Level of importance and housing satisfaction of Jeulingke residence housing on-road aspect

M Iqbal

1Civil Engineering postgraduate program, Department of Civil Engineering, Universitas Syiah Kuala, Banda Aceh, Indonesia

Corresponding e-mail: iqbal1991@mhs.unsyiah.ac.id

Abstract. Jeulingke Residence is one of the subsidized housing located in Jeulingke Village, Syiah Kuala District, Banda Aceh City. Occupants after occupying, faced with problems regarding the performance of developers on aspects of roads. The road aspect has a bad condition because the road surface + 246 m towards the housing complex is currently not pavement. This study aims to identify the level of importance and satisfaction of residents of Jeulingke Residence Housing on-road aspects. This study uses qualitative methods through observation and interviews and quantitative methods through questionnaires. The total population of houses that have been occupied in Jeulingke Residence is 102 units, and no sampling is taken. Data analysis used Importance Performance Analysis (IPA) through Minitab software 16. The results of the study showed that the level of importance and satisfaction that requires priority in improving performance in the aspect of the road is the condition of the entrance pavement.

1. Introduction

House is a building that functions as a human settlement, while housing is a collection of several housing units in an environment. Jeulingke Residence is one of the subsidized housing located in Jeulingke Village, Syiah Kuala District, Banda Aceh City. Based on [1], Jeulingke Residence Housing was built in the cultivation area, housing zone, sub-zone of medium density house (R-2). Jeulingke Residence Housing was built by PT. Matahari Cipta as the developer, which is divided into two stages of development. Phase I was built in 2017 in a total of 78 housing units, while phase II was built in 2018 as many as 205 housing units. The total housing units in the residence are 283 units, which can be seen in Appendix A Figure A.3.7 page 71. The building area of this house is 36 m², while the land area is 100 m². The house building specifications consist of 2 bedrooms, 1 living room, 1 bathroom, kitchen, terrace, and carport.

After occupying Jeulingke Residence Housing, residents are faced with problems of developer performance in several aspects. In the aspect of the road from the preliminary observations, the conditions were bad, because the road surface + 246 m towards the housing complex is currently not pavement. The pavement is only found in housing complexes made of rigid pavement. This is when rain occurs on roads that do not have pavement which can cause the surface of the road to become wet and muddy.

In planning the housing environment, aspects of roads have been well regulated by several regulations. The regulations are contained in [2]. These regulations should be a foundation for developers to plan housing complexes that meet standards for the residents. If the road aspects are below
expectations then the residents feel dissatisfied with the service provided by the developer. Conversely, if they meet their expectations, the residents are satisfied with the service provided by the developer. In connection with these problems, this study aims to identify the level of importance and satisfaction of residents of Jeulingke Residence Housing on aspects of the road.

2. Methodology

2.1. Determining the population
The population is a generalization area consisting of objects/subjects that have certain qualities and characteristics set by researchers to be studied and then conclusions drawn. The sample is part of the number and characteristics possessed by the population [3]. The population in this study was intended for residents of the Jeulingke Residence Housing complex. Based on data from PT. Matahari Cipta, the number of houses in Jeulingke Residence Housing in phase I is 78 units, while phase II is 205 units, with a total of 283 units. Based on observations for phase I, the total number of houses has been occupied are 78 units, while for phase II the number of houses has been occupied are 24 units, with a total of 102 units. Given the minimal population of residents, no more sampling is taken, so that this study is determined as population research.

2.2. Descriptive analysis
Descriptive analysis is an analysis that describes data that will be made both alone and in groups [4]. Descriptive analysis in this study was used to describe respondents' perceptions of the level of importance and satisfaction of residents of Jeulingke Residence Housing on-road aspects. The steps of this descriptive analysis can be described as follows:
1. The questions in the questionnaire were analyzed descriptively through the help of SPSS version 22 software.
2. The output of the software is the frequency of answers to the importance and the level of satisfaction in the aspects of the road.
3. Calculating the mean indicator of the importance and the mean indicator of satisfaction. The mean obtained from the score is divided by the number of respondents on each indicator. Scores are obtained from the sum of all forms of answers that have been multiplied by the weight of the answers on each indicator.
Calculating the mean aspects of the level of importance and the mean aspects of the level of satisfaction. The mean aspect is obtained from the mean of each indicator added up then divided by the number of indicators.

2.3. Importance of performance analysis (IPA)
The IPA combines the measurement of importance level factors and satisfaction levels in a two-dimensional graph that facilitates the explanation of the data and gets practical proposals [5]. The IPA in this study was used to identify the level of importance and satisfaction of residents of Jeulingke Residence Housing on aspects of roads. The steps of this IPA can be described as follows:
1. Performing vertical axis intersection (Y-axis) through the mean aspect level of interest with the horizontal axis (X-axis) through the mean aspects of satisfaction level, so that IPA graphics can be made through the help of Minitab 16 software.
2. The output generated from the software is a 4-quadrant IPA-based graph containing indicators of road aspects. The position of the aspect indicator in a quadrant is determined by the meeting of the mean level interest with the mean level of satisfaction on the Y and X axes.
3. Interpreting the indicators of road aspects included in quadrants I, II, III, and IV. The interpretation of the IPA quadrant can be seen in table 1.
Table 1. Interpretation of the IPA quadrant.

| No. | Quadrant | Interpretation                                                                 |
|-----|----------|--------------------------------------------------------------------------------|
| 1   | Quadrant I | Very important and very satisfied (maintain performance)                        |
| 2   | Quadrant II | Not important and very satisfied (tends to be excessive)                       |
| 3   | Quadrant III | Not important and not satisfied (low priority)                               |
| 4   | Quadrant IV | Very important and not satisfied (high priority / improve performance)         |

The quadrants in table 1 can show the level of importance and satisfaction of residents of Jeulingke Residence Housing on aspects of roads.

3. Results and discussion

3.1. Respondent’s perception

Residents after occupying Jeulingke Residence Housing, faced with problems regarding developer performance in several aspects. Developer performance is the work of the developer in building housing units, their facilities, and infrastructure in a housing complex. Developers who perform well are developers who can pay attention to the interests of residents while meeting satisfaction for the residents. Based on observations of existing conditions, developer performance which raises significant problems in housing complexes is the aspect of roads. Residents certainly have their evaluation criteria for the level of importance and level of satisfaction in each of these aspects. Perceptions of residents of one house can also be different from the other. This is because one's perceptions are influenced by ways of thinking and feeling that are subjective. The respondents' perceptions of the level of importance and satisfaction in each aspect can be described as below.

1. Perception of the level of importance

Based on the answers of 102 residents, the following can be shown the frequency of answers of importance ranging from Not Important at All (NIA), Not Important (NI), Slightly Important (SI), Important (I), Very Important (VI), score, and mean. This can be seen in table 2.

Table 2. Residents' perceptions of the importance.

| No. | Statements                                             | Resident's Perception | Score | Mean |
|-----|--------------------------------------------------------|-----------------------|-------|------|
|     |                                                        | NIA (1) | NI (2) | SI (3) | I (4) | VI (5) |
| 1   | Main road pavement conditions                         | -       | -      | 12     | 9     | 498    | 4,882 |
| 2   | Pavement condition of the entrance                     | -       | -      | 28     | 74    | 482    | 4,725 |
| 3   | Condition of road pavement in housing                 | -       | -      | 27     | 75    | 483    | 4,735 |
| 4   | Width of the main road                                 | -       | -      | 13     | 89    | 497    | 4,873 |
| 5   | Entrance width                                         | -       | 4      | 39     | 59    | 463    | 4,539 |
| 6   | Road width in housing                                  | -       | -      | 26     | 76    | 484    | 4,745 |
| 7   | Benefit Areas                                         | -       | -      | 68     | 34    | 442    | 4,333 |
| 8   | Regional Road Supervision                              | -       | -      | 29     | 73    | 481    | 4,716 |
| 9   | Building Line                                         | -       | -      | 39     | 63    | 471    | 4,618 |
| 10  | The width of the road for fire trucks access           | -       | -      | 14     | 88    | 496    | 4,863 |

Mean level of importance of aspects of the road: 4,703
Table 2 shows that the mean level of interest in aspects of the road is obtained at 4.703. The mean shows that overall residents perceive that housing complexes on aspects of roads have a very important level of importance.

2. Perception of the level of satisfaction
   Based on the answers of 102 residents, the following can be shown the frequency of answers of satisfaction ranging from Not Important at All (NIA), Not Important (NI), Slightly Important (SI), Important (I), Very Important (VI), score, and mean. This can be seen in Table 3.

   **Table 3. Residents’ perceptions of satisfaction.**

| No. | Statements                          | Residents’ Perception | Score | Mean |
|-----|------------------------------------|-----------------------|-------|------|
|     |                                    | NIA (1)   NI (2) SI (3) I (4) VI (5) |       |      |
| 1   | Main road pavement conditions      | -         -         12      90     | 498   | 4.882|
| 2   | Pavement condition of the entrance | 22        27        53      -       | -     | 2.304|
| 3   | Condition of road pavement in housing | -        -         2       60     40     | 446   | 4.373|
| 4   | Width of the main road             | -         -         -       13      89     | 497   | 4.873|
| 5   | Entrance width                     | -         -         -       79      23     | 431   | 4.225|
| 6   | Road width in housing              | -         -         14      64     24     | 418   | 4.098|
| 7   | Benefit Areas                      | 7         25        69      1       | -     | 268   | 2.627|
| 8   | Regional Road Supervision          | -         -         -       88      14     | 422   | 4.137|
| 9   | Building Line                      | -         -         17      47     38     | -     | 327   | 3.206|
| 10  | The width of the road for fire trucks | -       -          16      70     16     | 408   | 4.000|

Table 3 shows that the mean level of satisfaction in the aspect of the road is obtained at 3.873. The mean shows that overall residents perceive that the housing complex in the aspect of the road has a “satisfied” level of satisfaction.

3.2. Levels of interest and satisfaction of occupants on the road aspect
   The road is an infrastructure that functions as a vehicle and people traffic lane. Based on the perceptions of occupants on aspects of the road, the mean level of importance is obtained at 4.703 as the y-axis and the mean level of satisfaction is 3.873 as the x-axis. The mean generally means that residents feel very important and satisfied with aspects of the road. The two means are perpendicular to the axis intersection so that the road aspect indicators are spotted in each quadrant. The results of the level of importance and satisfaction of residents in the aspects of the road that have been analyzed through the Minitab software can be seen in figure 1.
The distribution of indicators on aspects of the road from each quadrant can be presented in table 4.

**Table 4. Distribution of indicators on-road aspect in each quadrant.**

| Quadrant IV (High Priority) | Quadrant I (Maintaining The Performance) |
|-----------------------------|-----------------------------------------|
| 2 Pavement condition of the entrance | 1 Main road pavement conditions |
| 3 Condition of road pavement in housing | 4 Width of the main road |
| 4 Width of the main road | 6 Road width in housing |
| 5 The width of the road can be accessed by fire trucks | 8 Regional Road Supervision |

| Quadrant III (Low Priority) | Quadrant II (Overdoing) |
|----------------------------|-------------------------|
| 7 Benefit Areas | 5 Entrance width |
| 9 Building Line | |

The quadrant interpretation in figure 1 and table 4 can be described as follows:

1. Quadrant I, there are 6 indicators in which performance needs to be maintained because residents assess the indicators as very important and very satisfied. Indicators that need to be maintained are as follows:
   a. Main road pavement conditions
      The main road of the Jeulingke Residence Housing complex is Teuku Nyak Arief Street which connects Kuta Alam District with Syiah Kuala District. According to the Spatial Detail Plan [1], this main road belongs to the classification of primary arterial roads. Primary arterial roads are roads that connect efficiently between national activity centers or between national activity centers and regional activity centers. Based on observation on the condition of the main road pavement is made of flexible pavement. Flexible pavement is a pavement that uses asphalt...
material as a binder. The condition of the main road pavement can support occupant satisfaction so that the government can maintain its performance.

b. Condition of road pavement in housing
Roads in housing complexes are classified as secondary road classification II. Secondary local roads II are lanes that connect arterial / collector / local roads with the residential neighborhood, to access higher hierarchies. Based on observation, the pavement condition in a housing complex made of rigid pavement. Rigid Pavement is a pavement that uses cement as its binding material. The condition of pavement in this housing complex can support occupant satisfaction so that the developers can maintain their performance.

c. Width of the main road
According to Minister of Public Works Regulation Number 19/PRT/M/2011 concerning Road Technical Requirements and Technical Planning Criteria for Roads, the smallest primary arterial road (main road) is 21 m. Based on observations the main road has a width of 31 m. The width of the main road can support occupant satisfaction so that the government can maintain its performance.

d. Road width in housing
According to [6], the width of the secondary road II (the road in the housing complex) is 3-6 m. Based on observations the road in the housing complex has a width of 4 m. The width of the road in this housing complex can support occupant satisfaction so that the developers can maintain their performance.

e. Regional Road Supervision (RRS)
According to [6], the minimum width of RRS in a residential environment is 4 m. RRS is measured from the walls of the outermost building to the fence or the edge of the drainage outside the Area of The Road (AR). Based on the RRS observation on the housing complex, it has a minimum width of 4 m. RRS in this housing complex can support occupant satisfaction so that the developers can maintain their performance.

f. The width of the road can be accessed by fire trucks
According to [2], the inlet used for passing fire trucks should not be less than 4 m. Based on road observations the housing complex has a width of 4 m. The width of the road in this housing complex can support occupant satisfaction so that the developers can maintain their performance.

2. Quadrant II, there is one indicator in which performance tends to be excessive because residents assess the indicator as not important and very satisfied. Indicators that tend to label as an excessive performance are the width of the entrance. This entry is included in the collector's road classification. Collector road is a road that serves the transportation of collection/distribution with characteristics of medium distance travel, medium average speed, and a limited number of entrances. According to [6], the width of the collector road (entrance) is 7 m. Based on observation, the entrance has a width of 7.5 m. Therefore the government does not need to allocate resources in improving performance.

3. Quadrant III; there are 2 indicators whose performance has a low priority because residents assess that the indicator is not important and not satisfied. Indicators that need performance improvement are as follows:

a. Benefit Areas (BA)
According to [6], the width of housing’ BA is 10-12 m. BA is measured from the edge of the left side of the drainage canal, the traffic lane, and the right side of the drainage canal. Based on BA observation, the housing complex only has a width of 4.6 m. Since the housing has been built from the planned site, the width of BA at the Jeulingke Residence Housing complex cannot be extended anymore. To improve their performance, developers should pay attention to the minimum width of BA for the next housing project.

b. Building Line (BL)
According to [6], the minimum width of BL is 10 m. BL is measured from the road axle to the outermost buildings on controlled land. Based on observations BL only has a width of 6 m. Considering that the housing has been built from the planned site, then the BL at the Jeulingke
Residence Housing complex cannot be expanded again. To improve their performance, developers should pay attention to the minimum width of BL for the next housing project.

4. Quadrant IV, there is one indicator of a performance that was categorized as a high priority, because the residents assess the indicator as very important and not satisfied. The indicator that needs to increase the performance in high priority is the condition of the entrance pavement.

Based on the observation of the entrance + 246 m towards the housing complex there is currently no pavement. This is when rain occurs on roads that do not have pavement which can cause the surface of the road to become muddy. This situation can disturb the comfort of residents and road users. Therefore, the developer needs to allocate adequate resources to increase access to the road.

Research conducted by [7] showed that the transportation aspects that were taken into consideration in choosing the location of Villa Mutiara Cikarang Housing were smooth traffic, main road conditions, residential road conditions, location accessibility, public transportation availability, main road width, and road width in housing. Research conducted by [8] found that the factors that influence the preferences of residents of Pekanbaru in determining housing locations are accessibility factors, infrastructure, and facilities, environmental conditions, socio-economic conditions, the physical condition of the area, quality of housing, legality housing, and the findings of housing residents. Research conducted by [9] found that the factors that influence the value of residential buildings in the city of Denpasar are factors in soil characteristics, environment, location, and building characteristics.

4. Conclusion

Road aspect, the indicator that needs to be maintained is the condition of the main road pavement, the condition of the road pavement in the housing, the width of the main road, the width of the road in the housing, the Road Monitoring Area (RMA), and the width of the road accessible by fire trucks. Indicators that tend to be excessive are the width of the entrance. Indicators that have low priority are the Road Benefit Areas (RBA) and Building Border Line (BBL). The indicator that has a high priority is the condition of the entrance pavement.

It is recommended for the road aspect, the developer needs to increase the access road along + 246 m towards the housing complex.

References

[1] Rencana Detail Tata Ruang (RDTR) Kecamatan Syiah Kuala 2015
[2] Peraturan Menteri Negara Perumahan Rakyat 2008 Nomor 22/PERMEN/M/2008 tentang Standar Pelayanan Minimal Bidang Perumahan Rakyat Daerah Provinsi Dan Daerah Kabupaten/Kota
[3] Sugiyono 2015 Statistik Nonparametris untuk Penelitian (Bandung :Alfabeta)
[4] Riduwan and Sunarto 2014 Pengantar Statistika untuk Penelitian Pendidikan, Sosial, Ekonomi, Komunikasi, dan Bisnis (Bandung: Alfabeta)
[5] Brandt D R 2000 An “Outside-In” Approach to Determining Customer Driven Priorities for Improvement and Innovation vol 2 (White Paper Series)
[6] SNI 2004 Nomor 03-1733-2004 Tentang Tata Cara Perencanaan Perumahan di Perkotaan
[7] Ruswandi Y 2013 Kajian Aspek Transportasi Terhadap Pemilihan Lokasi Perumahan Villa Mutiara Cikarang J Bentang 1 2 (Bekasi: Universitas Islam)
[8] Asteriani F 2011 Preferensi Penghuni Perumahan di Kota Pekanbaru Dalam Menentukan Lokasi Perumahan J Ekonomi Pembangunan (Pekanbaru: Universitas Islam Riau)
[9] Rijasa M M 2014 Analisis Penilaian Bangunan Rumah Tinggal di Kota Denpasar J Spektran (Bali: Universitas Udayana)