The Effectiveness of Livable Housing Program: A Case Study of Pidie District of Aceh Province

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Abstract. A livable house construction program was implemented for the poor by the governments of Pidie district and Aceh province to improve the welfare of the people. These programs were, however, observed not to be effective in achieving the targeted objectives. Therefore, this research was conducted to determine the effectiveness of the decent housing assistant program implemented by the government of Aceh province and Pidie district in 2019 and 2020. This involved the application of the effectiveness analysis through four variables of input, output, outcome, and impact using modified Dantes formula with five achievement levels. Findings from this work is related to effectiveness of the livable house construction programs implemented in Pidie Regency were used to draw the following conclusions: (a) The Aceh provincial government program was analyzed using four variables and found to be effective. The input and output variables were recorded to be quite effective while the outcome and impact variables were less effective; (2) the Pidie regency government program was also analyzed using four variables and found to be less while the input was discovered to be quite effective while the outcome, output, and impact were less effective.

1. Introduction

Housing affordability for the community indicates a national development, and it is the goal of the Indonesian government, including in the city of Banda Aceh, the capital of Aceh province to provide affordable housing for the low-income households [1]. The adequacy and quality of housing is an indication of the productivity, welfare, and prosperity of the community. For those with low-income housing is a form of necessity. However, for those with high incomes, home ownership is seen as an investment [2]. The availability of housing for the community is an indication of national development, and is the goal of the Indonesian government, including in Kota Banda Aceh, the capital of Aceh province, to provide affordable housing for low-income families. According to Glaeser and Gyourko [3] housing development or construction needs to be differentiated for several groups, for example housing for high-income people, middle-income housing, and low-income housing.

Article 28 H of the amended and original 1945 Constitution [4] makes house one of the basic rights of every Indonesian and this means every citizen has the right to live in and have a good and healthy living environment. This led the Aceh Provincial Government to create welfare for the community, especially the poor households, by providing livable housing assistance according to the Aceh Governor Regulation Number 145 of 2016 concerning Livable Houses Construction in Aceh [5]. Moreover, the Pidie Regency Government in Regent Regulation Number 11 of 2020 [6] concerning Technical Guidelines for the Use of Gampong Funds in the Pidie Regency Fiscal Year 2020 also regulates the use of village funds (gampong) to fulfill the mandate of the 1945 Constitution, Article 28 H of the Amended version, and Law No. 4 of 1992 [7] concerning Housing and Settlements. The provisions of the Pidie Regent Regulation Number 11 of 2020 Article 8 paragraph 2 [6] describe the programs and activities required to administer the Gampong funds and point (b) mandates the
provision of funds to construct livable houses for the poor. This has been carefully implemented by all village officials responsible for the management of the community fund since 2017 in line with the Pidie Regency Mid-Term Development Plan Policy for 2017-2022.

There are, however, significant differences in the planning and implementation of the livable housing assistance programs initiated by the provincial and regency government. For example, the provincial government made use of professionals in the process while the regency government conducted the program independently through the effort of the community. The two levels of government have both built approximately 1971 livable houses for Pidie regency in 2019 and 2020 in order to improve the living standard of the people and also to alleviate poverty. Meanwhile, the effectiveness of these programs in achieving their intended objectives has never been evaluated. Therefore, this research was conducted to determine the effectiveness of the housing assistance programs implemented by the two levels of government in the Pidie regency.

2. Research Location

The research was conducted in Pidie Regency which is a community located on a 3,562.12 km2 land area. It has 23 districts, 97 mukim, and 731 villages or gampong and astronomically placed between 04.30-04.60° North Latitude and 95.75°-96.20° East Longitude.

![Figure 1. Study area map](image)

3. Methodology

A proportionate stratified random sampling method was used to determine the respondents to be used in this research. This method involves the determination of samples from a heterogeneous and proportionally stratified population in terms of age and occupation. The focus was, however, on the residents benefitting from the livable house assistance programs provided by both the provincial and regency government in the Pidie district as shown in Table 1. According to [8], the Dantes Modification formula is the best method to classify trends and determine the level of effectiveness based on the scores from a questionnaire with the effectiveness category measured using the total score obtained from each variable based on the respondent's answer as shown in Table 2.
Table 1. Total Population and sample

| Organizers                  | Program Beneficiary Population | Total      | Sample          |
|-----------------------------|--------------------------------|------------|-----------------|
|                             | 2019                           | 2020       | (509/1971) x 150 = 39 |
| Aceh Provincial Government  | 228                            | 281        | 509             |
| Pidie District Government   | 731                            | 731        | 1462 (1462/1971) x 150 = 111 |
| Total                       | 959                            | 1012       | 1971            |

Table 2. Effectiveness qualification level

| Interval Value               | Achievement Level |
|------------------------------|--------------------|
| (Mi + 2 Sdi) ≤ x ≤ (Mi + 3 Sdi) | Very Effective     |
| (Mi + 1 Sdi) ≤ x ≤ (Mi + 2 Sdi) | Effective          |
| (Mi - 1 Sdi) ≤ x ≤ (Mi + 1 Sdi) | Quite Effective    |
| (Mi - 2 Sdi) ≤ x ≤ (Mi - 1 Sdi) | Less effective     |
| (Mi - 3 Sdi) ≤ x ≤ (Mi - 2 Sdi) | Ineffective        |

Where Mi is a Mean Ideal (½ x (max. Ideal score + min. Ideal score), Sdi represents Standard Deviation Ideal = (1/6 x (max. Ideal score + min. Ideal score), Max score ideal is 5 x (number of question items) x (number of respondents), and Min score ideal is a 1 x (number of question items) x (number of respondents). The variables used in this research are as follows (1) input variables with factors of socialization, target accuracy, and fund accuracy; (2) output variables with factors of conformity with DED, product quality, and facilities and infrastructure; (3) results or outcome with the factors of level of comfort, safety, and satisfaction; (4) impact variables with factors of level of income, health, and education.

4. Results and Discussion

4.1. Effectiveness Analysis of the Aceh Provincial Government Program

All the research variables were adjusted to the interval value and effectiveness level as shown in Table 2 and were applied to analyze the effectiveness of the livable house construction program implemented by the Aceh provincial government.

a. Input variable: the total score (X) calculated for the input variable using 12 questions and 39 respondents was X = 1549 and this was categorized as quite effective. The value was obtained from the score of socialization, target accuracy, and fund accuracy which were all recorded to be in the quite effective category of achievement as presented in Table 3.

Table 3. Factor interval value on input variable

| Factor Value Score | Interval Value Range | Achievement Level Category |
|--------------------|----------------------|---------------------------|
| Socialization: X = 532 | 364 ≤ X ≤ 572        | Quite Effective           |
| Target accuracy: X = 641 | 455 ≤ X ≤ 715        | Quite Effective           |
| Fund Accuracy: X = 376 | 273 ≤ X ≤ 429        | Quite Effective           |
| Total input variables: X = 1549 | 1092 ≤ X ≤ 1716 | Quite Effective           |

b. Output variable: the total score (X) calculated for the output variable using 14 questions and 39 respondents was 1349 and this is included in the quite effective achievement level. This value was based on the score recorded by the factor of conformity with the Detail Engineering Design (DED) and facilities and infrastructure which were found to be quite effective as well as the product quality factor which was less effective as indicated in Table 4.

Table 4. Factor interval value on output variable

| Factor Value Score | Interval Value Range | Achievement Level Category |
|--------------------|----------------------|---------------------------|
| DED Compliant: X = 462 | 364 ≤ X ≤ 572        | Quite Effective           |
| Product quality: X = 420 | 390 ≤ X ≤ 546        | Less effective            |
| Facilities and infrastructure: X = 467 | 364 ≤ X ≤ 572 | Quite Effective           |
| Total/output variables: X = 1349 | 1274 ≤ X ≤ 2002 | Quite Effective           |
c. Result or Outcome Variable: the total score (X) calculated for the result or outcome variable using 6 questions and 39 respondents was 496 and this was categorized as less effective achievement level. This value was a result of the score recorded for the comfort, safety, and satisfaction factors which were all observed to be less effective as indicated in Table 5.

| Factor                          | Value Score | Interval Value Range | Achievement Level Category |
|---------------------------------|-------------|----------------------|---------------------------|
| Comfort and safety level        | X = 315     | 260 ≤ X ≤ 364        | Less Effective            |
| Satisfaction level              | X = 181     | 130 ≤ X ≤ 182        | Less Effective            |
| Total/outcome variable          | X = 496     | 390 ≤ X ≤ 546        | Less Effective            |

Table 5. Factor interval value on the outcome variable



d. Impact variable. The total score (X) calculated for the impact variable using 8 questions and 39 respondents was 659 and this was classified as less effective. The value was based on the score recorded for the level of income and health which was less effective and education level which was found to be sufficiently effective as shown in Table 6.

| Factor               | Value Score | Interval Value Range | Achievement Level Category |
|----------------------|-------------|----------------------|---------------------------|
| Income level         | X = 345     | 260 ≤ X ≤ 364        | Less effective            |
| Health level         | X = 214     | 195 ≤ X ≤ 273        | Less effective            |
| Level of education   | X = 100     | 91 ≤ X ≤ 143         | Quite Effective           |
| Total/impact variables| X = 659    | 520 ≤ X ≤ 728        | Less effective            |

Table 6. Factor interval value on the impact variable



e. The total effectiveness of the Aceh provincial government program. The total score (X) calculated using 40 questions and 39 respondents was 4053 which is in the range of 3640 ≤ X ≤ 5720 intervals and this means the livable house construction program implemented by the provincial government was quite effective based on the four predetermined variables as indicated in the following Table 7.

| Factor               | Value Score | Interval Value Range | Achievement Level Category |
|----------------------|-------------|----------------------|---------------------------|
| Input variable       | X = 1549    | 1092 ≤ X ≤ 1716      | Quite Effective           |
| Output variable      | X = 1349    | 1274 ≤ X ≤ 2002      | Quite Effective           |
| Outcome variable     | X = 496     | 390 ≤ X ≤ 546        | Less effective            |
| Impact variable      | X = 659     | 520 ≤ X ≤ 728        | Less effective            |
| Total: X = 4053      |             | 3640 ≤ X ≤ 5720      | Quite Effective           |

Table 7. Research variable interval value



4.2. Pidie District Government Program Implementation Effectiveness Analysis

The calculation results of all research variables, namely input, output, outcome, and impact variables obtained from the analysis of the effectiveness of the implementation of the livable housing construction program from the Pidie Regency Government are as follows:

a. Input variable: the total score (X) calculated for the input variable using 12 questions and 111 respondents was 4188 and this was classified as a quite effective level of achievement. The value was, however, obtained from the scores recorded for the socialization, target accuracy, and fund accuracy factors which were found to be quite effective as presented in Table 8.

| Factor               | Value Score | Interval Value Range | Achievement Level Category |
|----------------------|-------------|----------------------|---------------------------|
| Socialization        | X = 1362    | 1036 ≤ X ≤ 1628      | Quite Effective           |
| Target accuracy      | X = 1939    | 1295 ≤ X ≤ 2035      | Quite Effective           |
| Fund Accuracy        | X = 887     | 777 ≤ X ≤ 1221       | Quite Effective           |
| Total/input variables| X = 4188   | 3108 ≤ X ≤ 4884      | Quite Effective           |

Table 8. Factor interval value on input variables
b. Output variable: the total score (X) calculated for the output variable using 14 questions and 111 respondents was 3129 and this was included in the less effective level of achievement. This value was, however, obtained from recorded by the factor of conformity with the Detail Engineering Design (DED) and facilities and infrastructure which were found to be quite effective as well as the product quality factor which was ineffective as indicated in Table 9.

| Factor Value Score | Interval Value Range | Achievement Level Category |
|--------------------|----------------------|---------------------------|
| DED Compliant: X = 1167 | 1036 ≤ X ≤ 1628 | Quite Effective |
| Product quality: X = 923 | 666 ≤ X ≤ 1110 | Ineffective |
| Facilities and infrastructure: X = 1039 | 1036 ≤ X ≤ 1628 | Quite Effective |
| Total/output variables: X = 3129 | 2590 ≤ X ≤ 3626 | Less effective |

Table 9. Factor interval value on output variable

c. Results or outcome variable: the total score (X) calculated for the result or outcome variable using 6 questions and 111 respondents was 1349 and this was categorized as less effective achievement level. This value was obtained from the score recorded for the comfort and safety factors which were less effective and the satisfaction factor which was sufficiently effective as indicated in Table 10.

| Factor Value Score | Interval Value Range | Achievement Level Category |
|--------------------|----------------------|---------------------------|
| Comfort and safety level: X = 831 | 740 ≤ X ≤ 1036 | Less effective |
| Satisfaction level: X = 518 | 518 ≤ X ≤ 814 | Quite Effective |
| Total/outcome variable: X = 1349 | 1110 ≤ X ≤ 1554 | Less effective |

Table 10. Factor interval value on the outcome variable

d. Impact variable: the total score (X) calculated for the impact variable using 8 questions and 111 respondents was 1609 and this was included in the less effective achievement level. The value was, however, obtained based on the income and education level which were found to be quite effective as well as the ineffective health level as can seen in Table 11.

| Factor Value Score | Interval Value Range | Achievement Level Category |
|--------------------|----------------------|---------------------------|
| Income level: X = 888 | 740 ≤ X ≤ 1036 | Quite Effective |
| Health level: X = 518 | 333 ≤ X ≤ 555 | Ineffective |
| Level of education: X = 203 | 185 ≤ X ≤ 259 | Quite Effective |
| Total/impact variables: X = 1609 | 1480 ≤ X ≤ 2072 | Quite Effective |

Table 11. Factor interval value on the impact variable

e. The effectiveness of the Pidie regency government program: the total score (X) obtained using 40 questions and 111 respondents was 10275 in the range of 7400 ≤ X ≤ 10360 intervals and the livable house construction program implemented by the Pidie Regency Government was classified as less effective based on the predetermined four variables as indicated in the following Table 12.

| Factor Value Score | Interval Value Range | Achievement Level Category |
|--------------------|----------------------|---------------------------|
| Input variable: X = 4188 | 3108 ≤ X ≤ 4884 | Quite Effective |
| Output variable: X = 3129 | 2590 ≤ X ≤ 3626 | Less effective |
| Outcome variable: X = 1349 | 1110 ≤ X ≤ 1554 | Less effective |
| Impact variable: X = 1609 | 1480 ≤ X ≤ 2072 | Less effective |
| Total: X = 10275 | 7400 ≤ X ≤ 10360 | Less effective |

Table 12. Research variable interval value

5. Conclusion

Findings from this work is related to effectiveness of the livable house construction programs implemented in Pidie Regency were used to draw the following conclusions: (a) The Aceh provincial government program was analyzed using four variables and found to be effective. The input and
output variables were recorded to be quite effective while the outcome and impact variables were less effective; (2) the Pidie regency government program was also analyzed using four variables and found to be less while the input was discovered to be quite effective while the output, outcome, and impact were less effective. Therefore, recommended to optimize the variables and factors classified as less effective to increase the effectiveness of the programs and to also maximize the efforts toward improving the welfare of the community by addressing the suggestions: (a) the quality of the livable house should consider the aspect of strength, durability, beauty, and health in line with the product quality factor of the output variable; (b) the decent housing assistance program should include an empowerment program for the recipients in order to improve the welfare of the community after the assistance has been provided.

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