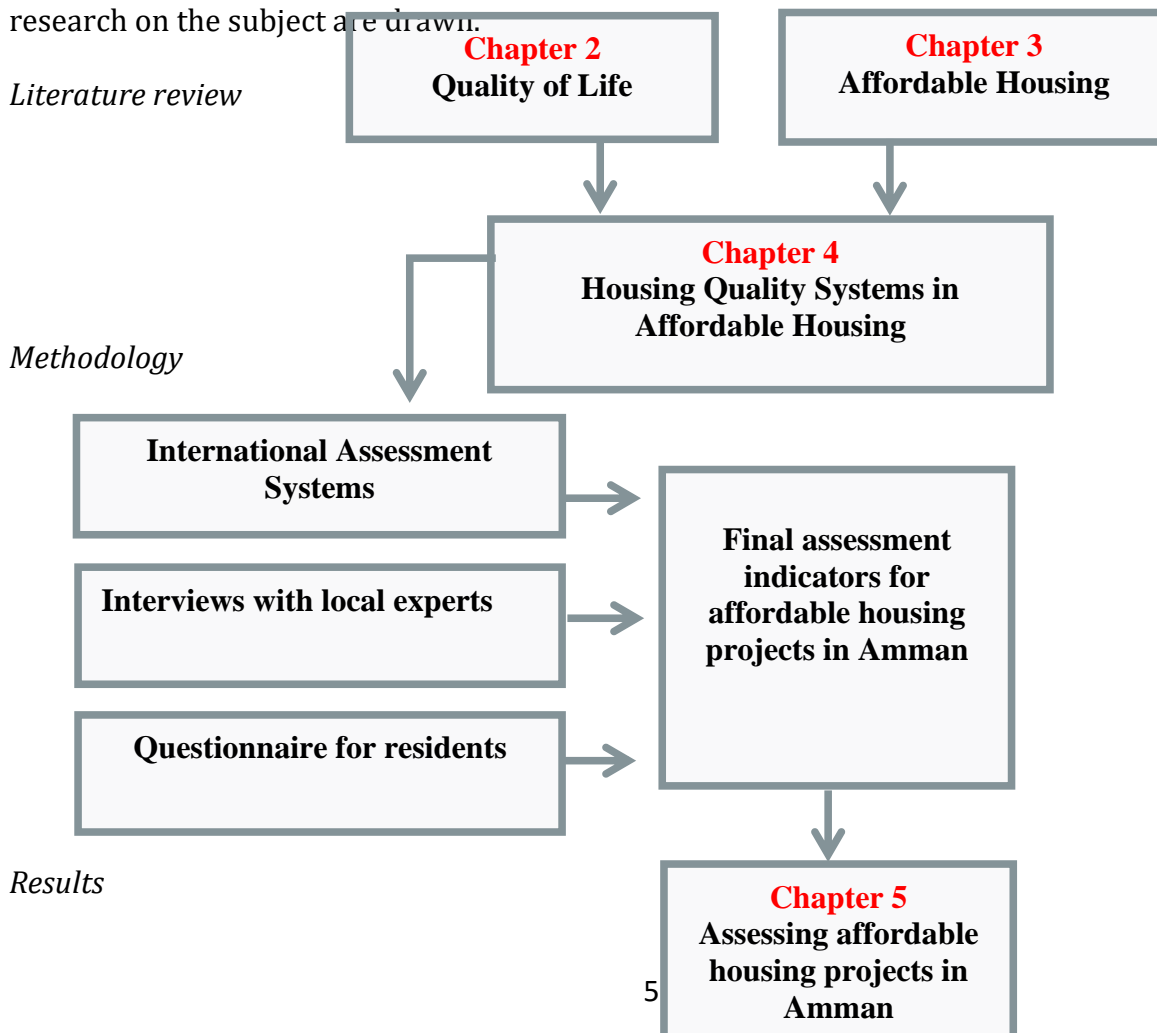
### ***Methodology***

The second section, detailed in Chapter four, primarily addresses the research methodology employed and the primary sources utilized to establish the final assessment of housing indicators specific to affordable housing projects in Amman.

### ***Results and Case Study Analysis***

The third section presents the findings derived from the final set of indicators. It is dedicated to examining the affordable housing situation in Jordan and conducts an in-depth analysis of selected case studies in Amman, evaluating them according to the identified indicators. This analysis is documented in Chapter five.

Chapter six develops the conclusion of the thesis. The main indicators to be considered the most important findings concerning the quality of life in affordable housing in Jordan are listed, the original contribution of the research is highlighted, and directions for future research on the subject are drawn.



## **2. Quality of Life in Housing Studies**

The second chapter explains the definition of quality of life and explores the historical background of quality of life and its assessment techniques, particularly the subjective-objective method. It also connects quality of life to the housing environment to determine the relationship between quality of life and housing quality.

The concept of quality of life is multidimensional and includes evaluating an individual's satisfaction with his or her environment. It is determined by multiple factors, such as physical, social, and emotional well-being, as well as personal beliefs and expectations.

Drawing from classical Greek philosophy and the social indicator movement of the 1960s, this chapter examines the historical background of quality of life. It delves into the methods of measuring quality of life, which include both objective and subjective indicators, such as social, economic, and health metrics, as well as individuals' perceptions and assessments of their living conditions.

Focusing specifically on housing, this chapter explores the intricate relationship between housing quality and quality of life within the context of urban planning. This highlights the significance of housing circumstances in influencing individuals' and families' quality of life. Adequate housing, which provides safety, security, privacy, and personal space, positively impacts well-being and satisfaction. Housing satisfaction, determined by the perceived gap between an individual's requirements and the reality of their housing situation, plays a crucial role in determining overall housing quality.

Moreover, housing quality, encompassing the physical condition of the house and the quality of its social and physical surroundings, is identified as one of the most significant indicators related to quality of life. This chapter emphasizes the importance of considering housing quality indicators in residential design to ensure residents' satisfaction and comfort.

In conclusion, this chapter underscores the crucial role of housing design in enhancing residents' quality of life and advocates for the incorporation of housing quality indicators in urban planning to ensure the well-being and satisfaction of urban populations.

## **3. Affordable Housing**

The third chapter explores the topic of affordable housing. This chapter begins by highlighting the challenges faced by low-income individuals in accessing housing and the importance of affordability in housing markets. Then, we delve into the definition of affordable housing, exploring terms such as social housing and public housing. It also examines how different countries define and approach affordable housing.

A historical perspective on affordable housing is presented, focusing on notable projects and initiatives. This paper starts with a historical overview of affordable housing in Europe and discusses the impact of the Industrial Revolution on housing, the emergence of social housing programs, and the influence of organizations such as the International Congresses of Modern Architecture (CIAM). This chapter offers insights into how various housing projects have evolved, such as the Hufeisensiedlung and Neues Frankfurt in Germany, and investigates innovative approaches as well as the Vienna model of social housing, which are highlighted as exemplars of effective solutions.

Shifting focus, the narrative extends to the Middle East and North Africa (MENA) region, exploring historical perspectives and contemporary challenges surrounding affordable housing. The chapter discusses the housing challenges faced by countries in the region, such as Iraq, Egypt, Syria and Jordan, and the various approaches taken to address them. It also examines the role of the public and private sectors in providing affordable housing and the impact of political and social factors on housing initiatives.

While Morocco stands out for successfully addressing the housing crisis and responding to the demands of low-income families, it has emerged as a case study, showcasing innovative initiatives that aim to address housing affordability issues in the MENA region. It also showcases the Dar Lamane Housing project in Morocco as an example of a successful and innovative affordable housing initiative.

Overall, the chapter emphasizes the importance of affordable housing in ensuring access to safe and secure housing for low-income individuals. It highlights the different approaches and initiatives taken by countries to address the housing needs of their populations, showcasing both successful and innovative projects.

#### **4. Housing Quality Systems in Affordable Housing**

The fourth chapter focuses on housing quality evaluation systems in affordable housing. This chapter begins with an introduction to the research goal, which is to develop indicators for assessing the quality of housing in affordable housing projects based on its impact on residents' quality of life. The chapter then discusses the sources used to set the housing quality system framework in Jordan, including international housing quality systems, an ideal architectural case study, interviews with Jordanian experts, and a questionnaire distributed to residents of affordable housing projects in Amman.

It navigates five housing quality systems from around the world: the SEL in Switzerland, the housing quality standards in the United States, the Housing Quality Indicators in the United Kingdom, the quality assessment method in Vietnam, and the Housing Preferences of Low-income Residents in Saudi Arabia. The indicators and components of each system are analysed, and common indicators across multiple systems are identified.

This chapter also analyses the Gheorgheni housing project in Romania as a successful case study to understand how architectural planning and decisions contribute to residents' quality of life. The design features, layout, and amenities of the residential buildings, streets, open spaces, and educational facilities in the Gheorgheni neighborhood are analysed.

Additionally, interviews with Jordanian experts in housing were conducted to provide a synthesis of professional perspectives on affordable housing indicators that suit the Jordanian context.

Finally, a questionnaire was distributed to residents of affordable housing projects in Amman to capture their performances and lived experiences from the perspective of those directly affected by affordable housing initiatives. This will help in developing housing quality indicators specific to Jordanian affordable projects. The data were analysed using different statistical tests, and procedures were applied based on the type of analysed data. The analysis included both descriptive and inferential analyses.

The chapter concludes with the development of a housing quality system for Jordanian affordable housing projects, which includes indicators related to housing units, residential buildings, and residential neighborhoods, addressing aspects such as internal layout, building finishing details, location, and safety. The chapter concludes by synthesizing findings and implications for enhancing housing quality in affordable projects. This highlights the importance of considering indicators that enhance residents' quality of life and promote community development in affordable housing projects.

#### **5. Affordable Housing in Jordan**

The fifth chapter includes an exploration of Jordanian affordable housing initiatives.

This chapter begins by highlighting the challenges faced by Jordan in meeting the increased demand for housing due to high population growth and the influx of refugees. This

section discusses the inadequate supply of affordable housing for low-income households and the impact of high land costs and restrictive building regulations on the housing sector.

The chapter then explores the housing sector in Jordan, including the government's role in providing affordable housing through initiatives such as the Housing Corporation and the Housing Bank. It also discusses the establishment of the Urban Development Department and the National Housing Strategy to address housing issues in the country.

It delves into various housing initiatives, including the Housing and Urban Development Corporation's projects such as the Royal Housing Initiative.

Three case studies of affordable housing projects in Amman are presented to explore the evolution of affordable housing projects over time and to assess the presence of specific indicators crucial for enhancing housing efficiency and resident satisfaction.

Specifically, it investigates the Daheyat Al-Hussein neighborhood (1969-1986), Abu Nseir neighborhood (1981-1986), and Al-Mustanadah neighborhood (2008-2013). Tracing their historical backgrounds and assessing the identified housing quality indicators across residential units, buildings, and neighborhoods. By analysing these case studies, this chapter aims to extract insights into the effectiveness and challenges of affordable housing initiatives in Jordan and the extent to which these projects achieve the quality of housing indicators identified in the previous chapter, which ultimately informs future policy and planning efforts in the realm of housing.



Figure 1. Affordable Housing Projects in Amman (Daheyat Al-Hussein neighbourhood, Abu Nseir Neighborhood, and Al- Mustanadah Negborhood).

To summarize, this chapter highlights the significance of housing quality indicators in assessing the success of affordable housing projects and suggests their incorporation in future residential designs to enhance residents' quality of life.

The analysis demonstrated that the presence of these indicators significantly impacts the success and quality of housing projects. The Daheyat Al-Hussein neighborhood is considered the most successful in terms of fulfilling housing quality indicators, while the Abu Nseir and Al-Mustanadah neighborhoods face challenges such as maintenance issues and a lack of specific services.

## 6. Conclusion

The primary goal of the study was to establish indicators for assessing the quality of life in Amman's affordable housing. The researcher begins by reviewing international case studies to identify indicators for evaluating housing quality and then conducts interviews with housing experts in Amman to develop an assessment system to be utilized throughout the study.

In addition, a questionnaire was distributed to the people living in these Amman affordable housing projects because of the importance of community involvement in the decision-making process related to housing and its environment. Finally, three examples of



affordable housing in the city of Amman were selected to explore the application of the specified indicators to this housing type.

## 6.1 Main Results

This research underscores that quality indices may vary based on the social, cultural, and economic contexts of various countries. Consequently, each nation attempts to develop a tailored system that is well suited to its particular circumstances.

The study objectives were achieved using data collection and analysis from international systems to determine the indicators and aspects that affect housing quality projects. Next, discussions with experts from Jordanian universities and institutions specializing in housing were conducted to determine the current situation of affordable housing projects in Amman. Subsequently, to collect responses from residents of affordable housing projects in Amman through the distributed questionnaire, a descriptive and statistical analysis of the questionnaire survey was performed.

Following these methodologies, this study identified a set of indicators for affordable Housing. These indicators emphasize the significance of considering them in any residential project, as they play a vital role in promoting residents' well-being and community development.

This set of indicators is divided into three categories: indicators related to housing units, indicators related to residential buildings, and indicators related to residential neighborhoods. Each category consists of a set of indicators that could be used to assess Jordan's affordable housing projects.

The following section will explain each indicator according to descriptive and statistical analyses based on expert and residential opinions were performed to reveal the importance and effectiveness of this approach for the satisfaction of residents of affordable housing.

In conclusion, it is crucial for housing projects, particularly those aimed at providing affordable housing to prioritize residents' comfort and enhance their quality of life. Successful case studies emphasize the existence of indicators that ensure that residential projects are suitable for inhabitants and provide an easy and satisfactory life for residents while also considering sustainability, community integration, urban cohesion, and community involvement.

Below is a discussion of the most crucial set of indicators identified in this study for affordable Jordanian housing.

### - Apartment unit Indicators

- **The total area of an apartment** is a crucial indicator of housing quality since it encompasses various factors that directly affect residents' satisfaction. Statistical analysis revealed a correlation between the area of the apartment and the number of family members and their income. Therefore, the area of the apartment is crucial for Jordanian families because it affects the number of bedrooms and bathrooms in the apartment. Additionally, most families prefer a separate kitchen and guest room. Moreover, people do not feel comfortable in open floor plans, so all of these spaces are affected by the total area of the apartment, which, as a result, contributes to ensuring individual satisfaction within the living space.
- **The interior layout** of an apartment is another essential indicator that must align with the lifestyle of families in Jordan. The studied and analysed examples

of affordable housing encompass a variety of apartment plans, sizes and layouts to accommodate the needs of different families residing in these apartments.

- **The distribution of windows** is significant, given that a large percentage of the residents of these projects have reported problems with sunlight penetration in residential apartments due to inadequate spacing between residential buildings that do not align with the heights of the buildings. This lack of sunlight poses a problem, despite Jordan's frequent sunny days throughout the year.
- **Water, electricity, and sanitation** are fundamental services for every household, and most of Jordan's housing projects include these services. Therefore, it might not be considered an indicator, as its presence is imperative for inhabiting a dwelling.
- **Periodic maintenance** is essential in housing, whereas each family maintains its apartment according to its needs, communal areas outside apartments, such as stairways, elevators, parking, playing areas, streets, and sidewalks inside housing projects, need follow-up. Significantly, Jordanian housing projects lack official oversight for maintenance post-occupancy, unlike in many other countries.
- Experts and residents pointed out the lack of any follow-up by any party regarding housing matters and problems, and this was observed in the analysed housing projects since no party followed up on the housing after it had been occupied. Another important indicator that must be added is the presence of a responsible **organization to follow up** on housing after its occupancy. It is considered a very important indicator and has a significant impact on the sustainability, appearance, and cleanliness of communal and public areas in housing projects.

- Residential building indicators

- **The materials** used in construction **and finishing** play a crucial role in the impact of housing on residents' comfort. The higher the quality of these materials is, the more durable and sustainable they are, which greatly reduces the need to change or maintain them. This, in turn, reduces the financial costs associated with maintenance, in addition to avoiding problems that arise between residents due to malfunctions in common areas such as stairs, roofs, and garages. Consequently, this has a positive impact on the comfort of residents both financially and psychologically, which makes this indicator important.
- **Building insulation** in all its forms, whether thermal, water or sound insulation, is considered extremely important in housing projects. As families spend most of their lives in residential apartments, the feeling of discomfort inside the home as a result of extreme cold or heat, humidity issues, or noise problems are all very important factors that impact residents daily. In Jordan, where there are no laws mandating the use of insulation materials in construction, these problems are widespread in residential apartments and require immediate solutions.
- **The number of apartments per building** in affordable housing projects is considered important because the number of family members living in the apartment is high, which leads to more people using shared services in the building and shared public spaces in residential complexes. In addition, due to the nature of housing in Jordan and the lack of bodies responsible for regulating

housing affairs and laws specifying residents' tasks regarding housing, maintenance, etc., the excessive number of apartments causes more problems among residents and leads to less comfort for them, according to residents' and experts' estimates.

- **Staircases** did not pose a problem for most residents in affordable housing complexes, as staircases are considered a means of accessing residential apartments. Although most of the stairs in residential complexes are designed according to standards, the cleanliness of the stairwell represents an important point that residents stated. Given the lack of laws requiring residents to take care of common spaces, issues related to cleanliness can lead to disputes between residents and affect their comfort.
- **Roofs** are common places for residents to cause problems. Under housing laws in Jordan, the roof is considered a shared space, and therefore, it may be exploited in inappropriate ways by some residents, such as using it as a storeroom or building additional rooms, which sometimes leads to problems for residents on the upper floors of the building. As a result of these problems related to the roof, more than half of the respondents expressed their unwillingness to use the roof as a common area, which shows the importance of consulting residents' opinions on matters that concern them, regardless of the opinion of the experts, who stressed the importance of using the roof as a common area for residents for recreation and various activities.
- **The shaft**, which is a construction opening extending from the ground floor to the roof of the building, plays an important role in facilitating maintenance and access to basic services such as water pipes and other services that extend from tanks to residential apartments; it also contains bathroom windows. Most buildings in Jordan contain shafts, but according to the results of questionnaires and interviews with experts, poor shaft design can cause problems such as the accumulation of dirt and dust due to inadequate roof coverage, difficulty accessing the shaft for maintenance purposes, and sound transmission between apartments, which can affect residents' comfort and well-being. Addressing these issues requires careful consideration in the design and maintenance of residential buildings.
- **Resident associations** are limited in Jordanian housing projects, as a small percentage of these buildings contain an association that contributes to managing shared spaces and services in housing. There are no laws mandating that residents establish associations or ensuring that all residents participate in them. Consequently, most housing problems arise due to shared areas and services that are not well managed, highlighting the importance of establishing resident associations that can help foster a sense of community and improve the overall quality of life within residential projects.

- Residential Neighborhood Indicators

- **Location of the project since**, studies have shown that many housing projects in Jordan suffer from inappropriate locations and are located far from vital areas in cities. This has impacted the demand for families to buy apartments in such projects. Therefore, the importance of the housing location and its effect on residents' satisfaction was emphasized, as well as connectivity, which contributes to easy access to work areas, services, and entertainment venues in the city.

- The **availability of basic amenities** in the residential neighborhood, such as schools, commercial centers, places of worship, and other essential services that families need daily, is also important because some housing projects in Jordan have been constructed without initially providing these basic services, leading to subsequent provision after residents' demands. Thus, the presence of services from the beginning of housing development is crucial and directly affects residents' comfort and ability to live there.
- **Public transportation** is considered another important indicator, especially since most of the housing projects were built far from city centers and may lack all services. Moreover, Jordan lacks an efficient public transportation network, making this indicator particularly significant. Addressing public transportation concerns from the inception of housing projects enhances residents' satisfaction and improves their quality of life.
- **Parking lots** also present problems in current housing projects, resulting from the lack of parking spaces. Therefore, providing adequate and organized parking spaces while preparing appropriate legislation to regulate their use is crucial to avoid problems arising from parking shortages.
- In housing, **security and safety** are crucial, especially considering that residential neighborhoods accommodate a large number of families. The tenants' comfort and sense of safety are highly influenced by their sense of security. Therefore, it is critical to design a neighborhood with security and safety in mind within public places through the design and relationships of buildings with parks and streets, the avoidance of isolated areas, the provision of good lighting and other considerations that contribute to increasing the degree of safety in the neighborhood due to their direct impact on residents' comfort and thus the quality of their lives.
- Finally, the availability of sufficient **outdoor spaces** within the residential neighborhood, such as playgrounds for children or communal gathering areas, is considered one of the most important indicators. In Jordan, this aspect has been emphasized due to the lack of such spaces in many housing developments. Most open spaces in these developments are either undeveloped or poorly planned, eventually turning into waste dumps and becoming polluted areas that residents avoid.

In conclusion, these key indicators could be considered by housing institutions, and developers and real estate planners in Jordan can use them as a guide to improve the design and implementation of new housing projects, aiming to enhance residents' satisfaction and improve the quality of life in housing communities.

## 6.2 Original Contributions

The original contributions of this study are briefly summarized below:

- Initially, the researcher developed a methodology for assessing housing quality in affordable housing projects in Amman and then applied it to assess selected local cases.
- At the time of writing, there was no system in place to determine the quality of housing in Jordan. There have been a few studies that address the topic of quality of life in housing in general, but there are no indicators related to the quality of life in affordable housing; therefore, this is the first study on this topic.

- There is a lack of references and studies or architectural analyses that have been conducted on this type of housing. Therefore, one of the most important findings of this research was the documentation and analysis of several important affordable housing projects from different architectural points of view through field visits, analysis of architectural plans, and interviews with engineers and owners.
- Indicators for assessing the quality of life in affordable housing in Amman have been identified, as the topic of evaluating these dwellings has not previously been addressed, especially in terms of how it affects residents' quality of life.
- This research documented and analysed several important affordable housing projects in Amman from different architectural perspectives, filling a gap in the literature.
- This study, through a literature review and original research, developed a new set of indicators that will be useful for new projects to consider housing quality and contribute to enhancing quality of life for residents.
- This research investigated and synthesized the viewpoints of Jordanian experts in the field of affordable housing who had a role in the Housing and Development Corporation, who are responsible for these housing projects, in addition to academics and practitioners who have direct involved in the Jordanian housing sector.
- This study identified the main problems faced by affordable housing projects in Jordan.
- The research provided a platform for the inhabitants of affordable housing projects to express their perspectives on their estates, emphasizing the importance of community participation in housing projects.

Together with the previous literature review used to obtain a new set of indicators that will be useful for assessing accessible housing quality in the future, this is the main original contribution of this thesis.

### **6.3 Research Limitations and Future Research**

Like the majority of the research, this study has some potential limitations.

First, some of the housing projects in the local case studies were constructed many years ago, which may have compromised their quality. There is a substantial proportion of buildings that are occupied by renters rather than the original owners, and even though some properties require extensive maintenance, families are renting them at a low cost due to their inability to pay high rents. An analysis of housing projects in the same period may provide a better way to compare study cases in future studies.

All of the neighborhoods chosen for case studies are in the Amman area, which has the largest concentration of affordable housing in the Kingdom, but this does not mean that there are no other forms of affordable housing in other cities, especially in villages, so it is possible in the future to analyse other housing projects in other parts of the Kingdom.

The researcher had to be present for each response from each participant since the questionnaire included too many questions for the residents, which made them unable to complete the questionnaire until the end. In addition to the culture of people who refuse to help, many people did not respond to the idea of answering the questionnaire, even though they were in public places to relax, such as parks or others, and they did not express any desire to fill out the questionnaire. Additionally, the questionnaire sample was not distributed to every affordable housing project in Amman. Instead, it was sent to the selected case studies. For future research, it might be possible to work with state agencies to administer the

questionnaire to all affordable housing in Amman. This would provide more accurate information about the factors that affect the quality of life of the people who live there due to the importance of the opinions of the residents.

As this investigation focused mainly on architectural aspects, future studies might investigate how other aspects impact people's quality of life. This is because other indicators beyond architecture also contribute to people's satisfaction with their lives. It is also possible to study the sociological aspect of how housing affects people's daily lives and how architectural decisions contribute to this impact.

These indicators can also be part of future research to study the impact of each one in detail on the quality of life of the residents and to indicate which of them is the most important. Using a method to assign values to each indicator based on its relevance and the amount to which it affects people's quality of life, this research can help determine which of the achieved indicators is the most essential.

Research focusing on the importance of public spaces within residential complexes and their impact on residents' quality of life is crucial. Future studies could further explore how well-designed public spaces contribute to fostering a sense of community and social bonds among residents.

#### **6.4 Recommendations**

After studying the Gheorgheni neighborhood for a while living in it, communicating with its residents, conducting interviews with Jordanian specialists and distributing a questionnaire in Amman's affordable housing areas, I obtained a point of view on the quality of life in the residential area.

The concept of quality of life in the residential area is not limited to only a group of indicators, so if this group exists, the quality of life in the residential area will rise with the emphasis that what has been achieved by the indicator is important and affects people's satisfaction with life in their residential neighborhood, but it is not exclusive.

What I mean is that the area of the apartment, its division, the number of bathrooms and bedrooms, and all the apartment indicators were identified affect the person's quality of life, but the presence of a good view from the window or balcony of the apartment also could greatly affects the quality of life. The arrangement of residential buildings so that they provide privacy to the windows also affects the comfort of the residents and thus their satisfaction within their apartment, which considered as intangible characteristics that affect the quality of life of the residents.

The availability of green spaces is also important, not only in terms of quantity but also in terms of variety and purpose. For example, green spaces that serve a specific purpose, such as children's play areas or seating areas for adults, or that contain trees to mitigate noise from neighboring streets and to spread the smell and colours of flowers in the neighborhood can greatly enhance the quality of life of a residential building.

Regarding the neighborhood, it is evident that its design should be human-centred and consider users of all ages, ranging from children to elderly people. This is evident in the planning of pedestrian paths and streets, the incorporation of green spaces to separate buildings, and the consideration of individuals with special needs when designing streets, corridors, and access roads leading to educational, commercial, or recreational areas. These aspects significantly impact the quality of life for residents of residential areas.

Additionally, the social dimension is a crucial determinant of an individual's quality of life. The presence of familiar neighbors who share a sense of community fosters a sense of affection and intimacy, thereby enhancing overall quality of life. Long-term residents who have established relationships with one another tend to experience greater comfort and ease

than those who are temporary residents, such as tenants. The establishment of a residents' association facilitates the organization of building affairs, including management and maintenance, thereby contributing to the long-term sustainability of the building. This, in turn, positively impacts the building's quality over time and enhances the quality of life for its residents.

In conclusion, the concept of quality of life in residential areas is a multidisciplinary subject encompassing a variety of tangible and intangible aspects. By considering these aspects, urban planners and architects can create residential areas that promote well-being and satisfaction among residents.

The researcher's personal experience as an architect living in two different residential neighborhoods in different countries has greatly contributed to understanding the importance of quality of life standards and their impact on individuals and communities. This first-hand experience has been invaluable research in the field of housing and quality of life, allowing me to analyse and understand these issues from both theoretical and experiential standpoints.