

## INFRASTRUCTURE SERVICE SATISFACTION INDEX FOR IMPROVING REGIONAL DEVELOPMENT IN KUTAI KARTANEGARA REGENCY

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### ABSTRAK

Penelitian ini bertujuan untuk mengevaluasi tingkat kepuasan masyarakat terhadap layanan infrastruktur di Kabupaten Kutai Kartanegara. Dengan menggunakan metode kuantitatif deskriptif, penelitian ini melakukan survei terhadap 437 responden yang tersebar secara proporsional di 20 kecamatan selama tiga bulan, dari Juni hingga Agustus. Hasil penelitian menunjukkan bahwa tingkat kepuasan layanan infrastruktur Kabupaten Kutai Kartanegara pada tahun 2025 adalah 74,93 (kategori kurang puas). Sektor-sektor infrastruktur dengan indeks kepuasan berkinerja kurang memuaskan meliputi infrastruktur transportasi, pekerjaan umum, perumahan dan kawasan permukiman, serta infrastruktur pendukung kegiatan perekonomian. Sedangkan infrastruktur pendidikan dan kesehatan sudah menunjukkan kinerja memuaskan. Meskipun pemerintah daerah telah merencanakan peningkatan ketersediaan infrastruktur di berbagai sektor, namun hal ini belum cukup untuk memperlihatkan kinerja memuaskan secara merata. Penelitian ini merekomendasikan strategi pengembangan infrastruktur berupa peningkatan kualitas fisik infrastruktur dan memperhatikan aspek kesesuaian dengan masyarakat sekitar. Hal ini diharapkan dapat mendorong tercapainya tujuan pembangunan regional yang adil dan berkelanjutan.

Kata Kunci: **Layanan Infrastruktur, Kepuasan Masyarakat, Pembangunan Wilayah, Berkelanjutan**

### ABSTRACT

*This research aims to evaluate the level of public satisfaction with infrastructure services in Kutai Kartanegara Regency. By applying a descriptive quantitative method, this research surveyed 437 respondents spread across all districts proportionally over three months from June to August. The results found that the level of infrastructure service satisfaction of Kutai Kartanegara Regency in 2025 was 74.93 (less satisfied category). Some sectors that have the lowest satisfaction index include transportation infrastructure, public works, housing and residential areas, and economic support sectors. Meanwhile, education and health infrastructure have shown satisfactory performance. Although the local government has programmed an increasing amount of infrastructure availability in all sectors, but this is not*

*enough to satisfy. This study recommends infrastructure development strategies in the form of improving the physical quality of infrastructure and paying attention to the aspects of appropriateness with the surrounding community. This is expected to encourage the achievement of equitable and sustainable regional development goals.*

**Keywords:** *Infrastructure Service, Satisfaction, Regional Development, Sustainable*

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## INTRODUCTION

The One form of realization of the state's obligation is to build, provide, and organize adequate infrastructure services. Infrastructure plays an important role in supporting various aspects of community life, both economic, social and cultural. Infrastructure is the basic physical and organizational foundation necessary for the operation of society and the economy. Infrastructure is a prerequisite for achieving sustainable development and improving people's quality of life (Calderon & Serven, 2010; Estache & Fay, 2007; Kodoatie, 2005).

To ensure that infrastructure services meet standards, periodic evaluations need to be carried out. The evaluation results will show the extent to which the infrastructure services provided have met the standards or still require improvement. In order for this evaluation to have a legal basis, the government issued Permen PANRB Number 14 2017 concerning Guidelines for Preparing Community Satisfaction Surveys for Public Service Delivery Units.

The Infrastructure Service Satisfaction Index (IKLI) is an important indicator in measuring the achievement of infrastructure development in a region. A high IKLI indicates that the community can move well, supported by adequate infrastructure in various fields, such as public works, housing, agriculture, transportation, and other economic sectors. Fung & Wright (2001) emphasizes the importance of active community involvement in public service assessment. Community participation in the evaluation process not only enriches the information obtained by the government, but also ensures that the assessment results truly reflect the real conditions felt by citizens (Hajiji & Rudiansah, 2025). Through meaningful participation, the improvement recommendations resulting from the IKLI results will be more effective, targeted and sustainable.

Regional development theory explains that the availability of adequate infrastructure will facilitate economic activity, increase productivity, and support poverty reduction (Todaro & Smith, 2015). Infrastructure problems are very important to be addressed immediately because quality infrastructure is a key factor in fulfilling people's basic rights, such as food, clothing, shelter, education, and health. In addition, infrastructure supports regional economic growth, reduces poverty and unemployment, increases investment, and opens up isolated areas (Suryono, 2001).

Kutai Kartanegara Regency has challenging geographical conditions, so its infrastructure development faces several obstacles. Based on the Medium-Term Regional Development Plan (RPJMD) of Kutai Kartanegara Regency for 2021-2026, the main problems of infrastructure development include uneven distribution of basic infrastructure development and services and sub-optimal regional access and connectivity. Infrastructure development in the RPJMD is part of the fourth mission, namely improving the quality of basic infrastructure services and inter-regional connectivity, with the target of improving infrastructure equity and regional planning. To assess the achievement of the mission, it is necessary to determine public satisfaction with infrastructure services provided by the government.

The purpose of this research is to measure the level of community satisfaction with infrastructure services, as well as identify problems that need to be improved in Kutai Kartanegara Regency. Some related studies include Hidayati, (2021) with the research area taken covering all villages in Ujung Pangkah District except Sekapuk Village by using descriptive quantitative method. The results showed that the road infrastructure service satisfaction index was categorized as follows B (Good). Land transportation Infrastructure Service Satisfaction Index category C (Not Good). Index Health Infrastructure Service Satisfaction Index category B (Good). Infrastructure Service Satisfaction Index Education category C (not good). Clean Water Infrastructure Service Satisfaction Index category B (Good). Housing Infrastructure Service Satisfaction Index category C (not good).

Meanwhile Hakim et al. (2025) also emphasis on five types of physical infrastructure such as roads, bridges, land transportation, clean water, and settlements. However, it does not only focus on the district area but covers the entire Serang Regency area. The result is the Satisfaction Index for Priority Infrastructure Services in Serang Regency in 2024 is 2.62, equivalent to 65.62, with the criteria of "quite satisfied." This result indicates that the people of Serang Regency perceive the performance of the Serang Regency Government in priority infrastructure services as quite good and satisfactory. Some studies have even focused on only one aspect of infrastructure e.g. Sahoo et al. (2025) which only looks at education infrastructure with a different method, namely the Performance, Infrastructure, and Equity (PIE) index.

We elaborate on some of these studies by expanding the types of infrastructure assessed into five groups or infrastructure service sectors. The five infrastructure service sectors include public works, health, education, housing and residential areas, transportation, and economic support. We also set the survey coverage at the Regency level by including all of its districts. We still adopt the IKLI measurement dimensions that are usually used in previous studies, which consist of availability, quality, appropriateness, utility, job creation, and contribution to the economy.

## METHOD

This research uses a quantitative approach with a survey method. A survey was conducted to collect primary data using a questionnaire with closed-ended questions (McMillan & Schumacher, 2010). The population in this survey was the 806.964 people of Kutai Kartanegara Regency (population with e-KTP). The determination of the sample size in this survey used the Slovin formula at a confidence level of 95% with a margin of error of 5%. Based on this, the sample size was set at 410 respondents. The survey locations were spread across 20 districts of Kutai Kartanegara Regency with the determination of the number of samples or respondents for each sub-district carried out proportionally according to the population size. The survey was conducted over three months from June to August 2025. Meanwhile, the technique of determining respondents was carried out in a multistage random sampling technique. The stages of determining the sample began with determining the District, then from the selected District the Village/ subdistrict was determined as the sample, and then the RT was determined and each RT was represented by 10 respondent.

This research focuses on five main sectors that form the parameters of the Infrastructure Service Satisfaction Index, namely public works infrastructure, health, education, housing, transportation, and the economy. Each sector has more than one type of infrastructure to be measured. Measuring the effectiveness of each type of infrastructure is done by adopting the system theory from Gibson et al. (2017). Based on the approach of the theory, the limitations of effective criteria in measuring IKLI of Kutai Kartanegara Regency consist of 6 (six) service dimensions (criteria), namely availability, quality, appropriateness, utility, job creation, and contribution to economic.

The analysis method used to calculate the infrastructure service satisfaction index uses Likert Scale Measurement. Each survey question of each element is given a value. Each infrastructure type consists of five questions following the number of 6 dimensions or service elements. Then the respondents' answers were categorized into 4 perception criteria or level of satisfaction.

**Table 1. Main Sector and Infrastructure Types of IKLI**

| No. | Main Sector  | Infrastruclture Types                          |
|-----|--------------|------------------------------------------------|
| 1.  | Public Works | Road (Regency, District, Village, Agriculture) |
|     |              | Bridge                                         |
|     |              | Embung (water reservoirs)                      |
|     |              | Irrigation                                     |
| 2.  | Health       | Posyandu (Integreted Service Post)             |
|     |              | Pharmacy                                       |
|     |              | Clinic                                         |
|     |              | Sub-Health Center                              |
|     |              | Health Center                                  |
|     |              | Hospital                                       |

|    |                            |                                         |
|----|----------------------------|-----------------------------------------|
| 3. | Education                  | Early Childhood Education/ kindergarten |
|    |                            | Elementary School                       |
|    |                            | Junior High School                      |
|    |                            | Senior High School                      |
|    |                            | College/University                      |
| 4. | Housing and Settlement     | Clean Water                             |
|    |                            | Electricity                             |
|    |                            | Drainage                                |
|    |                            | Waste Management                        |
|    |                            | Domestic Wastewater                     |
|    |                            | Telecommunication                       |
| 5. | Transportation and Support | Transport Mode                          |
|    |                            | Terminal                                |
|    |                            | Road Markings                           |
|    |                            | Traffic Signs                           |
|    |                            | Street Light                            |
| 6. | Supporting the Economy     | Market                                  |
|    |                            | Tourism                                 |

Source: Processed from secondary data, 2025

**Table 2. Perception Categories based on Infrastructure Service Dimensions**

| Dimension       | Perception Categories and Value |              |                   |                        |
|-----------------|---------------------------------|--------------|-------------------|------------------------|
|                 | 4                               | 3            | 2                 | 1                      |
| Availability    | Highly available                | Available    | Less available    | Very less available    |
| Quality         | Very high quality               | Quality      | Low quality       | Very low quality       |
| Appropriateness | Very appropriate                | Appropriate  | Inappropriate     | Very inappropriate     |
| Utility         | Very useful                     | Useful       | Less useful       | Very less useful       |
| Job Creation    | Very absorb                     | Absorb       | Low absorb        | Very low absorb        |
| Contribution    | Highly contribution             | Contributing | Less contribution | Very less contribution |

Source: Obtained from secondary data, 2025

The value of each question is calculated using the "weighted average value" of each service element. In calculating the public satisfaction survey on the elements of service studied, each element of service has the same weighting. The number of service elements used in this survey is six (6), namely based on dimensions or criteria, the weight is  $1/6 = 0.167$ . So each element has a total score of 0.167 and the total score of all elements is always one (1) or 100%.

Furthermore, the element values for each use the perception value categories (1, 2, 3, and 4) and are weighted to produce a conversion interval value. To obtain the value of the Infrastructure Service Satisfaction Index (IKLI) for each element of infrastructure, a weighted average value approach is used by following the following formula: Ferdinand in Hakim et al. (2025).

$$IKLI = \frac{\sum \text{Perception value}}{\sum \text{respondent who answered}}$$

After that, the perception index value for each type of infrastructure can be known by calculating the average value of IKLI per element which is then called the interval value (1-4). To facilitate interpretation of the IKLI 0-100 interval value, the results of the calculation of the perception index for each type of infrastructure are converted to a base value of 25 or multiplied by 25.

**Table 3. Scale of Infrastructure Service Satisfaction Index (IKLI)**

| Perception Value | Interval Value (1-4) | Conversion Interval Value (0-100) | Service Performance Criteria |
|------------------|----------------------|-----------------------------------|------------------------------|
| 1                | 1,00 - 2,5996        | 25,00 - 64,99                     | Not Satisfied                |
| 2                | 2,60 - 3,064         | 65,00 – 76,60                     | Less Satisfied               |
| 3                | 3,0644 – 3,532       | 76,00 – 88,30                     | Quite Satisfied              |
| 4                | 3,5324 – 4,00        | 88,31 – 100,00                    | Very Satisfied               |

**Source:** Budi Santoso et al. (2025) with modification

The sampling technique was carried out using stratified sampling. The total population of Kutai Kartanegara Regency with all age ranges based on Net Consolidated Data (DKB) in the second semester of 2024 was 788,113 people with a male population of 410,731 if and a female population of 377,382 people. Based on this data, the number of respondents obtained using the Slovin formula approach with a margin of error of 5%, amounts 437 people. Then the number is divided and distributed in 20 districts proportionally based on the population size. Data collection is focused on a few sample of villages or sub-districts that are the center of activity for the population in its district. Each of the 10 respondents was taken from 1 sample RT in this area. In detail, the distribution of respondents in the research location can be seen in Table 4 below.

**Table 4. Recapitulation of the Number of Respondents in Each District**

| No. | District            | Population | Number of Respondents | Sampling Village | Number of RT |
|-----|---------------------|------------|-----------------------|------------------|--------------|
| 1.  | Tenggarong          | 116.530    | 67                    | 6                | 6            |
| 2.  | Tenggarong Seberang | 74.167     | 45                    | 4                | 4            |
| 3.  | Loa Kulu            | 57.869     | 35                    | 3                | 3            |
| 4.  | Loa Janan           | 77.785     | 45                    | 4                | 4            |
| 5.  | Samboja             | 42.729     | 25                    | 2                | 2            |
| 6.  | West Samboja        | 32.459     | 20                    | 2                | 2            |
| 7.  | Muara Jawa          | 45.167     | 20                    | 2                | 2            |
| 8.  | Sanga Sanga         | 21.460     | 10                    | 1                | 1            |
| 9.  | Anggana             | 39.738     | 20                    | 2                | 2            |
| 10. | Muara Badak         | 52.222     | 30                    | 3                | 3            |
| 11. | Marangkayu          | 30.027     | 10                    | 1                | 1            |
| 12. | Sebulu              | 43.954     | 20                    | 2                | 2            |
| 13. | Muara Kaman         | 47.664     | 20                    | 2                | 2            |
| 14. | Kota Bangun         | 24.303     | 10                    | 1                | 1            |
| 15. | Kota Bangun Darat   | 14.738     | 10                    | 1                | 1            |

|              |                 |         |     |    |    |
|--------------|-----------------|---------|-----|----|----|
| 16.          | Muara Wis       | 9.979   | 10  | 1  | 1  |
| 17.          | Muara Muntai    | 21.520  | 10  | 1  | 1  |
| 18.          | Kenohan         | 12.626  | 10  | 1  | 1  |
| 19.          | Kembang Janggut | 28.125  | 10  | 1  | 1  |
| 20.          | Tabang          | 13.902  | 10  | 1  | 1  |
| <b>Total</b> |                 | 806.964 | 437 | 41 | 41 |

Source: Processed from secondary data, 2025

## RESULT AND DISCUSSION

### Analysis of Infrastructure Service Satisfaction Index

The study results obtained using a descriptive statistical approach show the satisfaction index of infrastructure services in Kutai Kartanegara Regency such as Public Works Infrastructure, Health, Education, Housing, Transportation, and Economy. The processed data is presented in charts and tables to make it informative and easy to interpret. Below is the Table 5. that analyzing the infrastructure service satisfaction index in Kutai Kartanegara Regency.

**Table 5. Infrastructure Service Satisfaction Index Analysis**

| Infrastruture       | Perception Value Total per dimensions |      |      |      |      |      | Respondent Total | IKLI (1-4) | IKLI (0-100) |
|---------------------|---------------------------------------|------|------|------|------|------|------------------|------------|--------------|
|                     | Av                                    | Q    | Ap   | Ut   | J C  | Co   |                  |            |              |
| Regency road        | 1336                                  | 1287 | 1270 | 1403 | 1303 | 1396 | 435              | 3.06       | 76.55        |
| District road       | 1297                                  | 1267 | 1261 | 1373 | 1298 | 1361 | 437              | 2.99       | 74.91        |
| Village road        | 1309                                  | 1269 | 1279 | 1355 | 1319 | 1359 | 437              | 3.00       | 75.22        |
| Agriculture road    | 1207                                  | 1195 | 1206 | 1296 | 1275 | 1294 | 429              | 2.90       | 72.58        |
| Bridge              | 1328                                  | 1310 | 1322 | 1366 | 1326 | 1362 | 437              | 3.05       | 76.41        |
| Embung              | 1164                                  | 1169 | 1161 | 1187 | 1190 | 1197 | 418              | 2.81       | 70.39        |
| Irrigation          | 1184                                  | 1185 | 1183 | 1215 | 1206 | 1209 | 421              | 2.84       | 71.10        |
| <b>Public Works</b> |                                       |      |      |      |      |      |                  | 2.95       | 73.88        |
| Posyandu            | 1421                                  | 1384 | 1402 | 1425 | 1407 | 1398 | 437              | 3.21       | 80.47        |
| Pharmacy            | 1316                                  | 1312 | 1312 | 1342 | 1321 | 1327 | 437              | 3.02       | 75.61        |
| Clinic              | 1288                                  | 1291 | 1284 | 1305 | 1292 | 1296 | 437              | 2.95       | 73.95        |
| Sub-Health Center   | 1358                                  | 1348 | 1355 | 1379 | 1357 | 1365 | 437              | 3.11       | 77.82        |
| Health Center       | 1433                                  | 1416 | 1403 | 1424 | 1390 | 1403 | 436              | 3.23       | 80.93        |
| Hospital            | 1191                                  | 1384 | 1355 | 1380 | 1373 | 1372 | 437              | 3.07       | 76.80        |
| <b>Health</b>       |                                       |      |      |      |      |      |                  | 3.10       | 77.59        |
| Kindergarten        | 1360                                  | 1330 | 1352 | 1379 | 1377 | 1371 | 437              | 3.11       | 77.88        |
| Elementary School   | 1414                                  | 1394 | 1406 | 1427 | 1418 | 1524 | 437              | 3.23       | 80.78        |
| Junior High School  | 1392                                  | 1377 | 1382 | 1402 | 1394 | 1397 | 437              | 3.18       | 79.55        |
| Senior High School  | 1384                                  | 1375 | 1378 | 1389 | 1373 | 1385 | 437              | 3.15       | 78.98        |
| College             | 1223                                  | 1323 | 1326 | 1336 | 1324 | 1328 | 437              | 2.99       | 74.94        |
| <b>Education</b>    |                                       |      |      |      |      |      |                  | 3.13       | 78.43        |
| Clean Water         | 1340                                  | 1336 | 1340 | 1364 | 1345 | 1361 | 437              | 3.08       | 77.09        |
| Electricity         | 1394                                  | 1384 | 1380 | 1410 | 1368 | 1395 | 437              | 3.17       | 79.43        |

|                                  |      |      |      |      |      |      |     |      |       |
|----------------------------------|------|------|------|------|------|------|-----|------|-------|
| Drainage                         | 1251 | 1240 | 1247 | 1285 | 1277 | 1283 | 437 | 2.89 | 72.30 |
| Waste Management                 | 1236 | 1221 | 1228 | 1257 | 1260 | 1254 | 437 | 2.84 | 71.09 |
| Domestic Wastewater              | 1158 | 1150 | 1161 | 1162 | 1161 | 1159 | 437 | 2.65 | 66.27 |
| Telecommunication                | 1359 | 1348 | 1346 | 1373 | 1342 | 1369 | 437 | 3.10 | 77.58 |
| <b>Housing and Settlement</b>    |      |      |      |      |      |      |     | 2.95 | 73.96 |
| Transport mode                   | 1249 | 1250 | 1253 | 1274 | 1260 | 1274 | 437 | 2.88 | 72.08 |
| Terminal                         | 1161 | 1158 | 1166 | 1185 | 1170 | 1182 | 434 | 2.69 | 67.33 |
| Traffic signs                    | 1284 | 1249 | 1254 | 1265 | 1247 | 1263 | 437 | 2.87 | 71.85 |
| Road markings                    | 1292 | 1289 | 1289 | 1303 | 1244 | 1291 | 437 | 2.94 | 73.71 |
| Street light                     | 1259 | 1246 | 1247 | 1275 | 1257 | 1280 | 437 | 2.88 | 72.12 |
| <b>Transportation</b>            |      |      |      |      |      |      |     | 2.85 | 71.42 |
| Market                           | 1274 | 1260 | 1266 | 1319 | 1295 | 1322 | 435 | 2.96 | 74.12 |
| Tourism                          | 1305 | 1284 | 1290 | 1312 | 1300 | 1308 | 436 | 2.98 | 74.53 |
| <b>Economic Support</b>          |      |      |      |      |      |      |     | 2.97 | 74.48 |
| <b>Kutai Kartanegara Regency</b> |      |      |      |      |      |      |     | 2.99 | 74.93 |

Source: Data Analysis Compiled by the Authors, 2025

The average satisfaction index for the public works sector has been measured at 2.95 equivalent to 73.88. Which means the majority of respondents are still less satisfied with public works infrastructure. The types of infrastructure with the highest average satisfaction index in this sector are regency road is about 76.55 and bridge is about 76.41, but their service performance is still classified as less satisfied. The elements of utility and economic contribution are the factors that cause district road and bridge infrastructure to get the highest score. This means that the construction of regency roads and bridges is quite beneficial for community activities and contributing to their economy. This is in line with the findings Julianti et al. (2025) that road infrastructure is instrumental in mobilizing labor and economic distribution.

Then the satisfaction index for village road is about 75.22, district roads is about 74.91, and agriculture roads at 72.58 were also rated as less satisfied by respondents. The most highlighted thing by respondents is the physical quality of the road and its appropriateness so that its condition is damaged and not as expected. Meanwhile, the types of infrastructure with the lowest average satisfaction index in this sector are embung (reservoirs) at 70.39 and irrigation at 71.10, with less satisfied service performance for respondents. Factors that contribute to low satisfaction with this type of infrastructure include its uneven availability, poor physical quality, and lack of relevance to the needs of the surrounding community.

The average health sector satisfaction index that has been measured is about 3.1 or equivalent to 77.59. These results indicate quite satisfied for service performance, where the types of infrastructure with the highest satisfaction index are health center at 80.93 and posyandu at 80.47 with performance criteria was quite satisfied. This result

is even the highest infrastructure service performance in East Kutai Regency. The element that most determines the high satisfaction index is the availability of health center and posyandu in each district. Data from the Central Bureau of Statistics in 2023, the number of puskesmas in Kutai Kartanegara Regency reached 32 units. Meanwhile, the types of infrastructure in health sector with the lowest satisfaction index are clinics with 73.95 and pharmacies with 75.61. The elements that still need to be addressed in improving the performance of health infrastructure services are the availability of the number of hospitals and pharmacies, the appropriateness of clinic designations with the surrounding community, and the physical quality of the buildings.

The average infrastructure service satisfaction index in the education sector is about 78.43 or equivalent to 3.13. This means that education infrastructure performance is quite satisfied. The type of infrastructure with the highest rating is elementary school at 79.63 with category is quite satisfied. One of the factors that respondents were positive about the elementary school infrastructure was that the benefits were felt by the community. While the type of infrastructure with the lowest satisfaction index is the college at 74.94. That way the college infrastructure falls into the category of less satisfied service, especially related to the availability factor because the number of campuses is still relatively small in Kutai Kartanegara Regency.

In the housing and settlement area sector, the average infrastructure service satisfaction index is 73.96 or equivalent to 2.95 with the predicate is less satisfied. Types of infrastructure such as drainage and solid waste fall into the less satisfied category. While some infrastructure such as electricity, telecommunications, and clean water are actually included in the service predicate is quite satisfied. Electricity infrastructure received the highest satisfaction rating with an index value of 79.43. Meanwhile, the type of infrastructure with the lowest satisfaction index is domestic wastewater treatment with an index value of 66.27. One element of the assessment that was noted was the poor quality of physical infrastructure such as drainage, dump, wastewater treatment plants, and clean water infrastructure in the villages.

Transportation infrastructure and its supports are on average at a less satisfied service performance, with a satisfaction index value of 71.42 or equivalent to 2.85 Road marking infrastructure received the highest assessment with a satisfaction index value of 73.71 with the predicate less satisfied. While the terminal gets a red note as well as the lowest with a satisfaction index of 67.33. In general, the transportation infrastructure satisfaction index is less satisfied, so it needs attention in all aspects by the local government, especially in increasing the quantity and quality of infrastructure services for the community.

And the last, the economic support sector on average received a satisfaction index rating of 74.32 or equivalent to 2.97. This means that the majority of respondents rated it as less satisfied. Tourism infrastructure received an index value of 74.48, higher than market infrastructure with a satisfaction assessment index of 74.12. Some things that still need to be addressed include the physical quality of market buildings and the appropriateness of market development with the needs of the community. Inappropriate selection of locations for the construction of new markets or tourism centers has resulted in many infrastructure developments becoming abandoned and unutilized. But at the high end, some properly developed market and tourism infrastructure benefits communities and contributes to their increased income.

### Infrastructure Problems and Regional Development Strategy in Kutai Kartanegara

Based on the results of data analysis, the infrastructure service satisfaction index for Kutai Kartanegara Regency is 74.93 or equal to 2.99. This means that the performance of Kutai Kartanegara's infrastructure services is categorized as less satisfied. When compared to the previous 2024 data, this figure has increased by 12.57%. One of the sectors that experienced the most significant increase was the transportation and support sector, with an increase of 17%. This indicates an improvement in the quantity and quality of services through infrastructure programs in Kutai Kartanegara. In 2025, the sector that recorded the highest satisfaction index was education infrastructure at 78.43 or equivalent to 3.13 with the service performance category is quite satisfied. Meanwhile, the sector that received the lowest assessment based on the satisfaction index was the transportation sector with the satisfaction index is about 71.42 or equivalent to 2.85, although it actually experienced a significant increase from the previous year. The transportation sector needs attention and improvement in the future because of its vital role in creating regional growth (Komornicki & Goliszek, 2023).

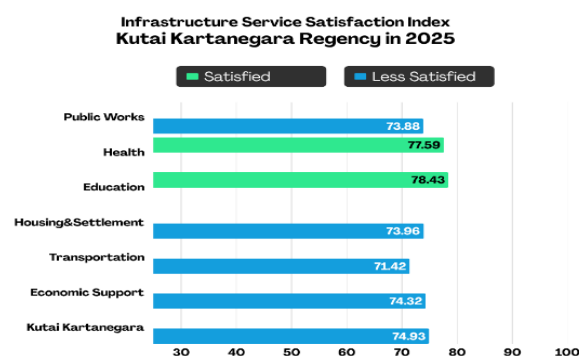


**Figure 1. Infrastructure Service Satisfaction Index of Kutai Kartanegara**  
Source: Primary data analysis results, 2025

In general, the performance of infrastructure services in each sector received unsatisfactory ratings such as transportation, public works, housing and settlements, and the economy. But on the positive side, there are two sectors that received quite satisfied ratings, namely the education and health sectors as can be seen in Figure 1. If we break down the data above by type of infrastructure, some of the problems that still need to be resolved. Environmental problems such as the quality and availability of domestic wastewater management and physical quality of waste infrastructure and its management. Then the problem of inter-regional connectivity while construction of inappropriate and underutilized land transport terminals. And agricultural issues include the availability of reservoirs and their unsuitable condition, and the availability and physical condition of agricultural irrigation development in agricultural center areas.

Based on the document of the medium-term development plan of Kutai Kartanegara Regency in 2021 to 2026, domestic wastewater infrastructure issues have been planned through the wastewater system management and development program, which is targeted that by 2025 the percentage of households receiving wastewater treatment services will be 88.3% and by 2026 it should increase to 90%. But, the majority of respondents still complained about the physical quality and provision of centralized domestic wastewater treatment infrastructure. In addition, the management of domestic wastewater services also needs to be improved as it is not yet appropriate because most of peoples still manage wastewater independently.

The waste problem has also been planned by the local government to increase the number of waste processing sites (TPA) from 1 to 6 through the construction of 5 TPA from 2021 to 2026. In addition, the government also targets the amount of waste generation to increase to 99.96 percent in 2026 from the current condition of 78.5%. But, the majority of respondents were less satisfied with the quality, availability, and appropriateness of waste infrastructure services because only 5 landfill sites have been realized. This is very important because the community concern about the increasing environmental effects due to cleanliness and waste management issues (Kosuru & B, 2022).

The problem of terminals in Kutai Kartanegara Regency can be seen in the absence of data on the number of goods passing through the terminal in Kutai Kartanegara, even though the role of transportation infrastructure can encourage trade and economic growth (Shen, 2023). The majority of respondents rated almost all elements as less satisfactory, especially physical quality and availability. This makes transportation activities and community travel carried out independently or through business transportation without using government terminal facilities.

Agricultural issues in Kutai Kartanegara are quite complex, the local government has planned irrigation and reservoir (*embung*) construction to increase significantly. The total number of reservoirs planned is 96 units of which 21 units have been planned in 2025. While the total length of the irrigation network to be built in 2025 is 10,000 meters with a ratio of the area covered of 0.8. Based on the survey results, the elements of assessment that need to be considered are the physical quality and appropriate for local communities not just an increase in the amount of infrastructure.

So, infrastructure development strategies cannot only be measured by increasing the availability of infrastructure but also need to pay attention to aspects of physical quality and appropriateness of infrastructure for the needs of local communities (Warsono & Hayati, 2022). Another thing to consider is how infrastructure development can provide benefits, provide jobs for the community, and contribute to their economy (Suminar et al., 2024). This is due to the role of infrastructure in enhancing economic growth and regional development (Joeliaty, 2024). A growing and developed region will have an effect on improving the welfare and quality of its people through the economic and education sectors (Simorangkir, 2022). From a social aspect, the development of education and economic infrastructure can reduce poverty and address social problems such as unemployment or incompetence. Moreover, human resource factors such as workforce professionalism can also have a positive impact on increasing public satisfaction (Fajriyah, 2025).

In addition, equitable infrastructure development will increase investment into the region and open access to isolation between regions (Guo et al., 2023; S. Siatan et al., 2024; Sahoo et al., 2025). In fact, budget and resource constraints pose a challenge in implementing appropriate regional development strategies (Fernández et al., 2025). For this reason, local government needs a strategy based on the results of the evaluation of the level of community satisfaction by maintaining infrastructure services that are quite satisfied and improving infrastructure services that are less satisfied (Metwally & Samir, 2024). To be more successful, development must also be driven by adaptive and inclusive leadership that involves community participation (Amir et al., 2025). A development plan that takes into account all these aspects is expected to realize regional development and growth while improving the quality of life and welfare.

## CONCLUSION

It cannot be denied that the Kutai Kartanegara Regency government has successfully implemented regional development through the provision of infrastructure that is felt by the community, especially in the education and health sectors. This can be seen through the infrastructure service satisfaction index in the education sector of 78.43 and health of 77.59, which is included in the category of service performance is

quite satisfied. However, this is not enough because when viewed as overall the infrastructure service satisfaction index of Kutai Kartanegara Regency in 2025 is about 74.93 or still in the category of service performance is less satisfied. This can be seen in sectors that still need to be addressed to improve their service satisfaction index which is in the less satisfied category such as the transportation, public works, settlement, and economic sectors. Efforts to improve have at least been seen this year with an increase in the infrastructure service satisfaction index by 12.57%, from the previous year's not satisfied performance to less satisfied performance. These efforts are also evident in the medium-term development plan where the types of infrastructure with a low satisfaction index have been programmed or prioritized to overcome the problem.

The infrastructure development in Kutai Kartanegara Regency still focuses on increasing the number and availability of infrastructure services. For this reason, this research recommend that infrastructure development strategies must also pay attention to quality and appropriateness aspects. Local government need to pay attention to the physical quality of the infrastructure built, which must be able to last and be utilized by the community in the long term. In addition, infrastructure development must also look at the appropriateness of the infrastructure to the needs of the local community through initial studies and selection of the right location. In the end, the success of regional development, especially in Kutai Kartanegara Regency, is not only measured in terms of quantity, but also how the infrastructure built can be useful, create jobs, and make an economic contribution to the community. In the future, in-depth research needs to be carried out not only looking at aspects of public satisfaction but also policy aspects in evaluating regional development planning programs that must prioritize the principles of justice, equity, and sustainability.

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