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Quality of Life Indicators from an Architectural Perspective: A Case Study in Medina

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Abstract: In pursuit of enhancing quality of life within societies, nations focus on the significance of residential life as a primary influencer of human well-being. Numerous organizations and research initiatives have developed methodologies to assess quality of life within urban environments, resulting in adaptable mechanisms suitable for diverse community data. This research explores the feasibility of harnessing these tools to assess the quality of life influenced by residences from an architectural perspective. The city of Medina was chosen as the spatial scope for the sample selection, resulting in 379 responses. This study revealed that the primary factor for comparison between residences was the type of dwelling, with the majority being apartments and villas. The mechanism demonstrated that residents of villas expressed higher satisfaction across all the assessment criteria. The study also revealed that among the nine aspects of improving housing selected by the respondents, the top three included the presence of a private outdoor area, increased natural lighting, and providing larger space. Based on these findings, this study recommends adopting a mechanism to analyze housing quality within a specific spatial context to study the current housing situation, set goals for designers, and provide recommendations for quality-of-life improvement.

Keywords: Quality of Life Indicators, Residential Spaces, Enhancing Architectural Design, Housing Satisfaction, Medina.

Abbreviations

QoL	Quality of Life
DBQS	Davos Baukultur Quality System

1. Introduction

Improving the quality of life of individuals and families within communities is an integrated and multifaceted system (Maamarieh, 2020). This concept is of interest to researchers in various contemporary sciences and fields. Numerous studies and specialized organizations have demonstrated that the urban environment is one of the most influential areas of quality of life. This is attributed to several reasons, including the tangible and evident standards in urban environments, which facilitate their measurement and comparison and allow for quicker and clearer improvements. Urban planning and architecture are interconnected and comprehensive disciplines that revolve around the human environment, whether on a narrow or broad scale. Similar to diverse sciences, they share many specific goals related to enhancing quality of life.

Dwelling is the primary focal point that connects individuals to their surrounding environment, indicating the extent of its impact on the quality of life for both individuals and families (Naji, 2020). The city of Medina has received considerable attention for its quality of life due to its historical significance. The initiative of "Ansanat Al-Madinah" or Humanizing Medina lunched by Al Madinah Region Development Authority in 2018, is one of the most important examples in this regard. It aims to achieve happiness for individuals within

a comprehensive living system. This is performed by focusing on diverse services and developing various aspects, including human, cultural, social, and economic. These efforts may be successful in improving the urban environment. However, they have not adequately addressed the internal residential environment for individuals. Therefore, it is necessary to shed light on this aspect to improve the quality of life of Medina (Madinah Region Development Authority, 2018).

An important question arises: Can residences affect the quality of life, and if so, can it be measured from an architectural perspective? Numerous prestigious research studies and organizations have established foundations and standards for measuring the quality of life in societies. These may vary in methodology and tools based on the objectives, yet they have managed to conceptualize the overall quality of life. These methodologies are characterized by flexibility, allowing them to achieve research objectives by establishing a mechanism for measuring quality of life from an architectural residential perspective. This study focuses on reviewing internationally recognized methodologies for measuring and comparing quality of life. In the current research, the most suitable methodology to achieve the objectives will be applied to study samples in Medina. Outcomes of the study shall be examined to help designers better understand the needs of residents. The importance of this study lies in establishing foundations and defining criteria related to the quality of residential life from an architectural perspective in a systematic manner. This will assist designers in identifying the relationship between these criteria and architectural design and in understanding the importance of each criterion for the residents. As a result, residential architectural designs that improve residents' quality of life and align with their needs could be developed. Considering the above, the research objectives can be summarized in the following manner:

1. Identify factors in architectural design that influence quality of life.
2. Assess the current status of housing in Medina.
3. Develop a methodology to produce quality of life indicators based on architectural elements.
4. Formulate architectural design recommendations informed by QoL indicators.

2. Literature Review

Quality of Life (QOL) is a broad and elusive concept. It also reflects the extent to which individuals experience improved levels of comfort, satisfaction, and well-being in various aspects of their health, social, economic, psychological, and other dimensions. This definition is considered one of the most common and widely used concepts in various fields. However, credit for studying variables related to human quality of life goes back to the field of psychology, as it is considered the primary reference for the concept of human QOL, considering that life is everything they perceive (Maamarieh, 2020). Itsin its status as a reference target for various types of scientific research and regional processes that directly address human life. The "Quality of Life Program 2020" pointed out that the aim of launching the program is to make the Kingdom of Saudi Arabia a better place to live for individuals. This is fulfilled by creating conditions that contribute to living a satisfactory life and developing a lifestyle through an environmental system that provides new options that enhance participation in cultural, recreational, and sports activities. Additionally, it aims to develop activities that help improve the family quality of life, create job opportunities, and diversify the economy (Vision 2030).

Numerous studies related to measuring QOL in the urban and built environment have indicated that it relies on two main dimensions: the objective dimension and the subjective dimension. The objective dimension refers to quantitative measures and indicators that can be produced and compared to benchmark standards for evaluating the quality of life. On the other hand, the subjective dimension refers to qualitative evaluation indicators that do not have a standardized reference (Abd alkareem, 2012; Eish, 2021; Maamarieh, 2020). To develop scientific mechanisms and policies for measuring quality, several institutions and international organizations have been established to classify cities by producing a set of standards and indicators based on various studies. Among these indicators, we find that:

- **The OECD Better Life Index:** is a global index that ranks countries based on quality of life using 11 criteria: income and wealth, work-life balance, housing, health, life satisfaction, education, civic engagement and governance, environmental quality, safety, social connections, and well-being.

It provides a comprehensive assessment of various aspects that contribute to a good quality of life in different countries (OECD, 2022).

- **The City Prosperity Index (CPI):** consists of six main dimensions that describe different aspects of urban prosperity based on the United Nations Human Settlements Program Habitat criteria (UN-HABITAT, 2014). These dimensions include productivity, infrastructure development, quality of life, equity and inclusion, environmental sustainability, and urban governance. The CPI provides a comprehensive framework for assessing account cities' overall prosperity and considering various factors that contribute to their development and well-being. This methodology was applied to Medina under the name of the Future of Saudi Cities Program in cooperation with UN-Habitat, and this study resulted in spatial, economic, and legislative recommendations at the level of city planning (UN-HABITAT, 2019).
- **The Mercer Quality of Living Index:** It is an annual report that ranks cities around the world based on QOL using 39 criteria grouped into ten categories. These categories include consumer goods, economic environments, housing, health, natural environments, political environments, public services and transportation, recreation, education, and social and cultural environments. The Mercer index provides a comprehensive assessment of the overall quality of life in different cities, taking into account various factors that impact residents' well-being and satisfaction (Mercer, 2023).

As the concept of quality of life is broad and multidimensional, it is reflected in measurement mechanisms without specific criteria or standardized methodologies. As previously mentioned, QOL measurement systems rely on multiple criteria that encompass all aspects of life. The current study will focus on criteria related to the urban and built environments in general, specifically on the indoor residential environment according to the relevant criteria.

Salma Naji (2020) defined urban life as "distinctive ways city dwellers interact with the urban environment. It can also be seen as the unique lifestyle and way of living for urban dwellers, who often follow a particular style and pattern, especially regarding the daily behavior of urban individuals." To assess the quality of urban life, indicators have been developed by researchers and stakeholders from various organizations. Quality of life is closely associated with the urban and built environment, which is considered one of the most important means of improving the quality of life for individuals and communities. This is because it serves as the link between humans and the surrounding environment. This environment encompasses several aspects of life, such as providing comfort, safety, healthcare, education, infrastructure, public facilities, and others, all of which have a direct impact on human life (Abdel Kader, 2023). The reason for the connection between the concept of quality of life and architecture lies in its dynamic and multidimensional nature. Over time, it has come to reflect the changes in the relationship between humans and the performance of the built environment surrounding them to meet the evolving needs related to culture, overall well-being, and satisfaction (Ismail et al., 2015). Additionally, this relationship is influenced by the integration of new sciences and technologies (Boschi & Pagliughi, 2002). Architecture significantly influences the psychological well-being of residents. Architectural design elements, including the scale of masses, design patterns, architectural features, colors, and even interior design, contribute to enhancing the enjoyment of social life and aid in overcoming depression (Alharbi, 2023).

Through the previously reviewed research, it can be concluded that despite the efforts directed towards studying and improving the quality of life, there is an absence of the contribution of architecture. Therefore, this article aims to introduce a methodology that enables architects to effectively integrate quality of life considerations into the design process.

3. Methodology

This study aims to evaluate and compare aspects of QOL influenced by housing in Medina using a descriptive analytical approach. To establish a contextual foundation, the methodology begins with an overview of Medina's cultural, historical, and environmental characteristics, highlighting how these factors shape the city's housing patterns and influence the residents' quality of life. This background provides an essential context for understanding the relevance of the analysis, and forms the basis for applying the methodology. The descriptive analytical approach is then utilized to examine variables related to QOL standards within the housing samples, identifying key differences between them. The methodology is structured

into three consecutive stages to address the study objectives systematically.

4. Background

Medina, located in the western region of Saudi Arabia, holds unparalleled historical and cultural significance as the first Islamic capital and home of the Prophet Muhammad (peace be upon him). Its architectural identity is deeply rooted in Islamic traditions and is shaped by cultural norms, environmental adaptability, and sustainable practices. Traditional housing in Medina reflects these values, with designs centered around the Prophet's Mosque, the nucleus of the city's urban development. These homes utilize locally sourced materials, such as basalt stones, clay, and palm wood, to address the region's harsh climate. Key architectural features include thick walls for insulation, internal courtyards (Hosh) for ventilation, and Mashrabiyas to maintain privacy while allowing natural light and airflow. The spatial organization of traditional homes was carefully planned to balance privacy, hospitality, and functionality. Spaces were classified by use and location, such as the Dihliz (main entrance hall), Maqad (ground-floor guest area for men), and Majlis (upper-floor reception area for families and occasional guests). Multifunctional spaces, including hallways (Sib) and secondary living areas (Safa), highlight the adaptability of homes to evolving needs. This thoughtful organization ensured that traditional homes could meet diverse family requirements while preserving cultural and social harmony.

Traditional housing incorporates sustainable design features tailored to the local environment. Thick walls, Mashrabiyas, and courtyards provided solutions to environmental challenges while upholding cultural norms. These elements not only enhanced thermal comfort, but also underscored the ingenuity of Medina's architectural traditions. The transition to modern housing marked a shift in priority, favoring functionality over cultural and environmental considerations. Simplified spatial arrangements and the omission of culturally significant features have resulted in the loss of the unique characteristics that define traditional homes. While modern designs prioritize efficiency, they risk undermining the social and cultural values embedded in the traditional architecture (Kaki, 2007; Lamei Mustafa, 1981).

Stage 1: Preparation and Development of the Assessment Tool

The Davos Baukultur quality system (DBQS) was used as the primary framework to develop the housing assessment method, (Swiss Federal Office of Culture, 2018a). It includes a detailed framework designed to assess and improve the quality of the built environment, emphasizing cultural significance and sustainable development. Stemming from the principles laid out in the Davos Declaration, this underscores the need to integrate cultural, social, and environmental factors into architecture and urban planning. The system relies on eight core criteria: governance, which focuses on participatory decision-making; functionality, ensuring spaces meet human needs; environment, emphasizing sustainability; economy, which values long-term viability; diversity, promoting inclusivity; context, respecting local heritage; Sense of Place, fostering a strong community identity; and beauty, which considers aesthetic appeal. Together, these criteria offer a comprehensive way to evaluate places, ensuring they are well-designed and meaningful. This framework is adaptable and can be applied to various settings, including individual buildings, neighborhoods, rural areas, public infrastructure, and cultural heritage sites. It even considers interior spaces, ensuring that they contribute to a place's overall quality and experience. By encouraging collaboration and open dialogue among professionals, communities, and stakeholders, the system helps to create vibrant spaces that enhance people's well-being and reflect shared cultural values.

Data for this study were collected through an electronic questionnaire related to housing in Medina. The questionnaire consisted of two sections. The first section included guiding questions to study social factors and common characteristics and verify the samples' accuracy. The second section relied on the DBQS to assess and compare the quality criteria of the study samples (comparison and assessment indicators). As indicated in Table A1 in the appendix, the questionnaire consisted of 36 questions: 12 related to quantitative indicators and 24 pertaining to housing assessment. The DBQS assessment contains six questions for each criterion (Swiss Federal Office of Culture, 2018b). This also suggests that the assessment mechanism is flexible and adaptable to a specific sample to achieve the research objective. Therefore, the following

methods were used in preparing the questionnaire:

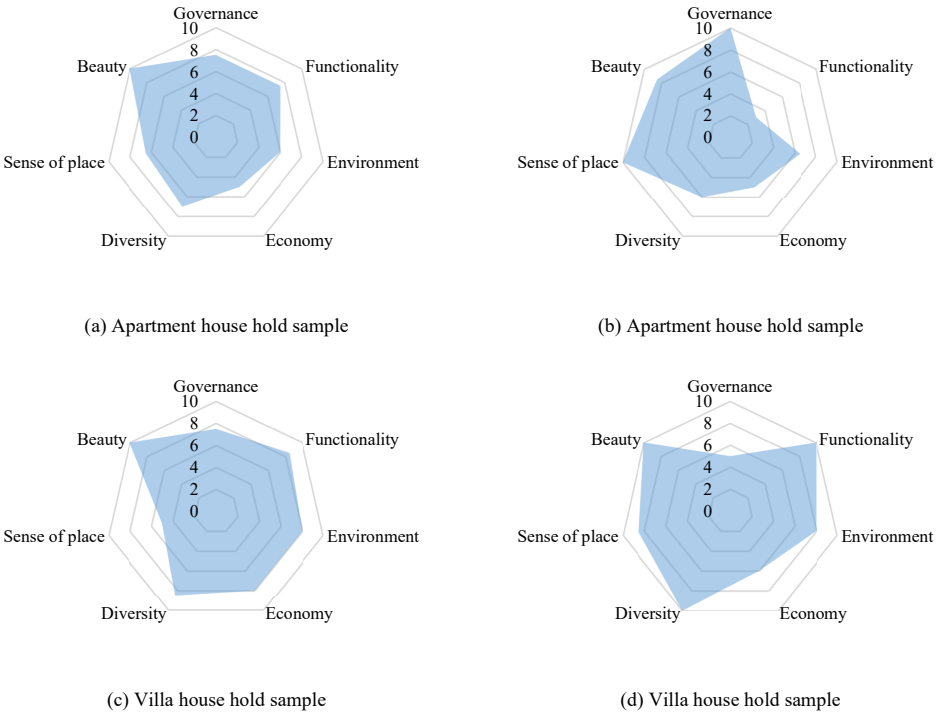
1. Targeting the most significant possible segment of respondents by creating a short and easily understandable questionnaire.
2. Some questions from the DBQS assessment form were excluded to align with the research path, without compromising the primary purpose of the question.
3. For ease of evaluation and comparison, each criterion was assigned a total score of 10 points.
4. Dividing the 10 points among the questions of each criterion based on the weight of each question, ensuring that a positive answer achieves the point.
5. The entire criterion of the architectural context was excluded because its questions were exclusively directed towards experts.

Stage 2: Sorting and Analysis of Assessment Outputs

A total of 379 samples were obtained during this stage. Subsequently, the results were filtered using the following procedures:

1. Results from outside Medina were excluded (49 samples).
2. Questionnaires with incomplete or unacceptable data (11 samples) were excluded.
3. Samples from non-apartment and non-villa residences were excluded because of scarcity (13 samples).
4. As a result, the total number of samples accepted for analysis was 306.

Statistical methods were employed to handle the data and obtain mechanized results to indicate the QOL influenced by the residence for each sample. The average results for each type of residence are compared. Figure 1 presents random samples from the study, analyzed using the DBQS method (European Union, 2021; Swiss Federal Office of Culture, 2018b). Each sample can be independently evaluated according to its response for each criterion in the questionnaire. For instance, sample (a) represents an individual residing in an apartment. When compared to sample (b), who also resides in an apartment, sample (b) exhibits superior performance in terms of sense of place



(a) Apartment house hold sample

(b) Apartment house hold sample

(c) Villa house hold sample

(d) Villa house hold sample

Figure (1). Random samples outputs according to Baukultur quality system

and governance, whereas sample (a) surpasses sample (b) in terms of beauty and functionality. Additionally, it is noteworthy that both samples showed minimal differences in environmental, economic, and diversity criteria.

Additionally, quantitative indicators unrelated to the assessment mechanism were generated to facilitate understanding of the relationships and correlations between housing-related variables (see Tables 1 and 2).

Stage 3: Conclusion and Description

In this stage, a summary of the indicators statistically analyzed in the previous stage is presented. Table 1 illustrates the quantitative indicators collected from the study samples classified by housing type (apartment or villa) and the overall average of both samples, if applicable to the same indicator.

Villa residents benefit from greater spatial advantages, such as accommodating a more

Table (1). Table of quantitative indicators for study samples

Indicator	Sub-category	Indicator value			Unit
		Apartment	Villa	Total	
Average persons per household		4.93	5.99	5.33	Person/Family
Housing type ratio in study samples		62.4%	37.6%		%
Tenure type ratio by housing type	Rent	37.6%	2.6%		%
	Own	22.6%	34.0%		
	Other	2.3%	1.0%		
Average annual income by housing and tenure type	Rent	108,594	308,750	172,994	S.R
	Own	194,982	219,016		
Housing expenses and income (for renters)	Average annual rent	23,365	33,128	28,246	S.R
	Housing ratio to income	21.5%	10.7%	13.54%	%
Average persons per room	Average number of rooms	5.28	8.37	6.44	Room
	Average person per room	1.07	1.4	1.21	Person
Average area per person	Average area	253.02	510.14	382.61	m2
	Average area per person	50.6	85.7	69.82	m2
Years of residence by housing type	< 5 years	24.7%	14.5%		%
	5 to < 10 years	15.5%	8.5%		
	10 to < 15 years	8.5%	5.1%		
	> 15 years	13.5%	9.8%		

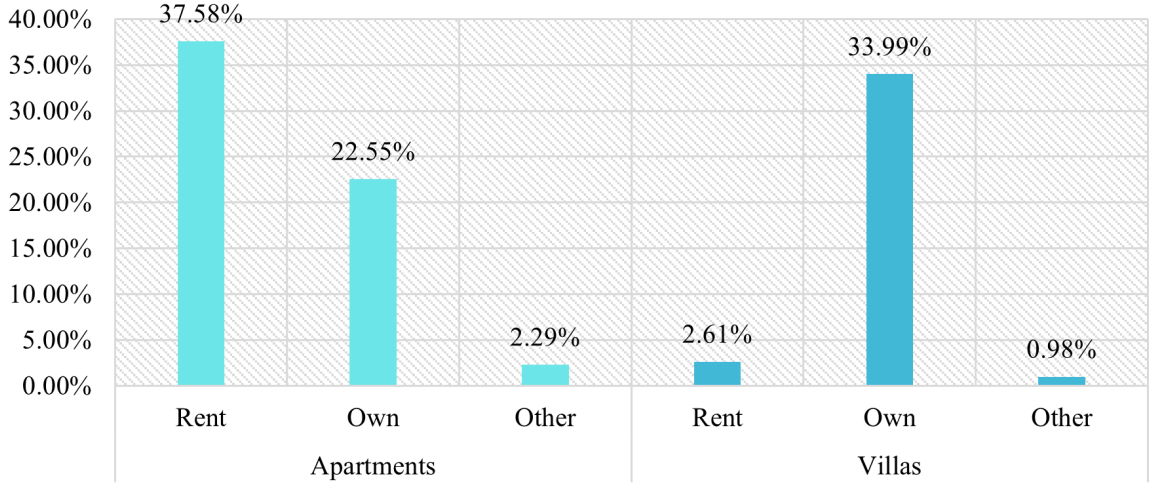


Figure (2). Percentage of housing types by tenure type

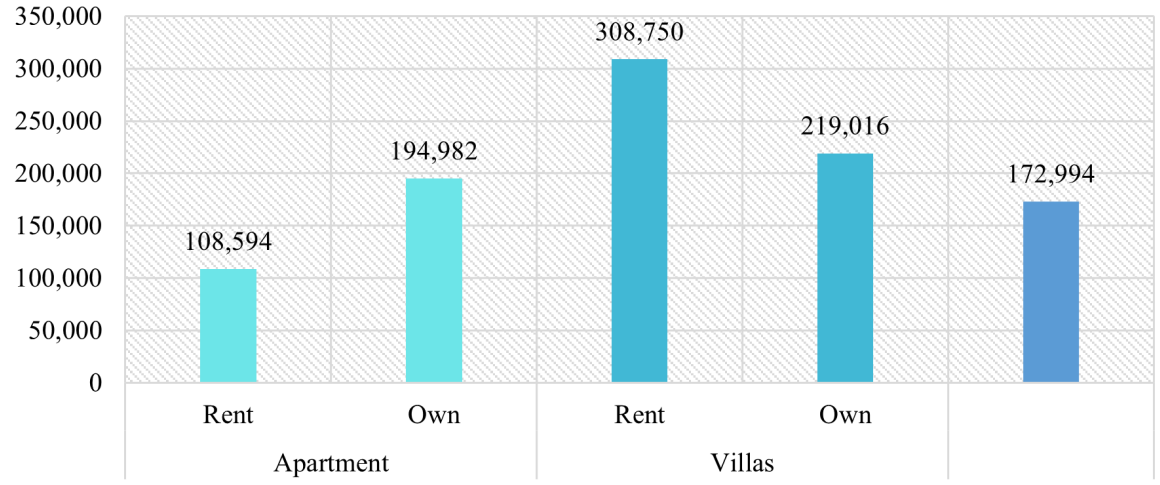


Figure (3). Average annual income (SAR) by housing type and tenure

significant number of occupants. The average area per person and number of rooms per person were significantly higher in villas than in apartments. This aligns with the cultural preference for extended family living and the larger average family size in the region, which exceeds global norms in many countries.

Regarding housing types, the results in Figure 2 indicate that 62.4% of the responses were from apartment residents, whereas 37.6% were from villa residents. The Figure also shows that the highest tenure-type percentage was rent among the tenants of apartments (37.6 %). Approximately 3.27% of the other tenure types in the study samples were excluded because of their low representation, as this small sample size would not yield precise results. Other tenure types varied between work, bank loans, charity, or other providers.

The results also indicate an inverse relationship between the average income and tenure type. The average annual income for the largest segment (rented apartments) was 108,564 SAR, whereas the lowest segment (rented villas) had an average annual income of 308,450 SAR. The results also show a significant convergence between the two owning segments (apartments and villas) of average annual income at 194,982 SAR and 219,016 SAR, respectively. This highlights the demand for apartment ownership even when villa, owning a villa is available (Figure 3).

As shown in Figures 2 and 3, rented apartment households constitute the largest segment of the study sample, representing 37.6% of the total, and they have the lowest income compared to the average income of other segments. It was noted in this research that the most populous groups among the residents of Medina are residents who rent apartments, (Figure 1). This conforms to reports by the General Authority for Statistics (General Authority of Statistics, 2022). Consequently, directing efforts towards this demographic would lead to a more significant improvement in their QOL.

Table 2 indicates the participants' satisfaction level regarding their residences based on housing type and ownership. This table can be read and compared vertically for each indicator. For example, the first indicator (residents' satisfaction with housing adequacy) indicated that 43% of the total sample responded affirmatively, 29% responded partially, and 27% responded that their residences did not meet their needs. A comparison can also be made based on ownership and housing types. The second indicator (percentage of residents' satisfaction with housing costs) indicates that 1 % of the rented apartment samples perceived housing costs as low. In comparison, 23.3 % of the same segment considered the costs suitable, and 14.5 % perceived housing costs as high.

To identify the reasons for residents' dissatisfaction with their residences, an open-ended question was added to the questionnaire (Table A1 Question 17) based on functionality, asking residents what they believe is lacking in

Table (2). Table of housing satisfaction for study samples

Indicator	Sub-category	Indicator value				
		Apartment		Villa		Total of Sub-category
		Rent	Own	Rent	Own	
Residents' satisfaction with housing adequacy	Meet the needs	13%	8%	0%	22%	43%
	Partially	12%	7%	2%	8%	29%
	Does not	14%	7%	1%	5%	27%
Residents' satisfaction with housing expenses	Low expenses	1.0%	0.3%	0.0%	0.3%	2%
	Moderate expenses	23.3%	17.6%	2.0%	17.6%	60%
	High expenses	14.5%	5.4%	7.0%	17.2%	38%
Residents 'satisfaction with the level of privacy in housing	High privacy	18.9%	16.9%	2.0%	29.7%	68%
	Moderate privacy	13.2%	4.4%	0.3%	3.4%	21%
	No privacy	6.8%	2.0%	0.3%	2.0%	11%
Residents' satisfaction with the size of their housing	Enough space	14.9%	10.1%	1.0%	26.7%	53%
	Somewhat enough	12.5%	6.4%	1.0%	6.1%	26%
	Not enough space	11.5%	6.8%	0.7%	2.4%	21%

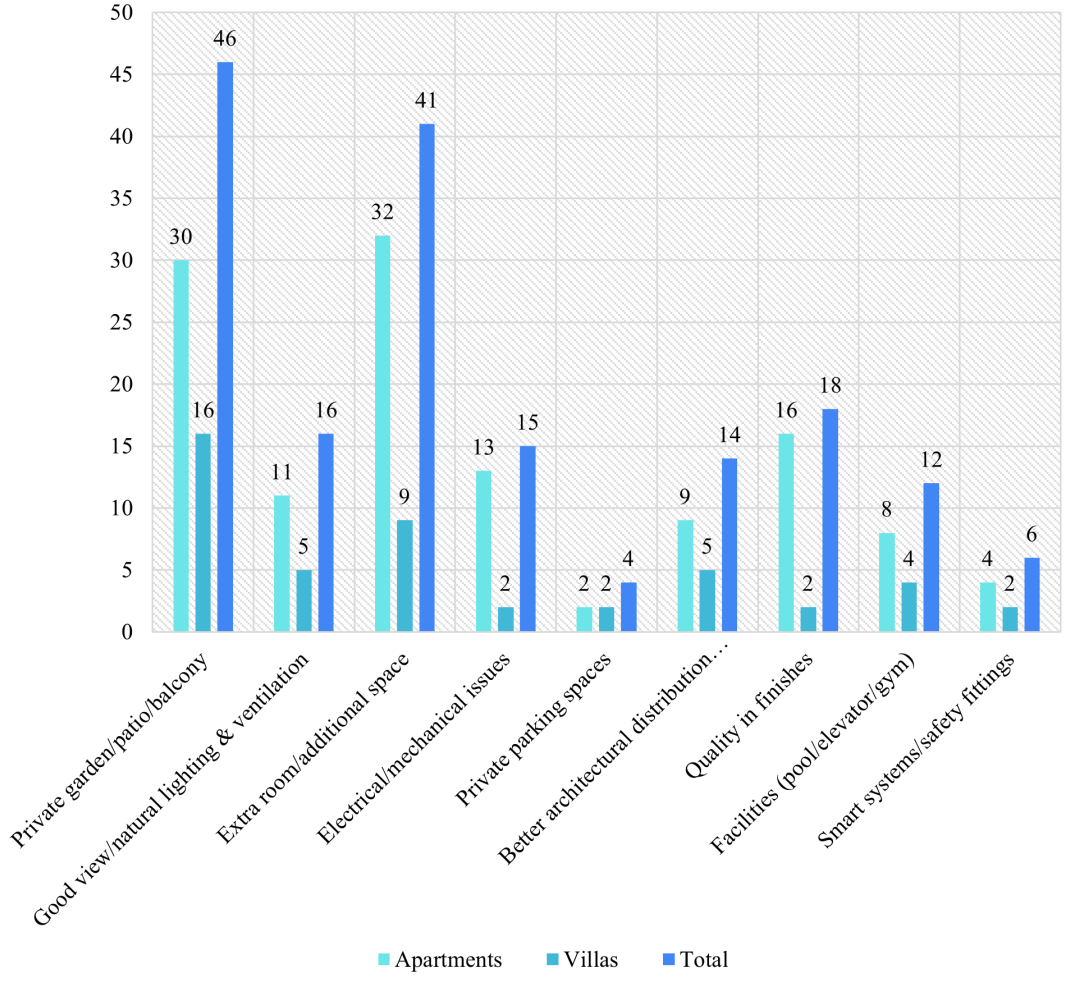


Figure (4). Residents' preferences according to housing type

their housing units. The available choices are: "Nothing is lacking in the housing unit" or, if there are any deficiencies, residents have the option to mention their preferences without restrictions. Responses (preferences) related to factors unrelated to architectural design, such as the location of the residence and presence of services, were excluded considering the scope of the current study. Nine diverse categories were identified when categorizing preferences, as some samples mentioned multiple preferences. Therefore, the number of responses may not match the number of preferences. One of the most commonly mentioned preferences is a private open area (exclusive to the family) such as private gardens, balconies, roofs, or courtyards. The results also indicate that the second preference is the presence of an additional space or an extra room, indicating a discrepancy between needs and preferences when comparing the results of space-related preferences with residents' satisfaction with the space in their residences (Table 2).

Figure 5 presents a summary of the research methodology, providing a visual comparison of the QOL aspects influenced by housing among residents. The close alignment of the graph across each criterion suggests that the study samples were well suited for comparison, reflecting similarities in social and cultural backgrounds and residents' desires and needs. The graph indicates that the most significant variance among the criteria is observed in the functional criterion. This indicates that residential villas in Medina better meet residents' needs, such as providing improved natural lighting and more space. Conversely, the governance criterion exhibits the least variance between the two samples, likely because governance is more closely related to the characteristics of residents than the specific details of the housing itself. The differences for each criterion will be discussed in more detail in the results and Discussion.

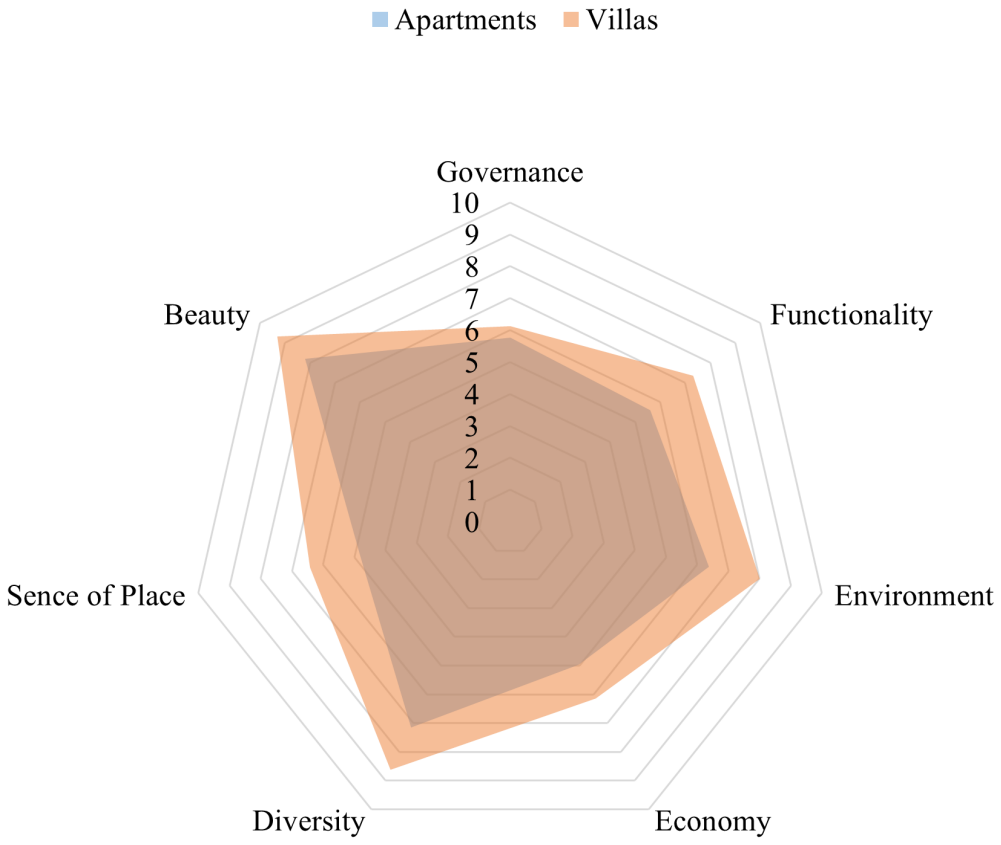


Figure (5). Total average samples comparison according to Baukultur quality system

5. Results

5.1 Statistical and Observational Indicators

These indicators were developed to establish a benchmark and relative scale for comparing samples based on the characteristics specific to each housing type. The aim was to track recurring patterns and identify standard features among housing types that contributed to consistent outcomes. The following charts illustrate these findings.

To ensure the accuracy and validity of the collected data, comparisons were made with figures issued by the General Authority for Statistics for 2022. According to the Authority, the average household size in Medina (Emirate headquarters) was 4.70 persons per household, while the samples indicated an average of 5.33 persons per household. Additionally, the distribution of housing types shows that apartments and villas accounted for 88% and 12% of the total residential units in these categories, respectively (General Authority of Statistics, 2022) .

In their study on housing preferences among low-income families in the major cities of Saudi Arabia, Opoku and Abdul-Muhmin (2010) concluded that among the ten factors influencing housing choice, the provision of outdoor spaces was among the least desired three factors. This contrasts with the findings from the Medina samples, where the desire for outdoor spaces in housing ranked first among the nine preferences (Figure 4) across all income and tenure categories. This paradox may be explained by the fact that providing a private open area is not a priority for low-income groups. In contrast, it is considered a priority across the average of all living groups.

The sample results can also be compared regarding housing area per person. According to the Urban Observatory report issued by the Madinah Development Authority for 2021 (Madinah Region Development Authority, 2021)The average housing area per person was 50 square meters. In contrast, the sample results from this study indicated an average area of 69.8 square meters per person. This discrepancy may be attributed to the smaller sample size in this study compared with that used by the Urban Observatory. Notably, the sample results for residential apartments showed an average area of 50.6 square meters per person.

5.2 Comparison in Quality-of-Life Indicators

This study offers a comprehensive analysis by comparing the results for each criterion, with a particular emphasis on the two primary housing types: apartments and villas. The analysis is grounded in a methodological framework designed for comparative studies, in which the outcomes are intended to be compared within similar contexts. It is important to note that the validity of this comparison is dependent on certain conditions, including the necessity of similar spatial and cultural characteristics among the samples. Comparing

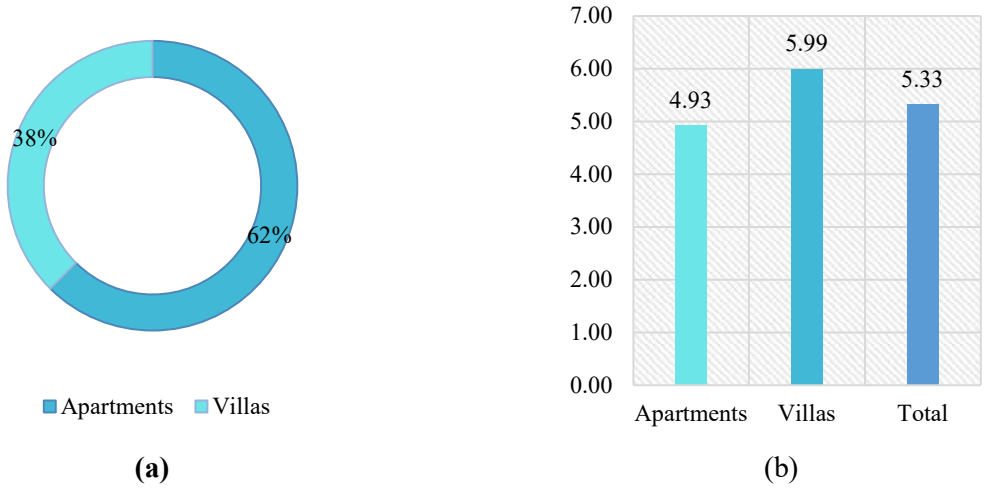


Figure (6). (a) Percentage of housing types to total of apartments and villas; (b) Average number of household members by type of housing

Table (3). Quality of life indicators assessment for housing category samples

Housing Category	Governance	Functionality	Environment	Economy	Diversity	Sense of place	Beauty
Apartments – Rent	5.39	5.37	5.95	4.42	6.69	4.56	7.78
Apartments – Own	6.41	6.06	7.20	5.96	8.01	5.14	8.81
Average Apartments	5.77	5.59	6.37	4.97	7.15	4.81	8.19
Villa - Own	6.13	7.33	8	6.15	8.62	6.42	9.30

samples with different characteristics using the same methodology can result in misleading outcomes.

It was observed that samples of homeowners (whether residing in an apartment or a villa) demonstrated better performance in terms of QOL indicators. This disparity may be attributed to cultural factors, as rented housing is often perceived as a temporary solution for families, typically until the number of children increases or the economic conditions improve. Consequently, the decision-making process for selecting an ownership home is likely to be more rigorous than that for rental housing. This observation is detailed in Table 3, which presents QOL indicators for the assessment samples. The results show that apartment-owning samples outperformed apartment-renting samples across all criteria. Similarly, villa-owning samples exceeded the apartment-owning category for all requirements. Consequently, it can be concluded that the category with the highest number of samples (apartment renting) demonstrated the weakest performance regarding QOL indicators.

The following sections present the results, offering a detailed exploration of how each criterion contributes to the overall conclusions of the study:

- **Governance**: The governance criterion assesses the level of awareness among resident samples regarding the concept of quality of life and the extent to which this concept is prevalent in their community. The findings indicate that awareness of housing quality was relatively consistent across all categories, representing approximately 60% of the total sample. This criterion is mainly targeted at specialists, and aims to evaluate decision-making processes and the degree to which these processes consider the specific circumstances and needs of the population.
- **Functionality**: This criterion exhibited the most significant variation among the study samples regarding QoL assessment. As depicted in Figure 5, apartment residents scored 5.59 out of 10 on the functionality criterion, whereas villa residents scored 7.33 out of 10, marking the most significant disparity across all requirements. Additionally, Figure 4 highlights that most of the dissatisfied responses originated from apartment residents. Notably, there was no significant variation in sense of security and belonging, regardless of housing type. Moreover, Table 2, which measures residents' satisfaction levels with housing, indicates that the overall satisfaction rates for each indicator were consistently higher among villa residents than apartment residents.
- **Environment**: To avoid confusion, it is essential to clarify that the environmental criterion in this study is considered a specialized standard that focuses specifically on the residential environment rather than the external environment. The environmental criteria in the survey assessed factors directly affecting residents, such as common areas, pollutants, and building materials. The results indicate that villa residents have greater access to private gardens or courtyards than apartment residents. However, apartment residents are more frequently exposed to negative factors such as noise pollution from neighbors, neglected maintenance, and other disturbances.
- **Economy**: The survey results revealed that residents living in villas reported the highest satisfaction with the housing economy. For instance, the largest segment of respondents who expressed a desire to

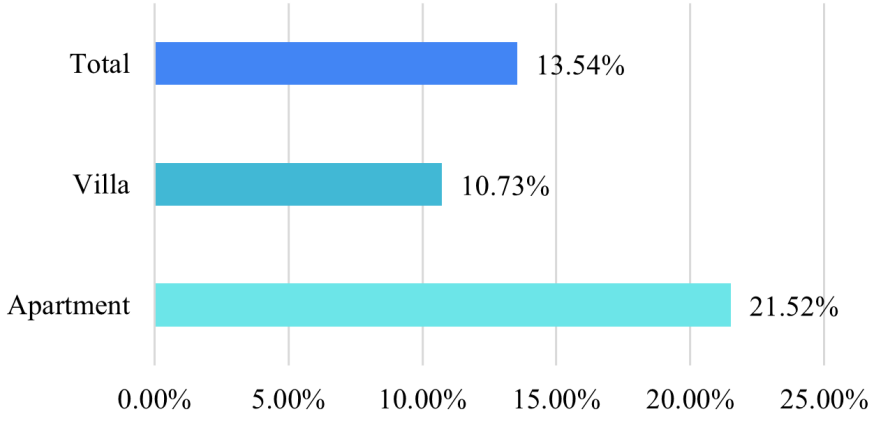


Figure (7). Average Housing Expenditure as a Percentage of Income for renters

continue living in their current residence was villa owners, representing 29.1% of the total sample. Conversely, the highest percentage of respondents who did not wish to remain in their current residence were apartment renters, accounting for 12.2%. As shown in Table 2, satisfaction with housing costs varied, with 60% of the total sample considering the costs reasonable, while 38% deemed them high. This suggests that housing costs in Medina are generally perceived as substantial regardless of housing type or tenure. Regarding maintenance and finishing materials, the results further indicate that villa dwellers (whether owning or renting) were more satisfied with the finishes in their homes than were apartment residents. Figure 7 presents the average housing expenditure as a percentage of income for house renters.

- **Diversity**: The diversity criterion assesses the adaptability of housing to various user categories, such as different age groups and cultural backgrounds, that meet the diverse activities performed within the residence. For instance, 54% of the respondents of apartment renters reported that their homes somewhat met their needs, 12% felt that their homes did not meet their daily needs, and 34% indicated that their residences fully met their daily needs. In contrast, there was a significant disparity when comparing this group to villa owners, with 78% of villa owners believing that their homes adequately met their daily needs, suggesting notable differences in space or psychological comfort. Privacy, a critical aspect of housing, particularly in Arab and Islamic societies, reflects broader societal and cultural dynamics. The study found that 68% of respondents perceived that their homes provided sufficient privacy, 21% considered that they offered some privacy, and 11% indicated a lack of privacy. The researcher suggests that privacy remains a highly valued feature of homes within Medina. However, the variation in responses could be attributed to differing interpretations of privacy, including factors such as the inclusivity of entrances and shared spaces within the privacy scale, which could provide more precise results. Regarding the suitability of homes in Medina for families from diverse cultural backgrounds, 48% of respondents perceived that homes in the region accommodate various cultures and are not exclusively tailored to native residents. Meanwhile, 30% considered that homes might accommodate some cultural differences, and 22% viewed that housing was primarily designed to meet the needs of residents. This finding suggests a shift in housing culture, with a growing emphasis on attracting a broader range of residents without compromising recognized housing needs. Lastly, the survey inquired about the availability of spaces for family gatherings

within residences, with 95% of respondents affirming the presence of such spaces and only 5% indicating otherwise. This response highlights the enduring importance of this cultural practice in homes, although the survey did not measure the frequency of the use of these spaces.

- **Sense of Place**: Social science and environmental psychology research has demonstrated that individuals familiar with a place's characteristics, identity, and history tend to feel more connected to it. In this study, the assessment mechanism treated this criterion as a cultural standard to evaluate residents' perceptions, regardless of the quality or ownership of their housing. The results indicate that 34% of the study sample believed that current homes will not be suitable for the next generation, 42% considered they may be appropriate, and 24% considered they will be appropriate. This suggests that cultural and housing needs will likely undergo significant changes for future generations, potentially impacting the local culture, housing quality, and design trends. The study also revealed a slight variation in residents' beliefs about whether their homes in Medina reflected their local and heritage identity. Specifically, 31% of respondents perceived their homes reflected their regional identity, 35% considered they reflected it to some extent, and 34% thought their homes did not reflect their identity, but rather foreign cultures. This issue may spark extensive debate at both national and city levels. Additionally, the influences on architectural identity and the evolving needs of dwellers might change owing to various factors, including economic growth and social openness.
- **Beauty**: Researchers suggest that there are no universal standards for architectural beauty and that beauty is not the exclusive domain of experts but should be viewed as a fundamental cultural value and a shared objective (Swiss Federal Office of Culture, 2018a). The assessment results revealed that most villa residents described their homes as aesthetically pleasing. However, variation was observed among apartment residents regarding this criterion, as shown in Table 4. Notably, the overall beauty criteria assessment was largely positive. This may be attributed to the fact that fixed standards do not bind architectural beauty but is instead shaped by individual preferences, leading to different interpretations of beauty.

6. Conclusion

This research aims to develop and apply a framework for assessing the quality of life influenced by the architectural design of family housing. It employs an eight-criterion methodology to analyze key indicators within these households. It was found that nearly half of the respondents

Table (4). Beauty criterion results based on the study samples.

Indicator	Housing type	Tenure type	Yes	Percentage	Somewhat	Percentage	No	Percentage
In general, can you describe your residence as beautiful?	Apartment	Rent	45	15.2%	56	18.9%	14	4.7%
		Own	37	12.5%	28	9.5%	4	1.4%
	Villa	Rent	5	1.7%	2	0.7%	1	0.3%
		Own	86	29.1%	15	5.1%	3	1.0%
	Total	**296**	**173**	**58.4%**	**101**	**34.1%**	**22**	**7.4%**
Do you feel an immediate sense of comfort when you enter your home?	Apartment	Rent	72	24.3%	37	12.5%	6	2.0%
		Own	58	19.6%	11	3.7%	0	0.0%
	Villa	Rent	8	2.7%	0	0.0%	0	0.0%
		Own	95	32.1%	6	2.0%	3	1.0%
	Total	**296**	**233**	**78.7%**	**54**	**18.2%**	**9**	**3.0%**
Do you think that the aesthetics of a home contributes to a person's comfort and well-being?	Apartment	Rent	102	34.5%	12	4.1%	1	0.3%
		Own	65	22.0%	4	1.4%	0	0.0%
	Villa	Rent	7	2.4%	0	0.0%	1	0.3%
		Own	98	33.1%	4	1.4%	2	0.7%
	Total	**296**	**272**	**91.9%**	**20**	**6.8%**	**4**	**1.4%**

believed that their housing could be improved considering different aspects. This study utilized the Davos Baukultur Quality System assessment mechanism, which provides a comparative visualization of its eight criteria for evaluating housing in Madinah. The results indicated that villa residents outperformed apartment residents across all requirements. The functional criteria exhibited the most significant variation among housing types in Madinah (apartments and villas), particularly regarding overall satisfaction, diversity in meeting household needs, and comfort. By contrast, the governance criterion showed less variation between housing types, which may be attributed to its assessment being based more on cultural factors rather than the housing unit itself. Furthermore, the evaluation of this criterion can potentially be expanded to encompass architectural factors. The results also revealed that income disparity among the study samples contributed to the differences in housing tenure quality. Contrary to expectations, high-income households were more likely to own homes, whereas low-income households tended to rent. However, a high income did not dictate the housing type, as high-income households were not necessarily more likely to reside in villas. This finding suggests a balance in housing preferences across income levels.

In recent years, the local authorities responsible for urban planning in Madinah have made significant efforts to improve the city's urban environment for both residents and visitors. These efforts have led to substantial enhancements in external urban spaces, aiming to improve the quality of life and provide amenities that meet families' needs beyond their homes, thereby promoting a culture of shared spaces. Although some of these developments have been successful, a strong culture of local ownership and privacy remains prevalent. Future research could broaden its scope by refining the methodology to study specific architectural behaviors, or by focusing on particular issues for further investigation, including other housing types beyond villas and apartments. Additionally, it should consider incorporating discussions around the Beauty criterion, engaging experts and non-experts, and relying on rationally founded experience and local residents' preferences.

These findings suggest that designers should consider the following recommendations when designing homes.

- Consider a dedicated outdoor area (garden, courtyard, etc.) for each household in residential apartments, mainly because it is the largest segment. However, this may be challenging because of high demand for housing units, limited space, and other factors. Nonetheless, this issue can be addressed by introducing a new design system (such as a shared indoor garden) or revitalizing previous architectural elements (balconies and alcoves), while ensuring privacy and utilizing modern technologies.
- It is recommended that designers develop surveys to understand clients' needs when designing their homes, as the old culture of housing space distribution is facing a new cultural change.
- Architects should consider new methods to solve the issue of natural lighting and good views in housing, such as using old methods of internal courtyards while maintaining privacy.
- Despite the significant growth and size of Medina's housing and construction sector, it still suffers from poor quality of materials used and the limited adoption of modern systems.
- One of the major criticisms directed towards designers in Medina is the complete departure from the architectural context of the place. This may be attributed to the diversity of cultural influences and transformation of old needs into modern ones. However, this does not preclude retaining and incorporating traditional architectural elements in ways that align with modern needs rather than completely replacing them with external architectural elements.

It should be noted that the effectiveness of this methodology was demonstrated when it was used to compare samples while considering the fairness of the comparisons. This methodology cannot be applied to samples with different cultural, social, and economic characteristics. Rather, it is valid to study and compare samples with the same characteristics. This study has shown that it is possible to conceptualize quality of life in redness by identifying areas of deficiency and highlighting changes in residents' needs and desires.

7. Appendix A

Table A 1: Questionnaire Preparation and Adjustment

	Criteria	Questions	Options	Mark
1	General Questions	How many family members live with you?	# Number	-
2		What city do you live in?	Medina-Makkah-Jeddah-Riyadh-Other	-
3		What type of housing do you live in?	Apartment-Villa-Other	-
4		What type of housing tenure does your family have?	Own-Rent-Other	-
5		What is the average annual family income?	# Number	-
6		If the house is rented - what are its annual costs?	Own-# Number	-
7		What is the total area of the residence you are living in?	# Number- I Don't know	-
8		How many years have you lived in your current residence?	# Number	-
9		How many rooms are in your house?	# Number	-
10		How many years have you lived in your current city?	# Number	-
11		What is your nationality	Saudi-Non-Saudi	-
12		Are you a specialist or familiar with housing issues?	Yes-No-Somewhat	-
13	Governance	Are you familiar with the concept of quality of residential life?	Yes-No-Somewhat	5
14		Is there a broad discussion about improving the quality of residential life in your area?	Yes-No-Somewhat	5
15	Functionality	Do you think that your current residence meets all your needs?	Yes-No-Somewhat	3
16		Do you think that your home is comfortable in terms of design, materials and lighting?	Yes-No-Somewhat	2
17		What do you think is missing from housing according to your need?	Nothing-# (Open Answer)	3
18		Do you feel safe and belonging inside your home?	Yes-No-Somewhat	2
19	Environment	Is there an internal garden or courtyard inside your residence that is accessible to everyone?	Yes-No	2
20		Is the population density within your building high?	Yes-No-Somewhat	2
21		Are the building facilities well-maintained and clean, and who is responsible for their upkeep?	No one - the building owner - the residents collectively - one of the residents always volunteers.	2
22		Does the building have good building materials and finishes (for example, it does not require a lot of maintenance, or the roofs do not leak water, etc.)?	Yes-No-Somewhat	2
23		Does your building free from pollutants (such as noise and garbage) that can harm the residents' health?	Yes, clean most of the time - sometimes gets dirty - always dirty.	2
24	Economy	Do you believe that your residence is good and worth living in for a long period of time?	Yes-No-Somewhat	3
25		Are the finishing materials used in your residence good (paints, ceilings, floors)?	Yes-No-Somewhat	3
26		Do you consider the costs of your residence to be reasonable or high?	High-Resonable-Low	4
27	Diversity	Does your residence help fulfill your daily needs (such as comfort, work, entertainment, etc.) and so on?	Yes-No-Somewhat	3
28		Does your residence provide privacy for every resident while maintaining the atmosphere of family gatherings?	Yes-No-Somewhat	3
29		Do you believe that your residence caters to the needs of different families from diverse cultures, or does it primarily cater to the needs of the local culture?	Yes-No-Somewhat	2
30		Is there a place in your residence for family gatherings?	Yes-No	2
31	Sense of place	Do you believe that the residences in Al-Madinah Al-Munawwarah (Madinah) are distinctive and reflect its local identity, or are they similar to residences in different cities and countries?	Yes-No-Somewhat	3

Table A 1: Questionnaire Preparation and Adjustment

32		Do you believe that today's residences will meet the needs of the next generation?	Yes-No-Somewhat	3
33		Do you believe that the area of your residence is suitable for your needs?	Yes-No-Somewhat	4
34	Beauty	In general, can you describe your residence as beautiful?	Yes-No-Somewhat	3
35		Do you feel an immediate sense of comfort when you enter your home?	Yes-No-Somewhat	4
36		Do you think that the aesthetics of a home contributes to a person's comfort and well-being?	Yes-No-Somewhat	3

8. References

Alharbi, M. "Impacts of Architectural Design on Quality of Life and Society". Journal of Al-Azhar University Engineering Sector, 18(68), pp.641–650. (2023). https://doi.org/10.21608/auej.2023.310351

Boschi, N., & Pagliughi, L. M. "Quality of life: meditations on people and architecture". (2002).

European Union. "Do your own evaluation of how to reach quality goals in architecture and the built environment for everyone". Publications Office of the European Union. (2021). https://doi.org/10.2766/973427

General Authority of Statistics. Saudi Census 2022 - Statistical Database. https://portal.saudicensus.sa/portal

Ismail, F., Jabar, I. L., Janipha, N. A. I., & Razali, R. "Measuring the Quality of Life in Low Cost Residential Environment". Procedia - Social and Behavioral Sciences, 168, pp.270–279. (2015). https://doi.org/10.1016/j.sbspro.2014.10.232

Mercer. "Quality of Living City Ranking 2023". https://www.mercer.com/insights/total-rewards/talent-mobility-insights/quality-of-living-city-ranking/

OECD. "Better Life Index: Definitions and Metadata". pp.8. (2022). http://www.oecd.org/statistics/OECD-Better-Life-Index-definitions-2019.pdf

Opoku, R. A., & Abdul-Muhmin, A. G. "Housing preferences and attribute importance among low-income consumers in Saudi Arabia". Habitat International, 34(2), pp.219–227. (2010). https://doi.org/10.1016/j.habitatint.2009.09.006

Swiss Federal Office of Culture. (a). "Eight criteria for a high-quality Baukultur". (2018). https://www.bak.admin.ch/bak/en/home/baukultur/qualitaet/davos-qualitaetssystem-baukultur.html#:~:text=It is an instrument enabling,Sense of Place and Beauty.

Swiss Federal Office of Culture. (b). "The Davos Baukultur Quality System Assessment form". (2018). https://www.bak.admin.ch/dam/bak/en/dokumente/baukultur/qualtaet/davos_baukultur_formular.pdf.download.pdf/03-EN_DAVOS_BAUKULTUR_FORMULAR.pdf

UN-HABITAT. "MEASUREMENT OF CITY PROSPERITY: Methodology and Metadata". (2014). https://unhabitat.org/sites/default/files/2019/02/CPI-METADATA.2016.pdf

UN-HABITAT. Madinah City Profile. https://unhabitat.org/madinah-city-profile

Arabic References

Abd alkareem, A. A. "Urban life Quality Indicators and How to Measure Space: Practical Study of Tobruk City." Journal of Urban Studies 40, pp. 583–614. (2012). https://journals.ekb.eg/article_6064.html.

Vision 2030. "Quality of Life Program Document 2023 Implementation Plan." (2023). https://www.vision2030.gov.sa/ar/vision-2030/vrp/quality-of-life-program/.

Eish, F. G. A. A. M. "The Role of the Urban Dimension in Assessing Quality of Life from

the Perspective of Urban Sustainability in the New City of Ali Mendjeli, Constantine." Insaniyat Journal 25(3), pp. 15–45. (2021). https://journals.openedition.org/insaniyat/25765#tocto1n3.

Abdel Kader, S. S., & Qutb, S. M. "A Proposed Framework for Analyzing the Quality of Community Life Associated with Tourist Activity to Guide Decision-Makers in Enhancing Urban Environmental Standards in Those Areas (Applied to the City of Kerdasa)." Arab Scientific Research Journal 4(4), pp. 45–64. (2023). https://doi.org/10.21608/ARABSTI.2024.335616.

Kaki, Abdul Aziz A. The Urban Fabric of Medina: Characteristics and Components. The Executive Committee for Central Area Development.

Lamei Mostafa, Saleh. Medina: Its Urban Development and Architectural Heritage. Dar Al-Nahda Al-Arabiya

Maamarieh, B. "Quality of Life: Definitions, Determinants, Manifestations, and Dimensions." Journal of Social and Human Sciences 1, pp. 15–26. (2020). https://doi.org/10.35393/1730-006-002-014.

Naji, S. "Urban Quality of Life in Residential Neighborhoods: A Comparative Study of Al-Badr and Belayat Neighborhoods in Biskra City." [Mohamed Khider University of Biskra]. https://library.alkafeel.net/dic/details/272721/.

Madinah Region Development Authority. Humanizing Medina. Madinah Region Development Authority. https://www.mda.gov.sa/News/Details/1894.

Madinah Region Development Authority. Urban Indicator Report for Medina. Madinah Region Development Authority.

doi:10.33948/JAP-KSU-37-2-2

مؤشرات جودة الحياة من المنظور المعماري: دراسة حالة في المدينة المنورة

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ملخص البحث. في ظل النمو الذي تسعى إليه الدول لتحسين جودة الحياة داخل مجتمعاتها؛ فإن الاهتمام بجودة الحياة داخل المساكن يعتبر من أول المؤثرات على جودة حياة الإنسان. وقد اهتمَّ كثير من المنظمات والأبحاث بوضع منهجيات لإنتاج مؤشرات جودة الحياة داخل البيئة الحضرية وهو ما أخرج عدة آليات وأدوات قابلة للتكيف مع المعطيات الخاصة بالمجتمعات. تناولت هذه الورقة مسألة إمكانية تسخير هذه الآليات لتقييم مؤشرات جودة الحياة المتأثرة بالمساكن من المنظور المعماري، وذلك بتحديد مؤشرات تتأثر بالعوامل المعمارية للبيئة السكنية تسمح للباحثين بالمقارنة والمفاضلة. تم اتخاذ المدينة المنورة نطاقاً مكانياً لتحديد عينات الدراسة، وتم الحصول على ٣٧٩ استجابة بوصفها عينات للدراسة. أظهرت نتائج الدراسة أن العامل الأول للمقارنة بين المساكن هو نوع المسكن؛ حيث كانت الأغلبية العظمى للمساكن من الشقق والفلل. وأظهرت الآلية أن ساكني الفلل يشعرون برضى أكبر من معايير التقييم كافة. كما أظهرت الدراسة أنه من بين ٩ أوجه لتحسين المسكن؛ كان أول ٣ أوجه هي: وجود منطقة خارجية أو حديقة خاصة بالأسرة، وتوفر المزيد من الإضاءة الطبيعية، وتوفير مساحة أكبر على الترتيب. بناء عليه توصي هذه الورقة باتباع الآلية لتحليل جودة الحياة بالمساكن في نطاق مكاني معين لدراسة حالة المساكن الحالية، ووضع أهداف للمصممين وتوصيات على صعيد تحسين جودة الحياة وتوفير الاحتياجات.

الكلمات المفتاحية: مؤشرات جودة الحياة، الفراغات السكنية، تحسين التصميم المعماري، الرضى عن المسكن، المدينة المنورة.