

Social Sustainability in Gated Communities Versus Conventional Communities: The Case of Amman



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<https://doi.org/10.18280/ijstdp.170714>

ABSTRACT

Received: 29 July 2022

Accepted: 26 October 2022

Keywords:

social sustainability, residential development, gated community, conventional community, spatial analysis

There is a growing interest in gated communities as residential developments for upper-middle-income residents in Amman, Jordan, but limited research has been conducted on this subject. Additionally, no clear codes or strategies exist to regulate these communities. Social sustainability has been recognized as a fundamental component of sustainability and residential communities since it concerns individuals' interactions and livable communities. This can be determined through five indicators: personal relationships, social network support, civic engagement, levels of safety, and shared values and norms. Therefore, this research investigates the impact of these indicators on one's social life in different typologies of residential development. This exploration involved a mixed-method approach that began with a spatial analysis of selected gated communities, a conventional community, and a survey of households. Subsequently, the results revealed that the mega gated communities were the best in terms of social sustainability in personal relationships, social networks, and civic engagement. These facts may relate to the availability of public spaces and facilities, which are either missing or limited in other developments. Such amenities are integral components of social infrastructure and involve diverse activities, necessitating design guidelines for residential development considering social sustainability.

1. INTRODUCTION

The term "sustainability" has been discussed thoroughly in environmental and economic aspects, but not in the social field. Social sustainability plays a significant role in shaping social life and livable communities. Providing people with a high quality of life, affordable housing and service, and well-planned workable neighborhood allows the city to attract new investments and migrants. This adds economic value by creating jobs and driving growth towards optimal destiny, which reduces the vulnerability of residence. So, people are bound to be part of any sustainable development endeavor if it deemed to be successful. This entails the need to investigate this concept to improve residents' quality of life regarding social integration, cohesion, inclusion, and justice [1]. Similarly, there has been a continuous effort to promote individual satisfaction by generating new typologies of residential development. This work has been clear in Amman, the capital of Jordan, in the emergence of several prototypes as a response to many forces in the housing industry, such as urbanization and the financial challenges of ongoing increases in housing costs. This situation may explain the city's shift from single-detached homes to multi-family housing with a limited appreciation and the appearance of new development typologies, such as gated communities [2].

The phenomenon of gated communities has expanded rapidly, especially in upper-middle-income communities. Simultaneously, there are no codes or strategies regulating this kind of development, but several researchers have discussed

gated communities at the international level. However, at the local level, few studies have highlighted this field's emergence, characteristics, types, features, or configuration. Additionally, these studies were mainly descriptive rather than analytical [3, 4]. From an assessment perspective, there is a need to develop appropriate methods and quantitative indicators that enable designers and planners to understand the gated community situation comprehensively. Especially it is criticized by isolation and alienation from the surroundings that negatively affect social life. In another respect, gated community with respect to a conventional one has seeds for social infrastructure represented by open public space. Consequently, this research involves two main issues: social sustainability and residential development types. To assess the impact of residential development types on social sustainability, this study identifies the differences in social sustainability between gated and conventional communities in Amman.

This study aimed to compare between different types of residential development in terms of social sustainability. This was done through exploring research constructs (social sustainability and residential development). Then, identifying the research question and associated methodology steps represented by general observation and spatial analysis for the selected community along with collecting data from the head of household through a structured questionnaire. Descriptive and inferential analysis was undertaken for the collected data that aimed to compare social sustainability between mega communities. The research findings highlighted the significance of open space within residential neighborhoods

along with sustainable management in terms of continuous maintenance and development. On the other hand, there is no governmental policy in Jordan enforcing providing common space or facility, which will be a hub for several activities, in order to guarantee social interaction between residents. Mega gated community with luxurious open space, even if it is located out of the city skirt, has better social sustainability in terms of social relations and civic participation.

1.1 Social sustainability

Despite the significance of social sustainability, some uncertainty remains connected with this concept's definition in all disciplines. This connection is evident in various designations and descriptions of this concept, including social standards, institutional sustainability, and democratic rights [5, 6]. That is, social sustainability concerns how individuals, communities, and societies live and communicate with each other. Various definitions of social sustainability have supported this, and some researchers have highlighted the values of equity and democracy, which require that every human have certain political, civil, economic, social, and cultural rights [7, 8]. For instance, Polèse et al. [9] examined social relationships to create a harmonious community on both cultural and social levels to encourage integration among everyone in these groups [10]. Ahmad and Ahmed [11] discussed the need for a specific arrangement and a clear plan that guarantees the achievement of social sustainability goals. This idea was supported by Colantonio [12], who acknowledged the necessity of order, a requirement to face certain challenges. Generally, social sustainability can be identified as a way to enhance social welfare within societies; improve societal quality; and achieve justice, human dignity, and participation in both the present and the future.

Social sustainability associated with social relations between individuals involves several factors. In this vein, McMillan and Chavis [13] proposed four components of social sustainability: a) membership is the feeling of belonging to a community, b) influence is acting for the community and its members, c) reinforcement is the integration and fulfillment of needs, and d) shared emotional connection is the relative stability of a community and a positive sense of identification and pride in the community [14]. Sachs [7] discussed social sustainability and added several elements to achieve social sustainability: a-social homogeneity, b- equitable incomes, c- equitable access to goods, services, and employment [15]. Forrest and Kearns [16] added the behavioral issues to the dimensions to be an umbrella term, including social interaction, social participation in formal and informal collective groups, community stability, safety, security, trust, and a sense of belonging. In the USA, Carte and Jennings [17] studied an assessment of social sustainability that identified diversity, philanthropy, health and safety, and human rights as social sustainability factors. Additionally, a study by Whooley [18] considered safety, health, diversity, and poverty as social sustainability factors in Europe. Over time, researchers have named several other social sustainability factors, such as health, safety, and having active communities. Thus, social sustainability is a multidisciplinary theme connected with the social network.

Generally, researchers and scholars agree on definitions of the factors or elements that affect social sustainability, but there are differences in the terminology. The Organization for Economic Co-operation and Development (OECD) 2013

published a report with five main social sustainability factors for communities: personal relationships, social network support, civic engagement, trust levels of safety, and shared values and norms [19]. To study social sustainability, the current work considered a community comprised of humans socializing with each other because most researchers define a community that communicates with each other in a particular area and space [20].

1.2 Residential development

The social theorist connected residential development with the term "community" which reflects the people who live in one particular area or people considered a unit because of their common interests, social group, nationality, shared interests, or background [21]. Generally, these communities have different configurations and purposes, as seen in Amman, where residential development can be classified into two major types: a) piecemeal residential development (conventional communities), which are constructed piece by piece over time, and b) residential compounds (gated communities), which are planned and constructed as a complete project [22].

This piecemeal development pattern has been followed by humanity for thousands of years across different cultures and continents. Traditionally, towns and cities were constructed incrementally over time piece by piece or step by step instead of being built all at once. Based on this traditional approach to development, all communities are on a continuum of improvement. Thus, reasons for gradual development can include a lack of investors to finance the community and the facilities and a lack of comprehensive planning. Conventionally, they are also called "unplanned communities," which can be defined as expanding communities without concern for the consequences [23]. According to Bianca [24], traditional settlements developed according to two main themes: spontaneous and planned communities. Spontaneous growth is conventional or unplanned growth, which comes from the populace's needs. This typology is the most common residential development in Amman, like most cities in Jordan.

The compound development relies mainly on the comprehensive planning of an entire area as a single entity that integrates residential and commercial buildings with open spaces in one project. Simultaneously, it determines the physical layout, including size, building setbacks, housing types, presence of open spaces, and preservation features of important naturalness permitted in the area [25]. Some researchers have connected such development with utopian communities that have evolved into different forms, such as gated communities [26]. This kind of development has emerged recently due to security and public features.

Amman contains both urban and suburban areas out of the old city center. These areas had common features from the open spaces, roads, infrastructure, and amenities, in addition to security, safety, and privacy [3]. In this vein, Alkurdi [4] categorized the gated communities in Amman according to their physical characteristics into three types: a) vertical gated developments, b) horizontal gated developments or gated villa towns, and c) mixed type gated developments or gated towns. Economically, the creation of gated communities positively affects the creation of new job opportunities, better infrastructure, and utilizing inactive lands. However, it negatively affects urban cohesion and causes segregation in the long run between compound residents and people who live

outside these compounds [3]. In the same manner, there is a need to understand the social relationships inside within these communities in Amman.

1.3 Social sustainability and gated communities

Several researchers discussed gated communities in terms of definitions, elements, and characteristics. Talen [27] and Rogers and Sukolratanamettee [28] highlighted the relationship between physical form and a sense of community. Quintal and Thompson [29] explained the motivation for moving to gated communities for both housing providers and policymakers. Landman [30] raised a concern about gated communities in terms of spatial planning and land use management. Osman et al. [31] investigated the underlying factors influencing the development of gated community which is associated with the demand for better control and security over the neighborhood. So, the researchers above argued that this type of residential development positively affects the residents' social sustainability. This is due to these areas' physical characteristics, such as gates and walls, and their gathering of people with the same socioeconomic status and shared interests. That is, it creates strong bonding and strong social communities. However, Wilson-Doenges [32], Adnan et al. [33], and Sakip et al. [34] explained that the gated community type might have negative effects on social sustainability. On the other hand, Fortress America's book presented the viewpoint that gated communities do not affect social sustainability, suggesting that both residents and those on the outside have the same social sustainability level [35]. All these previous studies were conducted in America, England, and Malaysia.

In the Middle East and the Arab world, a few researchers have investigated social sustainability inside gated communities. By assessing various factors, such as those defined by El Sayed [36] in Egypt, Al Shawish [37] in Qatar, and Einiifar et al. [38] in Iran, one could try to enhance social interaction and livability among residents in these communities. Most of the other research on this subject has assessed the effect of gated communities on social sustainability between those inside and outside these communities' residents. Additionally, such works have investigated the impact of this new type of residential development on urban form, fabric, and sustainability. Metwally and Abdalla [39] and Nassar et al. [40] in Egypt tried to understand the evolution of gated communities globally and then locally in Cairo. Also, it assessed its impact on urban development by comparing it with principles of sustainable development. Then, El Sayed [36] classified gated communities based on residence economic status and then assessed their satisfaction to identify the suitable type for Egyptian society.

Similarly, researchers in Qatar explored the changes in community development by emerging gated communities and their relation to the sense of community by identifying needed characteristics to act as catalysts for sustainable development [41-43]. In Amman, unfortunately, the research about the gated communities' phenomenon is only descriptive studies such as Alkurdi [4] and Al_Omari [3]. They mainly study the effect of these new residential developments type on residents' segregation. Thus, there is a deficiency in studies assessing the social sustainability in gated communities. Consequently, this research bridges this gap by assessing social sustainability in

both gated and conventional communities to determine the effect of residential development types on social sustainability.

2. METHODOLOGY

A mixed-method methodology was conducted to achieve research objectives (see Figure 1) that included the following steps:

1. First, the researchers observed gated communities in Amman by touring these communities and conducting interviews with residents. Based on the resulting observations, these gated communities were divided into two main categories: a) mega gated communities, which consist of more than 80 units, and b) mini gated communities, which have 5 to 40 units. However, a medium-sized category was missing from the Amman context.

2. Communities were selected according to criteria related to: a) level of occupancy, where 70% of residential units had to be occupied; b) length of residency, where the selected communities had to be occupied for more than five years; and c) The conventional community has the same living conditions and building type as the selected gated communities. Based on these criteria, The Greenland project represented the mega gated communities. Additionally, six projects represented the mini gated communities: 1) Saraya Dabouq, 2) Panorama Villas Compound, 3) Green Valley Villas, 4) Green Village, 5) Black Iris, and 6) the Al-Kursi compound. Ultimately, the Al-Kursi community was chosen to represent conventional communities.

3. The spatial analysis for the selected communities used plans, satellite images, and several photos. The investigation was focused on the following: a) security features and barriers, b) amenities and facilities, c) type of residents (homogeneous by), d) tenure, e) location, f) size, and g) type of residential blocks.

4. The quantitative analysis employed a structured questionnaire consisting of two parts. The first was related to confounding variables data (socioeconomic and characteristics of residential units). The second part was used to collect data related to the dependent variables of social sustainability [44].

a. A *personal relationship* reflects an interaction between people, individually or collectively, in the same community. This relationship can be measured by the strength of social relationships between neighbors, ranging from acquaintance, interaction, visitation, and friendship formation [44].

b. *Social network* support expresses the benefits of a strong personal relationship between individuals or groups in a community. This factor can be measured by how neighbors give each other' unpaid assistance, such as favors and lending tools to each other.

c. *Civic engagement* can be measured by the level of engagement of community associations or activities and individual and collective efforts to improve a community or shape the community's future by volunteering and scheduling events.

d. A *level of safety* can be measured by the amount of trust in feeling comfortable and night in public areas and the community's level of crime.

e. *Shared values* and norms can be measured by how neighbors respect private zones, culture, and other neighbors' religions.

2.1 Research setting

Al-Kursi is located in West Amman, a part of the Wadi As-Seir district, with an area of 2 km² and a population of 14,588, forming a population density of 7,294 persons per km² [45]. This study analyzed Al-Kursi because it contains three mini-gated communities, and the area is relatively close to most of the other mini-gated communities that were studied. Finally, convergent the living conditions with the selected gated communities in terms of construction style and economic level. The Al-Kursi community is one of the most luxurious areas in Amman; most of the residential zones are A and B, there are limited commercial buildings, and there are no public spaces or parks within the community boundaries. Additionally, the selected study zone has an approximate area of 0.5 km², and the occupied units are 110, consisting of about 95% of the selected site; there are villas and luxury apartments.

As mentioned above and based on the selection criteria for this study, the following communities were selected: Green Land Compound as mega gated communities, Saraya Dabouq, the Panorama Villas Compound, Green Valley Villas, Green Village, Black Iris, and the Al-Kursi Compound as mini-gated communities. These communities were studied in terms of the socioeconomic characteristics of residents (age, education, employment, and race); characteristics of residential units such as typology (apartment, detached house, or semi-detached house); tenure and ownership; context (urban/suburban); community size; amenities and public facilities (private roads, open spaces, activity center and many more); and security features such as gates and electronic surveillance equipment (see Table 1).

2.2 Research sample

Quantitative data were collected using a questionnaire, and a random sampling technique was used to select the participants from each community to ensure that every community member had an equal chance of being selected. The sample size was calculated based on Slovin's formula [46] with a 95% significance value, as displayed in the following equation:

$$\text{Sample Size} = N / (1 + N \cdot e^2)$$

where:

N = population size; e = margin of error

Calculations were based on the data shown in Table 2. Data were collected in two phases, first through social media (Facebook and WhatsApp) and then through face-to-face interviews due to the convenience of respondents, as most of them preferred electronic ones for hygiene issues associated with COVID-19. The study was conducted on several communities that were classified into three categories, mini gated, mega gated, and conventional communities. The selected communities had been visited several times, and the first visit started with a tour and general observation. The primary data were collected during the period extended from 24th August 2020 to 11th November 2020 using a structured questionnaire that was translated into the Arabic language (the mother language of the research setting).

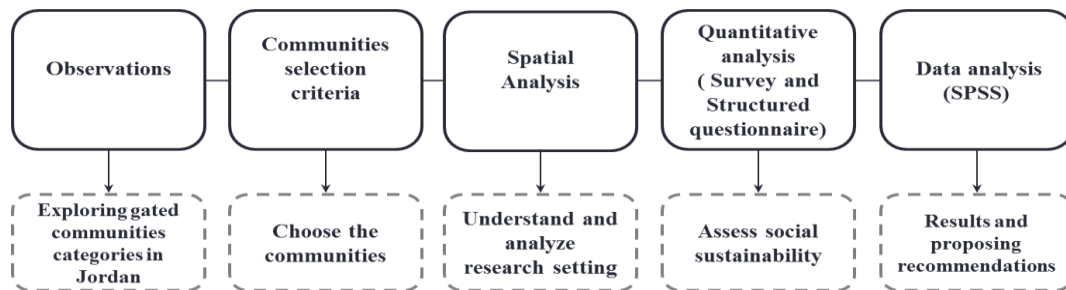


Figure 1. Framework of research methodology

Table 1. Physical characteristics of gated communities

| Gated community name | Location | Area (m ²) | Built-up area (m ²) | Number of units | Housing units typology | Construction date | Occupancy level |
|--------------------------|-------------|------------------------|---------------------------------|-----------------|--------------------------------|-------------------|-----------------|
| Saraya Dabouq | Dabouq | 6,000 | 1,570 | 10 | Detached | 2011 | 70% |
| Panorama Villas Compound | Al Kursi | 3,500 | 1,050 | 10 | Attached- Apartments | 2013 | 70% |
| Green Valley Villas | Al Kursi | 4,277 | 1,800 | 10 | Detached | 2014 | 80% |
| Green Village | Abu Al-sous | 22,000 | 6,180 | 30 | Detached | 2016 | 70% |
| Black Iris | Mahis | 13,550 | 5,370 | 18 | Detached | 2016 | 70% |
| Al-Kursi Compound | Al Kursi | 2,900 | 1,000 | 5 | Detached | 2016 | 100% |
| Green Land | Naour | 400,000 | 123,000 | 147 | Detached Attached - Apartments | 2008 | 75% |

Table 2. Sample size calculation

| Community types | Population | Confidence Level (%) | Sample size (unit; based on the equation) | Collected sample size (unit) |
|------------------------|------------|----------------------|---|------------------------------|
| Mega gated community | 110 | 95 | 86 | 68 |
| Mini gated communities | 60 | 95 | 52 | 40 |
| Conventional community | 110 | 95 | 86 | 86 |

Many barriers were encountered during data collection related to the COVID-19 quarantine. The researchers achieved the target sample size in Al-Kursi, the conventional community, but not in the gated communities. Only 68 out of the projected 86 samples were collected in a mega gated community, whereas 40 out of the projected 52 samples were collected from mini gated communities. Thus, 56% of the data were collected from gated communities (37% from mini gated communities and 63% from mega gated communities), and 44% were collected from the conventional community.

3. RESULTS

This study explored the impact of different types of residential development on social sustainability. The study objectives were achieved through a) a descriptive analysis of the research data (mean and standard deviation) derived from the online survey; b) an analysis of variance (ANOVA) to compare within and among the three respondent groups (the mega gated community, the mini gated communities, and the conventional community); c) a Scheffe test to discern these differences in favor of any type of community; and d) a partial ETA squared test to measure the effect of community types on values differences of social sustainability and its factors. All these analysis steps were performed using SPSS software.

As demonstrated in Table 3, the mega gated community achieved the highest score of social sustainability ($M = 3.79$) on a scale of 5, where 1 represents a negative attitude, and 5 denotes a positive attitude; then the mini gated communities with $M = 3.47$, and finally, the conventional community with $M = 3.24$. Shared values and norms scored the highest mean value of all factors for all community types, with the mega gated community score of $M = 4.15$, where the mini gated communities score $M = 3.93$, and conventional community score of $M = 4.02$. The safety level reported the second highest mean value for all communities to type it was $M = 3.97$ for the mega gated community, $M = 3.92$ for mini gated communities, and $M = 3.47$ for the conventional community. Next, the personal relationship came in third place for mini-gated communities $M = 3.21$, and conventional communities $M = 3.10$. On the other hand, in the mega gated community, the civic engagement came in third place, with a mean value of $M = 3.77$ and a personal relationship score of $M = 3.52$, and the lowest value was for social network support with $M = 3.49$. Civic engagement and social network support produced the lowest mean values in mini-gated communities and conventional communities. Subsequently, civic engagement achieved values of $M = 3.20$ in mini-gated communities and $M = 2.75$ for the conventional community. Finally, the social network support mean score was $M = 2.97$ for mini-gated communities and $M = 2.69$ for the conventional community.

In this study, an ANOVA test was used to determine whether the differences between data groups were statistically significant by analyzing the variance levels within the groups. Accordingly, the ANOVA test examined the effect of residential development types on social sustainability and its factors (see Table 4). The following facts are the ANOVA test results:

-Main question: Social Sustainability is affected by the difference in residential development types ($F = 26.082$, $P = 0.000$).

-Sub 1: Each personal relationship is affected by the difference in residential development types ($F = 7.403$, $P =$

0.001).

-Sub 2: Social network support is affected by the difference in residential development types ($F = 20.181$, $P = 0.000$).

-Sub 3: Civic engagement is affected by the difference in residential development types ($F = 34.339$, $P = 0.000$).

-Sub 4: The safety level is affected by the difference in residential development types ($F = 18.155$, $P = 0.000$).

-Sub 5: Shared values and norms are not affected by the difference in residential development types ($F = 2.416$, $P = 0.092$).

Generally, the ANOVA test concluded that residential development types affected social sustainability and social sustainability factors except for the shared value and norms factor.

Applying Scheffe test comparisons revealed differences among respondents' answers according to the residential development type, as displayed in Table 5. Generally, the Scheffe test showed significant differences between the three types of community in social sustainability for mega gated communities $M = 3.79$, whereas the mini gated communities are in the second level $M=3.47$, and the conventional community came in the third level $M=3.24$. Additionally, the Scheffe test comparisons revealed that the personal relationship factor was the highest in the mega gated community $M = 3.52$. However, there were no significant differences in this factor between the conventional community $M = 3.1$ and the mini gated communities $M = 3.21$. The mega gated community $M = 3.49$ was higher than the mini gated communities $M = 2.97$ and the conventional community $M=2.69$ in social network support.

On the other hand, there were no significant differences between the mini and conventional communities. Furthermore, the Scheffe test comparisons showed that the civic engagement factor produced significant differences between all community types. That is, the mega gated community was the best $M = 3.77$, the mini gated communities the second one $M = 3.20$, and the conventional gated community $M = 2.75$. The safety level was the last factor that produced significant differences between communities, which favored the mega gated community $M = 3.97$ and the mini gated communities $M = 3.92$. However, there were no significant differences between these groups, and finally, the conventional community $M = 3.47$ which came in the second level. Finally, the Scheffe test comparisons showed no significant differences between the community types in shared values and norms factor.

Partial eta squared is a way to measure the effect size of different variables in ANOVA models. It measures the proportion of variance explained by a given variable of the total variance remaining after accounting for variance explained by other variables in the model. So, a partial ETA squared test was conducted to measure the effect of community types on different values of social sustainability and its factors, revealing that 22.4% of all variances in social sustainability were attributable to community type, a very strong significant effect, which is consistent with F score is 27.588. Also, four out of five variables are significant at 99% significant (civic engagement, social network, safety, and personnel relations). Additionally, 26.4% of all variances in civic engagement factor was attributable to community type, which had the strongest effect on social sustainability factors with an F score of 34.339. Next, 17.4% of all variances in social network support as attributable to community type, and a significant strong effect on variations in safety levels was

attributable with 16%. Beyond this, 11% of all variances in personal relationships were attributable to community type with low effects. Finally, 2.5% of all variances in shared

values and norms were attributable to community type, which was the weakest effect of the social sustainability factors since it is significant at 90%, as displayed in Table 6.

Table 3. Mean values for the factors of social sustainability in three communities

| | Community Type | Mega Gated | Mini Gated | Conventional Community |
|--|--|-------------------|-------------------|-------------------------------|
| | Social Sustainability | 3.79 | 3.47 | 3.24 |
| | Personal Relationship | 3.52 | 3.21 | 3.1 |
| | I know all my neighbors' names. | 3.1 | 3.25 | 3.17 |
| | I interact with neighbors regularly. | 3.6 | 3.3 | 3.1 |
| | I visit my neighbors on special occasions. | 3.8 | 3.3 | 3.13 |
| | My kids play with community kids. | 3.7 | 3.3 | 2.9 |
| | I feel comfortable when I am talking with neighbors. | 4 | 3.75 | 3.5 |
| | My relationships with neighbors have developed into friendships. | 4 | 3.3 | 3.2 |
| | I feel lonely sometimes. | 2.4 | 3.1 | 2.7 |
| | Social Network Support | 3.49 | 2.97 | 2.69 |
| | I can ask my neighbors for favors. | 3.6 | 2.9 | 2.9 |
| | I can ask my neighbors to borrow tools. | 3.6 | 3.25 | 2.7 |
| | I can depend on neighbors to look after my home if I travel. | 3.5 | 3.5 | 2.8 |
| | I have neighbors with whom I can discuss personal matters. | 3.1 | 2.7 | 2.2 |
| | My neighbors are helpful; I can contact them frequently for unpaid assistance. | 3.6 | 3.3 | 2.8 |
| | Civic Engagement | 3.77 | 3.2 | 2.75 |
| | I am a member of community associations. | 3.9 | 3.5 | 2.4 |
| | I help organize events in my community. | 3.4 | 2.8 | 2.5 |
| | My family participates in community events. | 3.9 | 3.1 | 2.7 |
| | I am an active member of community associations, and I always participate in their activities. | 3.5 | 2.9 | 2.5 |
| | I volunteer for activities that improve my community or shape its future. | 3.6 | 3.5 | 3.1 |
| | I pay fees for the benefit of my community. | 4.5 | 4.2 | 3.2 |
| | Safety Level | 3.97 | 3.92 | 3.47 |
| | I trust most people in my community. | 3.8 | 3.6 | 2.9 |
| | I feel comfortable while walking alone after dark in the area surrounding my home. | 4.3 | 4.3 | 3.8 |
| | My children play safely outside my home. | 3.9 | 3.9 | 3.4 |
| | My neighbors address anti-social behavior and vandalism action in our community. | 3.6 | 3.6 | 3.3 |
| | If I lose my wallet or other items in my community, I believe that they will be returned. | 4 | 3.9 | 3.4 |
| | I have never experienced any type of crime in my community. | 4 | 4.4 | 4 |
| | Shared Values and Norms | 4.15 | 3.93 | 4.02 |
| | I determine my behavior by considering cultural values and beliefs. | 4.3 | 4.1 | 4.1 |
| | My neighbors consider the community's cultural values when choosing how to behave. | 4 | 3.9 | 3.8 |
| | I am conservative, and my neighbors respect my privacy. | 3.8 | 4.1 | 4 |
| | I respect my neighbors of different ethnicities than mine. | 4.5 | 4.5 | 4.4 |
| | I am satisfied with living in this community and planning to stay here. | 4.2 | 4.2 | 4.2 |
| | I would not trade this community for another, even if I could afford one of a higher class. | 4 | 3.8 | 3.8 |
| | If I needed to move out of my home, I would move elsewhere within the same community. | 4 | 3.6 | 3.75 |

Social Sustainability Factors

Table 4. Results of ANOVA test for the three communities

| | Dependent Variables | Sum of Squares | Df | Mean Square | F | Sig. |
|-------------------------|----------------------------|-----------------------|-----------|--------------------|----------|-------------|
| Social Sustainability | Between Groups | 11.395 | 2 | 5.698 | 26.082 | 0.000 |
| | Within Groups | 41.723 | 191 | 0.218 | | |
| | Total | 53.118 | 193 | | | |
| Personal Relationship | Between Groups | 6.986 | 2 | 3.493 | 7.403 | 0.001 |
| | Within Groups | 90.121 | 191 | 0.472 | | |
| | Total | 97.108 | 193 | | | |
| Social Network Support | Between Groups | 24.372 | 2 | 12.186 | 20.181 | 0.000 |
| | Within Groups | 115.335 | 191 | 0.604 | | |
| | Total | 139.707 | 193 | | | |
| Civic Engagement | Between Groups | 39.478 | 2 | 19.739 | 34.339 | 0.000 |
| | Within Groups | 109.793 | 191 | 0.575 | | |
| | Total | 149.271 | 193 | | | |
| Safety Level | Between Groups | 11.202 | 2 | 5.601 | 18.155 | 0.000 |
| | Within Groups | 58.926 | 191 | 0.309 | | |
| | Total | 70.129 | 193 | | | |
| Shared Values and Norms | Between Groups | 1.312 | 2 | 0.656 | 2.416 | 0.092 |
| | Within Groups | 51.868 | 191 | 0.272 | | |
| | Total | 53.180 | 193 | | | |

* The mean difference is significant at the 0.05 level.

Table 5. Scheffe test for comparison between the three communities

| Dependent Variables | (I) | (J) | Mean Difference (I-J) | Sig. |
|-------------------------|------------------------|------------------------|-----------------------|-------|
| Social Sustainability | Mega gated community | Conventional community | 0.548(*) | 0.000 |
| | | Mini gated community | 0.323(*) | 0.003 |
| | Mini gated community | Conventional community | 0.224(*) | 0.045 |
| | | Mega gated community | -0.323(*) | 0.003 |
| | Conventional community | Mega gated community | -0.548(*) | 0.000 |
| | | Mini gated community | -0.224(*) | 0.045 |
| Personal Relationship | Mega gated community | Conventional community | 0.423(*) | 0.001 |
| | | Mini gated community | 0.314 (*) | 0.023 |
| | Mini gated community | Conventional community | 0.109 | 0.709 |
| | | Mega gated community | -0.314 (*) | 0.023 |
| | Conventional community | Mega gated community | -0.423(*) | 0.001 |
| | | Mini gated community | -0.109 | 0.709 |
| Social network support | Mega gated community | Conventional community | 0.798(*) | 0.000 |
| | | Mini gated community | 0.521(*) | 0.004 |
| | Mini gated community | Conventional community | 0.277 | 0.179 |
| | | Mega gated community | -0.521(*) | 0.004 |
| | Conventional community | Mega gated community | -0.798(*) | 0.000 |
| | | Mini gated community | -0.277 | 0.179 |
| Civic engagement | Mega gated community | Conventional community | 1.020(*) | 0.000 |
| | | Mini gated community | 0.565(*) | 0.001 |
| | Mini gated community | Conventional community | 0.454(*) | 0.008 |
| | | Mega gated community | -0.565(*) | 0.001 |
| | Conventional community | Mega gated community | -1.020(*) | 0.000 |
| | | Mini gated community | -0.454(*) | 0.008 |
| Level of Safety | Mega gated community | Conventional community | 0.501(*) | 0.000 |
| | | Mini gated community | 0.049 | 0.907 |
| | Mini gated community | Conventional community | 0.452(*) | 0.000 |
| | | Mega gated community | -0.049 | 0.907 |
| | Conventional community | Mega gated community | -0.501(*) | 0.000 |
| | | Mini gated community | -0.452(*) | 0.000 |
| Shared Values and norms | Mega gated community | Conventional community | 0.129 | 0.316 |
| | | Mini gated community | 0.218 | 0.112 |
| | Mini gated community | Conventional community | -0.090 | 0.668 |
| | | Mega gated community | -0.218 | 0.112 |
| | Conventional community | Mega gated community | -0.129 | 0.316 |
| | | Mini gated community | 0.090 | 0.668 |

* The mean difference is significant at the 0.05 level.

* I: First community mean

* J: Second communities mean

Table 6. Partial eta squared test

| Dependent variables | Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
|-------------------------|----------------|----|-------------|--------|-------|---------------------|
| Social Sustainability | 12.402 | 2 | 6.201 | 27.588 | 0.000 | 0.224 |
| Personal relationship | 12.023 | 2 | 6.012 | 11.847 | 0.000 | 0.110 |
| Social Network Support | 24.372 | 2 | 12.186 | 20.181 | 0.000 | 0.174 |
| Civic Engagement | 39.478 | 2 | 19.739 | 34.339 | 0.000 | 0.264 |
| Safety Levels | 11.202 | 2 | 5.601 | 18.155 | 0.000 | 0.160 |
| Shared Values and Norms | 1.312 | 2 | 0.656 | 2.416 | 0.092 | 0.025 |
| Dependent variables | Sum of Squares | df | Mean Square | F | Sig. | Partial Eta Squared |
| Social Sustainability | 12.402 | 2 | 6.201 | 27.588 | 0.000 | 0.224 |
| Personal relationship | 12.023 | 2 | 6.012 | 11.847 | 0.000 | 0.110 |
| Social Network Support | 24.372 | 2 | 12.186 | 20.181 | 0.000 | 0.174 |

Based on the results, there were significant differences in social sustainability between gated communities and conventional communities. This proved that the residential development types affected social sustainability. Overall, the general built environment and residential communities specifically could increase or decrease social sustainability.

1. The best results of social sustainability were achieved in the mega gated community, then the mini gated communities, and finally, the conventional community.

2. The mega gated community again achieved the best

results in personal relationships. The mini gated and conventional communities came to the second level with no significant differences.

3. Due to the direct conjunction between personal relationships and social network supports, the results were identical between the mega gated communities, the mini gated communities, and the conventional community.

4. The conventional community achieved the lowest values of civic engagement, followed by the mini gated communities and the mega gated communities.

5. The results indicated no significant differences between the two categories of gated communities (mega and mini), and these communities achieved higher values than conventional communities.

6. In shared values and norms, the results revealed no significant differences between the three types of communities.

4. DISCUSSION

The results of this study demonstrated that mega community had the highest score for social sustainability, with a mean value of $M = 3.79$, where (1) represents a negative attitude, and (5) denotes a positive attitude. Next, mini-gated communities $M = 3.47$ and followed by conventional communities $M = 3.24$; see Table 3. These results agreed with the findings of Blandy and Lister [47], Geniş [48], Quintal and Thompson [29], and Osman et al. [31], who highlighted the positive features of gated communities associated with amenities, management, and maintenance. However, the results contradicted those of Wilson-Doenges [32], Adnan et al. [33], and Sakip et al. [34], who argued that gated communities negatively impact social sustainability and encourage isolation and segregation. This effect may have been related to differences in socioeconomic characteristics and residential units, where higher socioeconomic factors were associated with higher quality built environments that reflected positively in residents' satisfaction, encouraging them to interact with each other [1]. Additionally, social sustainability was associated with the length of residency and ownership, factors correlated positively with social sustainability. A longer stay would expand and strengthen networks that could be developed into social bonds, as Sakip et al. [34] and Abed [22] discussed. This ensures the need for providing amenities and public facilities to encourage residents' socializing and bonding.

Social sustainability themes were identified through the following factors:

1. *Personal Relationships* reflected the strength of social interactions between residents, measured by the strength of social relationships between neighbors. This factor involved the extent of how much the neighbors knew each other, the typology of each relationship, whether each relationship became a friendship and the level of interaction. The results revealed a positive attitude toward a personal relationship in mega gated communities, and the mean score $M = 3.52$ is shown in Table 3. On the other hand, the mean values for mini-gated and conventional communities were almost identical ($M = 3.21$ and $M = 3.1$, respectively). This was supported by Osman et al. [31] and El Sayed [36], who argued that residents in the mega community have more opportunities to meet and interact with neighbors and identify residents with common interests. This facilitated more frequent interactions between neighbors, which could develop into friendships.

2. *Social Network Support* is closely related to the personal relationship factor because it reflects the strength of personal relationships among the community residents. The stronger the personal relationship, the more social network support. The results indicated that the best social network supports were in the mega gated communities $M = 3.49$, and then between mini gated communities $M = 2.97$, and the conventional communities $M = 2.69$ with no significant differences between them, as shown in Table 3. The results in this research matched those of McMillan and Chavis [13] and

Osman et al. [31]. These researchers discovered that gated communities have high social network support between their residents compared with conventional communities, without specifying the size of gated communities, due to the commonality of residents' characters. Additionally, this work was supported by that of El Sayed [36], who connected community support with its homogeneity, making residents act as one big family or group. Beyond this, it is related to boundaries surrounding gated communities, which increase residents' intimacy and social connections among the residents. This belief provides residents with a sense of unity that positively affects their levels of cooperation and collaboration.

3. *Civic Engagement* expressed positive behaviors of residents that contributed to social life and enhanced the civic network itself. It ranges from paying community fees and volunteering to improve the current and future community environment. This study revealed that there were significant differences between gated communities and conventional communities in civic engagement factors, where the mean values $M = 3.77$, $M = 2.75$ for mega gated and conventional communities, respectively (see Table 3). This may be related to the availability of community associations that guarantee a high quality of maintenance and a high hygiene level for the facilities in the gated community, unlike the conventional one. Additionally, it could organize common activities based on events and seasons. In this study, such action required initiatives and volunteers from the community, creating opportunities for interaction, which then strengthened the sense of community that could be activated in solving problematic issues. This result agreed with the work of McMillan and Chavis [13] and Dublinski [49].

4. *Levels of Safety* related to being protected and feeling safe, measured by assessing certain activities, such as trusting residents in the community; feeling safe while walking in the dark; children's being safe playing outside their homes; or other issues, such as crime and vandalism. The results showed no significant differences between gated communities, where the $M = 3.97$, and $M = 3.92$ for mega gated and mini gated communities, respectively. At the same time, it was lower in the conventional community $M = 3.47$, as displayed in Table 3. The sense of safety in the gated community was mainly connected with physical features of security like walls, gates, guards, electronic surveillance, and many more techniques that restrict strangers and traffic entry. This supported previous research by Hashim et al. [50]. On the other hand, the security strategies in conventional communities were associated with the financial statuses of the residents. Thus, it is individualistic and arbitrary, negatively affecting residents' feelings of safety.

5. *Shared Values and Norms* reflect community members' behaviors and beliefs and were measured in this study through the level of respect for others' thoughts and values. The results demonstrated no differences in shared values and norms between gated communities and conventional communities. In other words, the mega ($M = 4.15$) and mini ($M = 3.93$) gated communities had similar shared values and norms as conventional communities ($M = 4.02$), as illustrated in Table 3. These results disagreed with those of McMillan and Chavis [13] and Salah and Ayad [51], who reported that gated communities are better than conventional ones in shared values and norms. The inconsistency between these studies resulted from differences in the studied region. In Amman, residents are mainly homogenous in culture and traditions, with very limited ethnic diversity. However, in American communities, where McMillan and Chavis conducted their

research, great ethnic diversity has led to the existence of gated communities, which is mainly related to a homogeneous group.

5. CONCLUSION

During this study, many new types of residential developments appeared in Jordan at the end of the 1990s gated communities phenomenon was begun, and nowadays, it is expanding. Because of this expansion, it was necessary to evaluate the effect of these new types of residential development. Therefore, this research assessed social sustainability in gated and conventional communities by analyzing its factors, including personal relationships, social network supports, civic engagement, safety levels, and shared values and norms. The results showed that social sustainability is better in gated communities if it is compared with conventional communities—specifically, mega rather than mini gated communities. This was supported by its factors: personal relationships and social network support. However, due to the homogeneity of communities in Jordan, there were no differences between the communities' shared values or norms.

Consequently, it was necessary to examine the possibility of expanding gated communities in Amman. This process required a comprehensive evaluation of various aspects to achieve sustainability at different levels. This needed to engage stakeholders from various disciplines to propose innovative design guidelines and strategies. This could maximize opportunities for creating an optimal level of communities and enhancing the social sustainability of residents. Overall, this study could be considered the first step in assessing social sustainability in a gated community in Amman. Therefore, future studies must consider the various sizes and income levels of such communities. Hoping this could increase investors' interest in establishing such communities with better social infrastructure, which will be extended to diverse types of public spaces quantitatively and qualitatively.

The research findings revealed a significant impact of gated communities on the social aspect associated with collective privatization services and the creation of spaces with high environmental quality. It is also important to realize that gated communities could represent a marketing opportunity for developers and private investors who tend to focus on the positive impacts and minimize the negative concerns. Based on that, planners and policymakers have to regulate the notion of a gated community as social legislation to promote inclusive rights for sustainable development and maintain an integrated urban realm to be part of the urban landscape. The agenda will be implemented through specific design review procedures to be more accepted in both marketplace and urban settings.

REFERENCES

- [1] Abed, A., Al-Jokhadar A. (2022). Common space as a tool for social sustainability. *Journal of Housing and the Built Environment*, 37(1): 399-421. <http://dx.doi.org/10.1007/s10901-021-09843-y>
- [2] Al Shawabkeh, R.K., Alzouby, A.M., Rjoub, A., Alsmadi, M., AlKhamaiseh, M., Shboul, D., Smadi, A., Al-Bzour, A., Al-Omari, R., Alobaidat, E. (2020). Evaluating the satisfaction rate for affordable housing in non-gated residential area (NGR): The case of Al-Sharq housing project in Zarqa-Jordan. *International Journal of Housing Markets and Analysis*, 14(1): 192-217. <http://dx.doi.org/10.1108/IJHMA-10-2019-0105>
- [3] Al Omari, O., Al Omari, K. (2015). The emergence of the residential gated communities in Jordan. *Research Journal of Applied Sciences, Engineering and Technology*, 11(3): 293-298. <http://doi.org/10.19026/rjaset.11.1719>
- [4] Alkurdi, N. (2015). Gated communities (GCS): A physical pattern of social segregation. *The Anthropologist*, 19(1): 229-237. <http://dx.doi.org/10.1080/09720073.2015.11891657>
- [5] Littig, B., Griessler, E. (2005). Social sustainability: A catchword between political pragmatism and social theory. *International journal of sustainable development*, 8(1-2): 65-79. <http://dx.doi.org/10.1504/IJSD.2005.007375>
- [6] Eizenberg, E., Jabareen, Y. (2017). Social sustainability: A new conceptual framework. *Sustainability*, 9(1): 68. <http://dx.doi.org/10.3390/su9010068>
- [7] Sachs, I. (1999). Social sustainability and whole development: Exploring the dimensions of sustainable development. *Sustainability and the Social Sciences: A Cross-Disciplinary Approach to Integrating Environmental Considerations into Theoretical Reorientation*, T. Jahn and E. Becker, Editors, Zed Books, 25-36.
- [8] Rasouli, A.H., Kumarasuriyar, A. (2016). The social dimension of sustainability: Towards some definitions and analysis. *Journal of Social Science for Policy Implications*, 4(2): 23-34. <http://dx.doi.org/10.15640/jsspi.v4n2a3>
- [9] Polèse, M., Stren, R. (2000). *The Social Sustainability of Cities: Diversity and the Management of Change*. University of Toronto Press. <http://dx.doi.org/10.3138/9781442682399>
- [10] Caputo, S. et al. (2016). A Critical analysis of well-being, consumption and growth within New York City's OneNYC Plan for a Strong and Just City. *MASTER'S PORTFOLIO*, p. 48.
- [11] Ahmad, Q.K., Ahmed, A.U. (2000). Social sustainability, indicators and climate change. *Climate Change and Its linkages with Development, Equity, and Sustainability*, Jointly Published by LIFE, RIVM and World Bank for IPCC, Geneva, 95-108.
- [12] Colantonio, A. (2009). Social sustainability: a review and critique of traditional versus emerging themes and assessment methods. *Second International Conference on Whole Life Urban Sustainability and Its Assessment*, Loughborough University.
- [13] McMillan, D.W., Chavis, D.M. (1986). Sense of community: A definition and theory. *Journal of Community Psychology*, 14(1): 6-23. [http://dx.doi.org/10.1002/1520-6629\(198601\)14:1%3C6::AID-JCOP2290140103%3E3.0.CO;2-I](http://dx.doi.org/10.1002/1520-6629(198601)14:1%3C6::AID-JCOP2290140103%3E3.0.CO;2-I)
- [14] Korti, R. (2018). Citizen participation and sense of community in the development of the permanent conservation project plan. *European Journal of Interdisciplinary Studies*, 4(1): 87-92. <http://dx.doi.org/10.26417/ejis.v10i1.p87-92>
- [15] Mani, V., Gunasekaran, A., Delgado, C. (2018). Supply chain social sustainability: Standard adoption practices in

- Portuguese manufacturing firms. *International Journal of Production Economics*, 198: 149-164. <http://dx.doi.org/10.1016/j.ijpe.2018.01.032>
- [16] Forrest, R., Kearns, A. (2001). Social cohesion, social capital and the neighbourhood. *Urban Studies*, 38(12): 2125-2143. <http://dx.doi.org/10.1080/00420980120087081>
- [17] Carter, C.R., Jennings, M.M. (2004). The role of purchasing in corporate social responsibility: A structural equation analysis. *Journal of business Logistics*, 25(1): 145-186. <http://dx.doi.org/10.1002/j.2158-1592.2004.tb00173.x>
- [18] Whooley, N. (2004). Social responsibility in Europe. Retrieved on August, 22: 2012.
- [19] Forsell, T., Tower, J., Polman, R. (2022). Development of a scale to measure social capital in recreation and sport clubs. *Leisure Sciences*, 42(1): 106-122. <http://dx.doi.org/10.1080/01490400.2018.1442268>
- [20] Pahwa, R., Smith, M.E., Kelly, E.L., Dougherty, R.J., Thorning, H., Brekke, J.S., Hamilton, A. (2021). Definitions of community for individuals with serious mental illnesses: Implications for community integration and recovery. *Administration and Policy in Mental Health and Mental Health Services Research*, 48(1): 143-154. <http://dx.doi.org/10.1007/s10488-020-01055-w>
- [21] Hillery, G.A. (1955). Definition of community. *Rural Sociology*, 20: 111-123.
- [22] Abed, A.R. (2017). Assessment of social sustainability: A comparative analysis. *Proceedings of the Institution of Civil Engineers-Urban Design and Planning*, 170(2): 72-82. <http://dx.doi.org/10.1680/jurdp.16.00020>
- [23] Batty, M., Besussi, E., Chin, N. (2003). Traffic, urban growth and suburban sprawl.
- [24] Bianca, S. (2000). *Urban Form in the Arab World: Past and Present*. Vol. 46. vdf Hochschulverlag AG.
- [25] Arendt, R.G. (1996). *Conservation Design for Subdivisions: A Practical Guide to Creating Open Space Networks*. 1996, Washington, D.C: Island Press.
- [26] Kalantari, S., Rafieian, M., Aghasafari, A., Aghasafari, A. (2017). Investigation of gated communities in Tehran city. *Journal of Research in Ecology*, 5(2).
- [27] Talen, E. (1999). Sense of community and neighbourhood form: An assessment of the social doctrine of new urbanism. *Urban Studies*, 36(8): 1361-1379. <http://dx.doi.org/10.1080/0042098993033>
- [28] Rogers, G.O., Sukolratanamete, S. (2009). Neighborhood design and sense of community: Comparing suburban neighborhoods in Houston Texas. *Landscape and urban Planning*, 92(3-4): 325-334. <http://dx.doi.org/10.1016/j.landurbplan.2009.05.019>
- [29] Quintal, D., Thompson, S. (2007). Gated Communities: The search for security. In 3rd State of Australian Cities National Conference, Adelaide, Australia.
- [30] Landman, K. (2004). Gated communities in South Africa: Comparison of four case studies in Gauteng.
- [31] Osman, M.M., Rabe, N.S., Bachok, S. (2011). An investigation of factors influencing communities decision to reside in gated development in Kuala Lumpur and Selangor. In 11th International Congress of Asian Planning Schools Association (APSA 2011), Japan.
- [32] Wilson-Doenges, G. (2000). An exploration of sense of community and fear of crime in gated communities. *Environment and Behavior*, 32(5): 597-611. <https://doi.org/10.1177/00139160021972694>
- [33] Adnan, N.A., Arif, N., Shamsudin, Z., Ariffin, K.M. (2014). Practice of gated communities development in Malaysia: towards sustainable communities. In 7th International Real Estate Research Symposium (IRERS 2014), National Institute of Valuation.
- [34] Sakip, S.R.M., Johari, N., Salleh, M.N.M. (2018). Sense of community in gated and non-gated residential. *Asian Journal of Environment-Behaviour Studies*, 3(9): 151-159. <http://dx.doi.org/10.21834/aje-bs.v3i9.303>
- [35] Blakely, E.J., Snyder, M.G. (1997). *Fortress America: Gated Communities in the United States*. Brookings Institution Press.
- [36] El Sayed, E. (2016). Residents' satisfaction at gated communities In Egypt. *International Journal of Scientific & Engineering Research*, 7(4): 1185-1196.
- [37] Al Shawish, A. (2016). Gated communities and neighborhood livability in Doha. Qatar University (Qatar).
- [38] Einifar, A. (2019). The physical factors affecting the social livability of gated communities: A case study of gated communities in Tehran. *Iran University of Science & Technology*, 29(2): 127-139.
- [39] Metwally, M., Abdalla, S.S. (2011). Impact of gated communities on the urban development of new cities in Egypt.
- [40] Nassar, U., Fathy, A., Saleh, A. (2013). Urban Sustainability and connectivity in gated communities in Cairo, Egypt. In Contemporary Urban Issues Conference (CUI'13), Istanbul.
- [41] Al Shawish, A. (2015). Evaluating the impact of gated communities on the physical and social fabric of Doha City. In 12th international Postgraduate Research Conference (IPGRC15).
- [42] El-Ekhteyar, E.S., Furlan, R. (2016). Sense of community in gated communities in Doha: The case of Al-Ein compound in Ein Khaled neighborhood.
- [43] Alfaraidy, M., Raffaello, F. (2017). Urban form and sense of community: Exploring catalysts for community sustainability within Al-Wakrah Neighborhood in Qatar.
- [44] Scrivens, K., Smith, C. (2013). Four interpretations of social capital: An agenda for measurement. *OECD Statistics Working Papers*. <https://dx.doi.org/10.1787/5jzbcx010wmt-en>.
- [45] Department of Statistics, Population and Housing Census 2015. 2018: Jordan.
- [46] Behluli, A. et al. (2020). The impact of the job characteristics on employees' internal motivation a case study into kosovo's agribusinesses. In 20th International Multidisciplinary Scientific GeoConference SGEM 2020.
- [47] Blandy, S., Lister, D. (2005). Gated communities: (Ne) gating community development? *Housing Studies*, 20(2): 287-301. <http://dx.doi.org/10.1080/0267303042000331781>
- [48] Geniş, Ş. (2007). Producing elite localities: The rise of gated communities in Istanbul. *Urban Studies*, 44(4): 771-798. <http://dx.doi.org/10.1080/00420980601185684>
- [49] Dublinski, A.R. (2012). Partitioned landscapes: the gated community interface as an edifice for social and spatial interchange. University of Georgia.
- [50] Hashim, I.H.M., Mohd-Zaharim, N., Karupiah, P., Selamat, N.H., Endut, N., Azman, A.A. (2019). Crime and social connectedness in Malaysian gated communities. *Social Indicators Research*, 144(3): 1179-1193. <http://dx.doi.org/10.1007/s11205-018-2046-5>

[51] Salah, N.M., Ayad, H.M. (2018). Why people choose gated communities: A case study of Alexandria metropolitan area. Alexandria Engineering Journal,

57(4):

<https://doi.org/10.1016/j.aej.2017.10.008>

2743-2753.