# Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar

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## ABSTRACT

This research paper conducts an evaluation of residential satisfaction within government-provided four-storied apartment complexes situated in civil-servant housing areas in Naypyitaw City, Myanmar. As the construction of these apartment buildings continues to address the housing demands of civil servants, comprehending the determinants of residents' contentment becomes paramount. The study encompasses data collected from 500 households through structured questionnaires employing a multi-cluster sampling approach. These questionnaires utilize a five-point Likert Scale format to gauge residents' levels of importance and satisfaction. Gap Analysis is employed to scrutinize the gathered data, ultimately identifying seven pivotal attributes that hold the potential to substantially enhance residential satisfaction. These attributes encompass ceiling height, apartment layout plan, room and corridor dimensions, quantity of rooms, staircase design, neighborhood relations, and proximity to police stations. Based on these revelations, recommendations are tendered, advocating the modification and reevaluation of these attributes in forthcoming housing developments. This underscores the imperative need for creating a livable city by ensuring the provision of essential services in closed proximity to residential areas.

*Keywords: Gap Analysis, Government-Provided Housing, Livable City, Residents, Satisfaction.*

*ABSTRAK. Penilaian Kepuasan Penghuni Perumahan Menggunakan Gap Analysis: Studi Kasus di Kota Naypyitaw, Myanmar. Penelitian ini melakukan evaluasi kepuasan penghuni kompleks apartemen empat lantai yang disediakan pemerintah di kawasan perumahan pegawai negeri di Kota Naypyitaw, Myanmar. Karena pembangunan gedung-gedung apartemen terus dilakukan untuk memenuhi kebutuhan perumahan para pegawai negeri sipil, pemahaman terhadap faktor-faktor yang menentukan kepuasan penghuni menjadi sangat penting. Studi mencakup data yang dikumpulkan dari 500 rumah tangga melalui kuesioner terstruktur menggunakan pendekatan multi-cluster sampling. Kuesioner menggunakan Skala Likert lima poin untuk mengukur tingkat kepentingan dan kepuasan responden. Gap Analysis digunakan untuk meneliti data yang terkumpul. Pada akhirnya teridentifikasi tujuh atribut penting yang berpotensi meningkatkan kepuasan hunian secara substansial, meliputi: tinggi plafon, denah tata letak apartemen, dimensi ruangan dan koridor, jumlah ruangan, desain tangga, hubungan lingkungan, dan kedekatan dengan Kantor Polisi. Berdasarkan hasil tersebut, rekomendasi disampaikan terkait modifikasi dan evaluasi ulang ketujuh atribut dalam pembangunan perumahan di masa depan. Hal ini menggarisbawahi pentingnya menciptakan kota yang layak huni dengan memastikan penyediaan layanan penting di dekat kawasan pemukiman.*

## 1. INTRODUCTION

Housing does not mean an individual's dwelling unit only. It is a composite of the overall physical and social components that make up the housing system (Francescato et al., 1989). Housing also has a profound impact on quality of life and well-being of a person (Yusoff, 2017). Satisfaction is defined by the Oxford Dictionary (Oxford University, 2021) as fulfillment of one's wishes, expectations, or needs or the pleasure derived from this. Quality of life, housing satisfaction, job performance, and job satisfaction have been the subjects of research for a long time. Quality of life components related to housing satisfaction indicated that respondents are very satisfied with their family relationships, helping others, and participation in government" (Henderson, 1988).

Many scholars have concentrated their research preferences on housing conditions, urban housing provisions and neighborhood environmental quality. Research conducted in various countries has provided evidence that having satisfactory accommodation is often at the top of people's human needs" (Kiel & Carson, 2020). Aigbavboa & Thwala (2016) described that "the motivation for the interest and popularity of residential satisfaction is twofold. First, residential satisfaction is recognized as an important component of an individuals' general quality of life; meaning that for most people, housing is the largest consumption item in their lifetime. Second, a home is the place where one most often finds refuge, rest, and satisfaction. This means that the degree to which an individual's needs and aspirations are met by their housing condition is a concern for researchers but most importantly for housing developers, planners and specifically for housing policy-makers". In view of this, it can be identified that the research on residential satisfaction has become an important study. Correspondingly, Balestra & Sultan (2013) concluded that understanding the levers of residential satisfaction is important for any public policy aiming at enhancing people's housing opportunities. Besides, Ibem et al., (2013) stated that findings of these studies help us to understand the importance of housing characteristics, housing unit support services, neighborhood environment and management aspect of housing as well as the socio-economic and demographic characteristics of residents in residential satisfaction.

The above-mentioned findings underscore the paramount importance of acquiring a holistic comprehension of residential satisfaction. This understanding not only enriches the overall quality of life for residents but also bestows invaluable insights upon housing developers, urban planners, and policymakers. By discerning the factors that wield influence over residential satisfaction, these stakeholders can make judicious decisions and implement measures that align with the needs and aspirations of residents. This, in turn, has the potential to foster the creation of

Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

176

meticulously designed and supportive housing environments that facilitate an elevated quality of life for both individuals and communities. Furthermore, it accentuates the need to consider resident satisfaction as a pivotal metric in shaping future housing policies and initiatives.

In the year 2006, Naypyitaw emerged as the new administrative capital of the Union of Myanmar (Burma) under the aegis of the Military Government, officially assuming the mantle of the country's capital. Concomitant with this monumental shift, the construction of 1,200 four-storied apartment blocks in the residential zone was executed with the explicit aim of accommodating civil servants who were mandated to relocate from Yangon to Naypyitaw. These government-provided apartment buildings were exclusively allocated for civil servants, affording them the privilege of residing therein rent-free, except for electricity and water taxes, until the age of 60 while actively engaged in government service. Housing provision, particularly for individuals with limited means and civil servants, has consistently held a position of primacy within Myanmar's government-led housing initiatives. This dedication has translated into the ongoing construction of four-storied apartment buildings, tailored to cater to the housing requisites of government employees, as substantiated by various datasets. Nonetheless, an empirical dearth exists concerning research on residential satisfaction among residents occupying housing structures conceived through divergent strategies. Furthermore, a conspicuous absence of studies evaluating the contentment levels of residents dwelling in government-provided housing units within the confines of Myanmar prevails.

The visionary roadmap for Naypyitaw City, as delineated in the Smart City Action Plans (SCAPS) by Naypyitaw Aung (2019), includes the aspiration to become a green and livable city by 2040. However, one of the main challenges faced is attracting people to reside in Naypyitaw. charts a course toward metamorphosing into a verdant and habitable city by the year 2040. Yet, a pressing challenge persists in the endeavor to entice inhabitants to establish their abode in Naypyitaw. Consequently, the role of housing and urban development has surged in significance in the overarching scheme of Naypyitaw City's evolution. Kabisch et al., (2020) argued that "A key component of livable cities is the residential satisfaction of their inhabitants. To achieve, maintain and improve residential satisfaction, it is essential to gather detailed insights regarding opportunities and obstacles at the district, neighborhood, and apartment level. Appropriate study results deliver arguments, recommendations and proposals that enable municipal and planning institutions and housing providers to make targeted and tailored decisions". Thus, an unambiguous research exigency materializes to scrutinize the satisfaction levels of residents residing in government-provided apartment buildings within Naypyitaw City. Such research endeavors are poised to cast their influence on the refinement and fortification of housing strategies and policies within the city.

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

177

In the context of assessing residential satisfaction in government-provided four-storied apartment buildings in Naypyitaw, Myanmar, it is crucial to delve into the specific criteria and attributes that pertain to this unique context. This evaluation of government buildings encompasses a spectrum of factors, including building quality, amenities, proximity to essential services, security measures, and other relevant aspects. Recognizing the distinctive features and challenges associated with government-provided housing in Myanmar is paramount, as these factors can exert a significant influence on residents' levels of satisfaction. Therefore, this study endeavors to offer a comprehensive understanding of the dynamics of residential satisfaction within these specific buildings by examining the specific assessment criteria and contextual factors that shape the residents' experiences, thereby contributing to the broader goal of refining housing strategies and policies within the city.

This study embarks on an exploration of residential satisfaction within government-provided four-storied apartment buildings nestled within civil servant housing enclaves in Naypyitaw City. The primary objectives are to identify priority factors that bolster residential satisfaction within these government-provided four-storied apartment units and to proffer recommendations aimed at elevating the overall residential satisfaction levels for denizens of government-provided four-storied apartment buildings. Two overarching research questions steer this study: (1) What are the salient factors that wield influence over residential satisfaction within government-provided four-storied apartment units situated within civil servant housing estates in Naypyitaw City? (2) What strategies can be envisaged to elevate the overarching residential satisfaction within government-provided four-storied apartment buildings? By addressing these research questions and objectives, this study endeavors to make a substantive contribution to the comprehension and enhancement of residential satisfaction within government-sponsored housing developments.

## 2. RESEARCH METHOD

This study is geographically focused on the residential zone area, which is situated in Zabu Thiri Township and Pobba Thiri Township of Naypyitaw City. The target population comprises residents living in government-provided four-storied apartment buildings within civil servant housings located in various quarters of Zabu Thiri Township and Pobba Thiri Township. Figure 1 displays the locations of the nine civil-servant housings in Naypyitaw City.

According to data from the Naypyitaw Development Committee, a total of 20,624 households currently resides in these nine civil servant housings. Given the infinite population size, a quantitative approach is adopted for this research, utilizing a cluster sampling method

Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

178

(specifically, multistage cluster sampling) to collect the samples. The primary data collection is designed to address the specific research problem at hand.
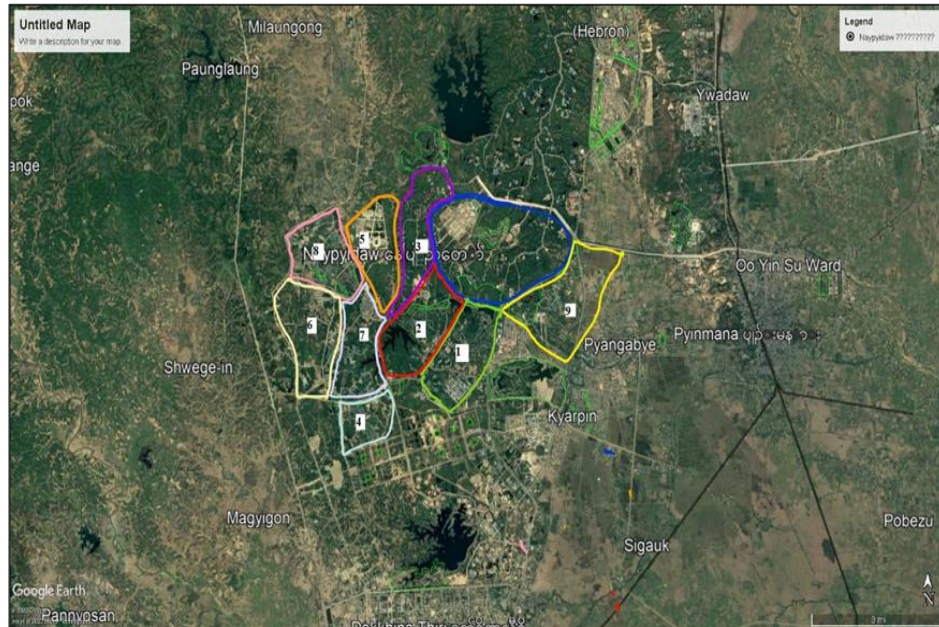


**Figure 1.** Locations of Nine Civil-Servant Housings in Naypyitaw City
(Source: Google Earth, 2022)

Data collection for this study involves the use of questionnaire papers administered through a face-to-face approach. Given that many civil servants in Myanmar are unfamiliar with email and online techniques, a house-to-house approach is adopted to reach potential respondents who are willing to answer the questionnaire. Pre-testing was conducted among a sample of residents to ensure the suitability of the approach. The total number of housings included in the study is nine, and the required sample size is determined to be 384 using Cochran's formula (Cochran, 1977).

The components and variables selected for this study are based on commonly used attributes identified in previous research and studies on residential satisfaction, considering the specific needs of residents in the study area. These components encompass socio-demographic characteristics, physical and environmental features of housing units, the social environment within the housing area, services provided for the housing area, and housing locations.

Respondents are asked to rate the "level of importance" (expected performance) and "level of satisfaction" (actual performance) for each targeted attribute using a five point Likert Scale (Likert, 1932). The scale ranges are 1 (very unimportant), 2 (less important), 3 (doubtful), 4 (important), and 5 (very important) for the level of importance; and 1(very dissatisfied), 2 (not satisfied), 3 (undecided), 4 (satisfied), and 5 (very satisfied) for the level of satisfaction.

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

179

Somiah et al., (2017) classified that "inferring from the definitions of satisfaction, satisfaction has to do with a person's feeling(s), perceived performance or outcome of a product and a person's expectations of a product; hence making satisfaction a very subjective and relative concept". Importance, on the other hand, represents the significance or priority that customers or residents assign to various attributes or features of a product or service. It reflects how much customers value different aspects of the product or service. This is often based on their needs, expectations, or preferences. The relationship between Satisfaction and Importance is typically used to identify areas for improvement or focus in a product or service. By analyzing the gap between Satisfaction and Importance, it can be prioritized actions and allocated resources more effectively to enhance overall satisfaction and meet the most critical needs of the target population, which are the residents of Naypyitaw City. Thus, the collected data will be analyzed using the Gap Analysis Method.

"Gap analysis is applied to see gap between perceived quality (actual) and expected quality (ideal). Actual quality is demonstrated through respondents' assessment of the performance attribute indicator forming quality website-based dimension WebQual indicator, while the ideal qualities shown by respondents' assessment of expectations (importance) of attributes of quality indicators. Process for determining gap value in Formula (1), calculated the difference of actual quality value (Performance) and ideal quality value (Importance)" (Shia et al., 2016).

$$Q(Gap) = Perf - Imp \tag{1}$$

Description:

Gap : level of the quality gap.

Perf : value of current perceived or actual quality (performance).

Imp : value of ideal quality or expectation and need to be developed (importance).

Good quality levels signified by a positive value or $Q \geq 0$. This signifies actual quality has met ideal quality that is expected by the respondents. Conversely if the results of $Q < 0$ or negative, the quality level is not able to meet desires of user.

In the context of this study, 'satisfaction level' is a pivotal metric utilized to assess respondent satisfaction with specific elements under scrutiny in the context of Gap Analysis. It is calculated using Formula (2).

$$Tk \text{ (satisfaction level)} = ((x) \text{ satisfaction} / (y) \text{ importance}) \times 100\% \tag{2}$$

Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

180

'Satisfaction' represents respondent contentment, while 'Importance' signifies the significance respondents attribute to these elements. The formula provides a numerical satisfaction level, which aids in prioritizing areas in need of attention. Lower satisfaction levels in comparison to importance highlight disparities between expected and actual satisfaction, guiding informed decision-making and action plans for improvement.

## 2.1. Research Framework

The focus of this study revolves around residential satisfaction, which serves as the dependent variable. The various factors and determinants influencing residential satisfaction, as depicted on the left side of Figure 2, are treated as independent variables. The aim is to examine the relationship between residential satisfaction and these independent variables, exploring whether residential satisfaction is influenced by any of these factors. It is worth noting that the determinants of residential satisfaction may vary depending on the type of housing under investigation. To provide a visual representation of the research framework, Figure 2 presents the conceptual framework adopted for this study.
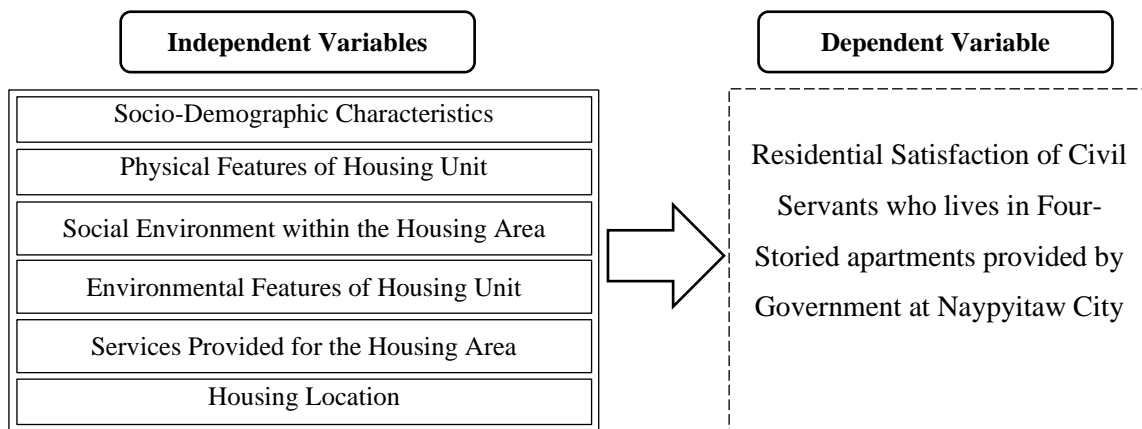


**Figure 2.** Conceptual Framework

## 3. RESULTS AND DISCUSSION

In this study, the data analysis was conducted using a quatitative descriptive method. To address the research questions, the Gap Analysis Method was employed with the aid of Microsoft Excel. A total of 500 questionnaires were distributed, and 445 questionnaires (N = 445) were deemed suitable for inclusion in the final analysis, resulting in a response rate of 89%. The collected data were subjected to Gap Analysis, which involved calculating the average values for each attribute. Table 1 provides the percentage distribution of socio-demographic characteristics based on the data collected from the 445 respondents.

Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

181

**Table 1.** Percentage of the Collected Data from 445 numbers of Respondents for Socio-Demographic Characteristics

| No. | Category | Classification | Numbers of Respondents | Percentage of Respondents' Numbers |
|---|---|---|---|---|
| 1 | Housing Names | Kant Kaw Housing | 47 | 10.6 % |
| | | Padauk Housing | 59 | 13.3 % |
| | | Khayay Housing | 49 | 11.0 % |
| | | NPTDC Housing | 58 | 13.0 % |
| | | Project-1 Housing | 45 | 10.1 % |
| | | Project-2 Housing | 45 | 10.1 % |
| | | Project-3 Housing | 46 | 10.3 % |
| | | Project-4 Housing | 44 | 9.9 % |
| | | Project-5 Housing | 52 | 11.7 % |
| 2 | Types of Buildings | 4 Unit-4 Storey including 3 bedrooms | 142 | 32% |
| | | 4 Unit-4 Storey including 2 bedrooms | 100 | 22% |
| | | 6 Unit-4 Storey including 3 bedrooms | 87 | 20% |
| | | 6 Unit-4 Storey including 2 bedrooms | 116 | 26% |
| 3 | Sex of respondents | Male | 146 | 33% |
| | | Female | 299 | 67% |
| 4 | Age Groups in Years | Below 30 years | 82 | 18% |
| | | 30 years and above | 363 | 82% |
| 5 | Numbers of Children | No Children | 179 | 40% |
| | | 1-2 people | 241 | 54% |
| | | 3-4 people and more | 25 | 6% |
| 6 | Marital Status | Single | 140 | 31% |
| | | Married | 305 | 69% |
| 7 | Educational Qualification | Less than high school | 21 | 5% |
| | | Graduated high school or equivalent | 22 | 5% |
| | | Diplomas/ Professional qualifications/ Certificates | 18 | 4% |
| | | Bachelor's Degree | 309 | 69% |
| | | Master's Degree/ Doctorate Degree | 75 | 17% |
| 8 | Position | Lower than the position of Officer | 214 | 48% |
| | | Officer and higher than the position of Officer $\geq$ | 231 | 52% |
| 9 | Average Monthly Income (Myanmar) (1$=2000 MMK) | < 200.000 MMK | 19 | 19% |
| | | 200.000-300.000 MMK | 56 | 56% |
| | | 300000 MMK $\geq$ | 24 | 24% |
| 10 | Household Size | 1-2 people | 168 | 38% |
| | | 3-4 people | 201 | 45% |
| | | 5-8 people | 76 | 17% |
| 11 | Length of Stay in the residence | Less than 1 year | 19 | 19% |
| | | 1 year-3 years | 26 | 26% |
| | | More than 3 years | 55 | 55% |
| 12 | Place of residence | Ground floor | 132 | 30% |
| | | First floor | 115 | 26% |
| | | Second floor | 97 | 22% |
| | | Third floor | 101 | 23% |

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

182

Based on Table 1, the study findings on the socio-demographic characteristics of the respondents revealed several key insights. The majority of respondents were female (67%) and aged 30 years or above (82%), indicating a predominantly mature population. Additionally, a significant portion of the respondents were married (69%) and had a moderate family size, with 45% having a family size of 1-2 members. Education was a distinguishing factor, as 69% of the respondents held a bachelor's degree and 17% had a postgraduate degree, highlighting the overall high level of education among the participants. Occupation-wise, 52% of the respondents held officer positions or higher, while 48% held positions below the officer level. In terms of income, 56% residents earned between 200,000 and 300,000 MMK per month, with 24% earning more than 300,000 MMK and 19% earning less than 200,000 MMK.

The length of residence data indicated that 55% of the respondents had been living in their current apartments for more than three years, and 26% had been residing there for more than one year. Overall, the study findings underscored the predominance of female respondents, the mature age group, and the influence of education on job positions, with implications for understanding gender disparities in the workplace.

The results of the Gap Analysis, along with the assessment of respondent suitability using Formula 2, are presented in Table 2. The gap values displayed are depicted in the Gap Analysis Chart shown in Figure 3.
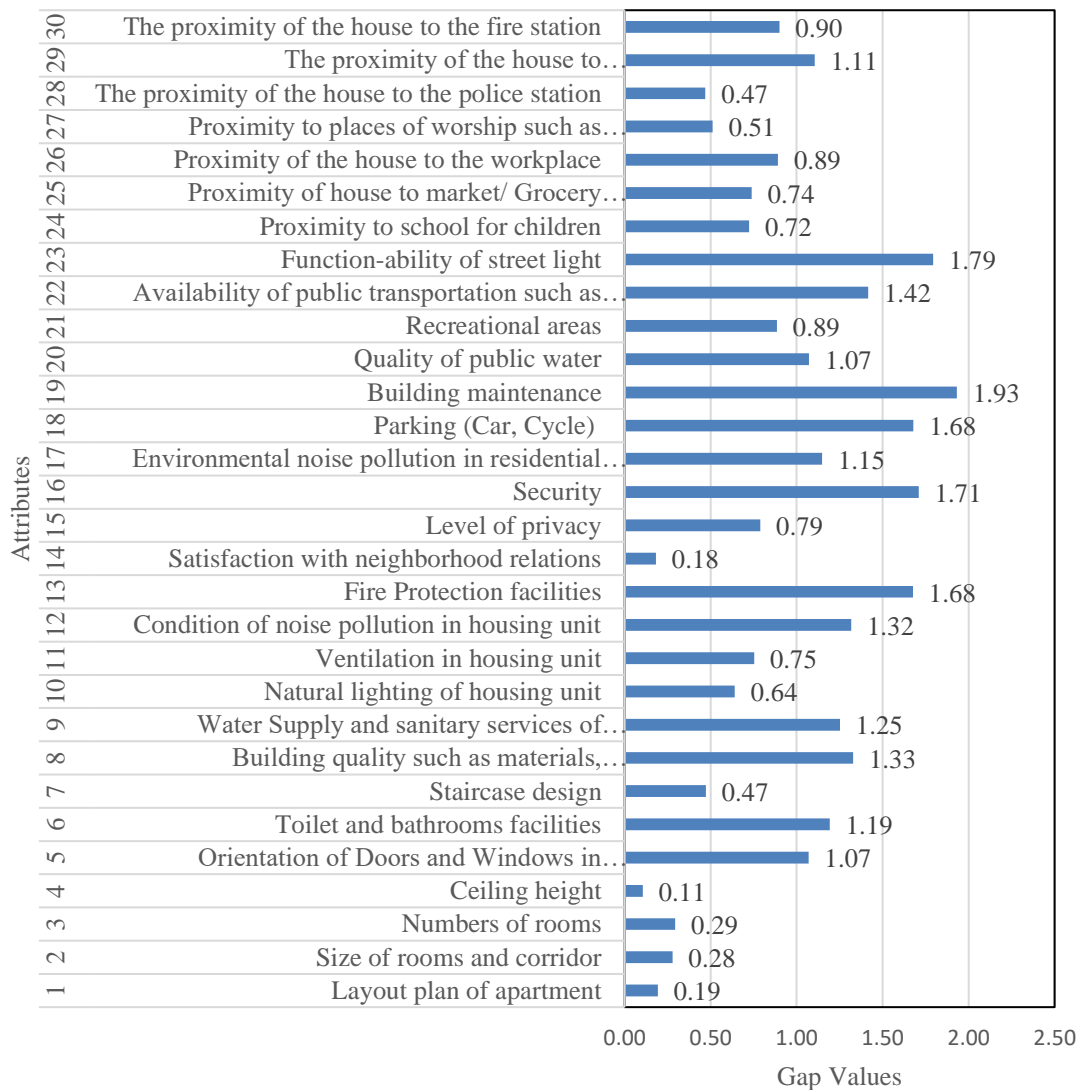
Upon analyzing the results presented in Table 2 regarding the level of suitability of users, it is evident that all satisfaction levels surpass expectations. Among the attributes assessed, notably, attributes such as "Security," "Building Maintenance," and "Function-ability of Street Lights" score exceptionally high, indicating a strong level of satisfaction among respondents. On the other hand, attributes like "Proximity to the Police Station" and "Proximity to Places of Worship" exhibit relatively lower satisfaction levels.

**Table 2.** User Satisfaction Level and Gap Values

| Categories | No. | Attributes | Satisfaction | Importance | Satisfaction Level (%) | Gap (P-I) |
|---|---|---|---|---|---|---|
| Physical features of Housing unit | 1 | Layout plan of apartment | 2.57 | 2.38 | 108.14 | 0.19 |
| | 2 | Size of rooms and corridor | 2.73 | 2.45 | 111.38 | 0.28 |
| | 3 | Numbers of rooms | 2.70 | 2.41 | 112.23 | 0.29 |
| | 4 | Ceiling height | 2.53 | 2.42 | 104.36 | 0.11 |
| | 5 | Orientation of doors and windows in housing unit | 3.23 | 2.16 | 149.48 | 1.07 |
| | 6 | Toilet and bathrooms facilities | 3.22 | 2.02 | 158.93 | 1.19 |
| | 7 | Staircase design | 2.99 | 2.52 | 118.75 | 0.47 |
| | 8 | Building quality | 3.34 | 2.02 | 165.89 | 1.33 |

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

183

**Table 2.** User Satisfaction Level and Gap Values (Continued)

| Categories | No. | Attributes | Satisfaction | Importance | Satisfaction Level (%) | Gap (P-I) |
|---|---|---|---|---|---|---|
| Environmental features of Housing unit | 9 | Water supply and sanitary services of housing unit | 3.08 | 1.83 | 168.43 | 1.25 |
| | 10 | Natural lighting of housing unit | 2.66 | 2.02 | 131.70 | 0.64 |
| | 11 | Ventilation in housing unit | 2.68 | 1.93 | 139.04 | 0.75 |
| | 12 | Condition of noise pollution of housing unit | 3.56 | 2.24 | 158.78 | 1.32 |
| | 13 | Fire protection facilities | 3.52 | 1.85 | 190.75 | 1.68 |
| Social environment within the housing area | 14 | Satisfaction with neighborhood relations | 2.49 | 2.31 | 107.89 | 0.18 |
| | 15 | Level of privacy | 2.72 | 1.93 | 140.77 | 0.79 |
| | 16 | Security | 3.41 | 1.70 | 200.66 | 1.71 |
| | 17 | Environmental noise pollution in residential areas | 3.43 | 2.28 | 150.39 | 1.15 |
| Services provided for the housing area | 18 | Parking (car/cycle) | 3.76 | 2.08 | 180.67 | 1.68 |
| | 19 | Building maintenance | 3.84 | 1.90 | 201.53 | 1.93 |
| | 20 | Quality of public water | 2.86 | 1.79 | 159.85 | 1.07 |
| | 21 | Recreational areas | 3.50 | 2.61 | 133.88 | 0.89 |
| | 22 | Availability of public transportations | 3.55 | 2.14 | 166.25 | 1.42 |
| | 23 | Function-ability of streetlight | 3.57 | 1.77 | 201.14 | 1.79 |
| Housing location | 24 | Proximity to school for children | 2.91 | 2.19 | 133.03 | 0.72 |
| | 25 | Proximity of house to market/grocery store/shopping locations | 3.07 | 2.33 | 131.67 | 0.74 |
| | 26 | Proximity of house to workplace | 3.14 | 2.25 | 139.70 | 0.89 |
| | 27 | Proximity to place of worship such as Masjid, Temples, Churches, etc. | 2.86 | 2.34 | 121.86 | 0.51 |
| | 28 | Proximity of house to police station | 2.85 | 2.38 | 119.72 | 0.47 |
| | 29 | Proximity of house to hospital/health clinics /health facilities | 3.06 | 1.95 | 156.62 | 1.11 |
| | 30 | Proximity of house to fire station | 3.04 | 2.14 | 142.08 | 0.90 |
| Average | | | 3.10 | 2.14 | 146.85 | |

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

184

**Figure 3**. Gap Analysis Chart

The Gap Analysis Chart displayed in Figure 3 reveals that no negative gaps were identified in this study. To prioritize the findings, the gap values have been categorized into four ranges: values greater than 1.5, between 1 and 1.5, between 0.5 and 1, and between 0 and 0.5. The specific attributes falling into each category are as follows:

The attributes with the most positive gaps greater than 1.5 are as follows:

1. Fire Protection facilities (Gap Value1.68).

2. Security (Gap Value 1.71).

3. Parking (Car/Cycle) (Gap Value 1.68).

4. Building maintenance (Gap Value 1.93) which is the largest positive gap.

5. Function-ability of streetlight (Gap Value 1.79) which has the second largest positive gap.

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

185

The attributes with positive gaps between 1 and 1.5 are:

1.  Orientation of doors and windows in housing unit (Gap Value 1.07).

2.  Toilet and bathrooms facilities (Gap Value 1.19).

3.  Building quality (Gap Value 1.33).

4.  Water supply and sanitary services of housing unit (Gap Value 1.25).

5.  Condition of noise pollution of housing unit (Gap Value 1.32).

6.  Environmental noise pollution in residential areas (Gap Value 1.15).

7.  Quality of public water (Gap Value 1.07).

8.  Availability of public transportations (Gap Value 1.42).

9.  Proximity of house to hospital/health clinics /health facilities (Gap Value 1.11).

The attributes with positive gaps between 0.5 and 1 are:

1.  Natural lighting of housing unit (Gap Value 0.64).

2.  Ventilation in housing unit (Gap Value 0.75).

3.  Level of privacy (Gap Value 0.79).

4.  Recreational areas (Gap Value 0.89).

5.  Proximity to school for children (Gap Value 0.72).

6.  Proximity of house to market/ Grocery store/shopping locations (Gap Value 0.74).

7.  Proximity of house to workplace (Gap Value 0.89).

8.  Proximity to place of worship (Gap Value 0.51).

9.  Proximity of house to fire station (Gap Value 0.9).

Lastly, the attributes with positive gaps between 0.5 and 0 are:

1.  Layout plan of apartment (Gap Value 0.19).

2.  Size of rooms and corridor (Gap Value 0.28).

3.  Numbers of rooms (Gap Value 0.29).

4.  Ceiling height (Gap Value 0.11) which is the smallest positive gap.

5.  Staircase design (Gap Value 0.47).

6.  Satisfaction with neighborhood relations (Gap Value 0.18), which is the second smallest positive gap.

7.  Proximity of house to police station (Gap Value 0.47).

Based on the findings of this study, it is recommended to focus efforts on improving the attributes with the smallest positive gaps, which are close to 0. Levenburg & Magal, (2004) pointed out that "Remember that gaps can be positive or negative, and positive gaps indicate that the audience's satisfaction with a certain attribute is higher than the corresponding importance they associate with that attribute, while a negative gap indicates that satisfaction with a certain attribute is less than its importance".

In this study, all attributes were found to have positive gaps. However, considering the study objectives, attention should be given to the attributes with the smallest positive gaps between 0 and 0.5, as their values are close to 0 and can easily be transformed into negative gaps.

Therefore, the seven attributes with the lowest positive gaps, close to 0, are layout plan of apartment, size of rooms and corridor, numbers of rooms, ceiling height, and staircase design from physical features of the housing unit, satisfaction with neighborhood relations from social environment within the housing area, and proximity of house to police station from housing location. These attributes should be considered priority factors for improving residents' satisfaction in the government-provided apartments.

## 4. CONCLUSION

The findings of this study indicate that the majority of residents living in four-storied apartment buildings of civil servant housing provided by the government in Naypyitaw City are satisfied, based on the attributes targeted in this study. The priority factors that can improve residential satisfaction are identified as follows: ceiling height (Gap Value 0.11), satisfaction with neighborhood relations (Gap Value 0.18), layout plan of apartment (Gap Value 0.19), size of rooms and corridor (Gap Value 0.28), numbers of rooms (Gap Value 0.29), staircase design (Gap Value 0.47), and proximity of house to the police station (Gap Value 0.47).

Therefore, this study suggests the following improvements that are necessary to enhance residents' satisfaction:

1. Reevaluate ceiling height.

   The ceiling heights in these apartment buildings conform to Myanmar's regulatory standards, residents residing on the upper floors have expressed discomfort due to heat transfer issues through the ceilings. To address this concern and improve overall comfort, future designs should consider higher ceilings or incorporate heat insulation during the initial design phase.

2. Revise neighborhood relations satisfaction.

   Research by Hur & Morrow-Jones (2008), has shown that safety and social concerns have a more substantial impact on neighborhood satisfaction than physical factors, particularly in less satisfactory areas. Therefore, it is crucial to address safety issues and promote community building to enhance residents' satisfaction with neighborhood relations.

3. Rethink apartment layout.

   The layout of apartments should be reexamined to align more closely with residents' needs, preferences, and established design guidelines.

4. Enhance room and corridor sizes.

**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

187

The room and corridor sizes in the apartment adhere to standard requirements outlined in the Myanmar National Building Code. Improvements with careful analysis of traffic flow and potential congestion areas should be conducted to prevent bottlenecks and enhance space utilization.

5. Consider expanding room numbers.

   Depending on the demands of the intended residents, future apartment buildings may benefit from an increase in the number of rooms. This adjustment could enhance residents' satisfaction and attract a broader range of occupants.

6. Optimize staircase design.

   Staircase design should adhere to the standards detailed in the Myanmar National Building Code, with a focus on proper lighting, ventilation, non-slip surfaces, and appropriate distances between stairs and door openings. This approach ensures safe and comfortable access while also aligning with residents' needs.

7. Proximity to Police Stations.

   To create a truly livable city, careful planning of housing locations should include convenient proximity to Police Stations. This proximity fosters a sense of security and contributes to overall resident satisfaction with the living environment.

In addition to these architectural considerations, it is recommended that the government and public housing developers actively engage residents and potential homebuyers in the development of dwelling units. Implementing incremental construction and housing delivery strategies that align with residents' needs and preferences can further elevate satisfaction levels in future housing projects. These collaborative efforts can lead to more tailored and satisfactory living environments for the residents of Naypyitaw City.

## 5. ACKNOWLEDGEMENT

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**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

188

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**Assessment of Residential Satisfaction using Gap Analysis: A Case Study in Naypyitaw City, Myanmar**
(Pan Ei Phyu, Nursyirwan Effendi, Purnawan)

189