The Influence of Commercial Activities and Tourism Activities on the Development of Public Facilities of the Simpang Barelang Boundar

Andhika Pradita Fermana¹, Yuanita FD Sidabutar¹

¹Regional Planning Master's Study Program, Batam University

*Corresponding Author: Andhika Pradita Fermana
E-mail: 102622015@univbatam.ac.id

Article Info

Article history:
Received 4 June 2024
Received in revised form 26 June 2024
Accepted 9 July 2024

Keywords:
Commercial Activities
Tourism Activities
Construction of Public Facilities
Simpang Barelang Roundabout
Infrastructure

Abstract

This research aims to evaluate the influence of commercial activities and tourism activities on the development of public facilities at the Simpang Barelang Roundabout, a strategic area that connects several areas in the Batam region. The method used in this research is a quantitative method with a descriptive approach. Primary data was collected through surveys involving business actors, tourists and local communities. The survey was designed to identify their needs and perceptions of available public facilities. In addition, secondary data was obtained from local government reports and other related institutions. The analysis results show that commercial activities, which include trade, services and small industry, significantly influence the need for adequate infrastructure. The increase in the number of businesses around the Simpang Barelang roundabout encourages the government to provide facilities such as better roads, street lighting and adequate drainage systems. On the other hand, increasing tourism activities in this area also contribute to the development of public facilities. Tourists who visit, both domestic and international, expect adequate facilities such as a large parking area, tourist information center, cleaning facilities and recreation areas. This research concludes that synergy between commercial and tourism activities is very important in the planning and development of sustainable public facilities.

Introduction

Indonesia is known as a maritime country because it has a very long coastline, which is around 54,720 km and consists of 17,508 islands. Apart from that, Indonesia's vast seas and territorial waters are also very important natural resources for this country, such as fish resources, oil and gas, as well as maritime tourism. The history of Indonesia which was formed from maritime kingdoms in the past is also become a factor that strengthens Indonesia's maritime identity (Putri, 2023; Rosyidin, 2021). The archipelago, which is a vast archipelagic region in Indonesia, has long been the center of international trade and the main trade route between Asia and Europe. The Indonesian government has also established the Vision of Indonesia as the World Maritime Axis which aims to utilize Indonesia's maritime potential optimally and sustainably to improving people's welfare and national competitiveness in the current era of globalization (Sitanggang, 2021; Kundori et al., 2020; Radjendra et al., 2022). Therefore, Indonesia has great potential to become a center for developing the maritime and shipping industry in the Asia Pacific region, as well as playing an important role in maintaining security and stability in the Southeast Asia and Pacific Ocean regions.

One of the provinces in Indonesia that is synonymous with islands is the Riau Islands Province. The Riau Islands are a province in Indonesia located east of Sumatra and south of Singapore. This province consists of a series of islands spread across the Karimata Strait, Singapore Strait

ISSN 2721-0960 (Print), ISSN 2721-0847 (online)
Copyright © 2024, Journal La Sociale, Under the license CC BY-SA 4.0
and Malacca Strait. The Riau Islands have a large water area and have large marine resource potential, such as marine products and underwater mining. The Riau Islands Province consists of 5 districts and 2 cities, namely Bintan Regency, Karimun Regency, Anambas Islands Regency, Lingga Regency, Natuna, Batam City, and Tanjung Pinang City. Batam City is the largest city and main economic center in this province. The Riau Islands also have enormous marine tourism potential, such as beautiful beaches, marine parks, beautiful small islands, and various water sports activities. Some popular tourist attractions in the Riau Islands include Bintan Island, Natuna Island, Anambas Island, and Penyengat Island. The Riau Islands also have a rich and unique culture, with influences from various tribes and religions originating from various regions in Indonesia, such as Malay, Bugis, Javanese, Chinese, and so on. This culture is reflected in various festivals and traditional ceremonies held in the Riau Islands, such as the Malay Cultural Festival, traditional marriage ceremonies, and so on.

Batam City is one of the municipalities in the Riau Islands Province. The city center is known as Batam Center. This city consists of 12 sub-districts. When it was built in the early 1970s, this city only had around 6,000 residents, but now it has a population of 1,193,088 people, with a density of 1,153 people/km². Batam City is an island that is very strategically located in the north of Indonesia and is located on international shipping routes.

Batam began to be developed in the early 1970s as a logistics and operational base for the oil and gas industry by Pertamina. Then based on Presidential Decree no. 41 of 1973, the development of Batam was entrusted to a government agency called the Batam Island Industrial Development Authority or better known as the Batam Authority. However, since the enactment of PP Number 46 of 2007, the Batam Authority has changed to the Batam Area Concession Agency (BP Batam). BP Batam obtains authority from the central government, especially the Ministry of Trade, to issue permits for the movement of goods in and out.

Geographically, Batam Island, known as the Batam City area, has a very strategic location, namely the international service route with a distance of 12.5 nautical miles from Singapore. The Batam Island area has more than 400 (four hundred) islands and 329 (three hundred and twenty nine) of them have been named, including the outermost islands in the state border area, which are bordered by: (1) North: Singapore; (2) East: Bintan and Tanjung Pinang Regencies; (3) South: Lingga Regency; (5) West: Karimun Regency

Batam City, with its fairly high population growth, followed by growth in the development of residential areas, educational facilities, health facilities, development of commercial areas and government facilities, also means that the need for adequate infrastructure is also increasing (Kevino, 2020).

Roads are an important infrastructure in dealing with population growth. Population growth causes an increase in the development of residential areas and commercial areas which also causes an increase in the use of transportation means, resulting in a lack of road capacity.

Batam City is a city with an economic center for the Riau Islands Province. Batam City has also carried out a lot of infrastructure development to support economic, social and other aspects such as maritime activities (Istiqa et al., 2023). The Batam City Government is aware of the potential in the Batam City area and has carried out regional and city structure arrangements by carrying out widening and development, spatial planning of the city area, and also analyzing the efficiency of land use for the people of Batam City while still paying attention to environmental, social, economic and environmental aspects. also the local wisdom of Batam's native people, namely the Malay tribe.

A round-about is a type of intersection control that is generally used in urban and out-of-town areas. Priority traffic is traffic that is already at the roundabout, so vehicles entering the
roundabout must first give opportunity to traffic that is already at the roundabout. A roundabout consists of a directed traffic lane around a central island which can be raised or flat. This type of traffic circle creates a rotational movement of traffic flow, replacing intersecting movements with a series of intersection sections.

A roundabout can also be interpreted as a part of the road that is controlled by Indonesian traffic rules, namely giving way to left-hand traffic flow. Braided sections are divided into two main types, namely single braided sections and circular braided sections. Roundabouts were first developed in England and America, and are widely used in Indonesia. Roundabouts are considered to be a sequential interlacing. Roundabouts are most effective when intersections are used between roads of the same size and traffic level. Therefore roundabouts are very suitable for intersections between two-lane or four-lane roads. For intersections between larger roads, interlocking areas easily occur and roundabout safety decreases. In general, roundabouts with right-of-way arrangements (traffic flow priority from the left) are used in urban and inland areas for intersections between roads with moderate traffic flow. In high traffic flows and congestion at the intersection exit area, the roundabout is easily blocked, which may cause capacity to be disrupted in all directions.

Urban areas with high pedestrian flow crossing non-level roundabouts (bridges or tunnels) are recommended to provide safety for pedestrians. Although the traffic impact of roundabouts in the form of delays is always better than other types of intersections such as signalized intersections, the installation of signals is still preferable to ensure a certain capacity can be maintained, even in peak hour traffic conditions. Changing from signalized or unsignalized intersections to roundabouts can also be based on traffic safety, to reduce the number of traffic accidents between intersecting vehicles.

The Tembesi Red Light Interchange is located in the Sagulung District area, Batam City. The changes and widening of roads carried out by the Batam City Government have created quite a lot of debate among the community, there are some people who agree with the development being carried out and there are also some people who criticize the changes that will be made. However, the Batam City Government must have analyzed the potential that could be optimized by building a roundabout, which was originally a red light intersection in the Simpang Barerang area, Sagulung District, Tembesi Village.

Commercial activities include various forms of economic activities such as trade, services and industry that contribute to the economic growth of a region. According to Smith (2018), the existence of intensive commercial activity in an area can encourage the government to improve infrastructure to support the smooth running of business and attract more investors. Research by Johnson (2019) shows that the development of commercial areas is often followed by increased construction of public facilities such as roads, lighting and adequate parking areas. This increase not only facilitates economic activity but also improves the quality of life of the surrounding community.

Tourism activities play a significant role in increasing the development of public facilities, especially in areas that have high tourism potential. According to Cooper et al. (2020), growing tourism drives demand for facilities such as transportation, accommodation, recreation areas and tourist information services. A study by Williams & Shaw (2017) shows that investment in tourism infrastructure not only increases tourist comfort but also provides long-term benefits for local communities through job creation and improvements to public infrastructure.

Commercial and tourism activities often support and reinforce each other. According to Tondoyeki (2024), synergy between these two sectors can create a more dynamic and sustainable economic environment. For example, the development of shopping centers and
restaurants can attract tourists, while increasing the number of tourists can encourage the growth of local businesses. Research by Wilantara & Misnan (2023) emphasizes the importance of integrated planning that considers the needs of both sectors to optimize economic and social benefits for society.

Several case studies in various countries show how integration between commercial and tourism activities can influence the development of public facilities. A relevant example is the development of tourist areas in Bali, Indonesia, which according to Mulyani (2021) has succeeded in improving the quality of public infrastructure through collaboration between the government, private sector and local communities. The results of this research show that inclusive and participatory planning is very important in achieving sustainable development.

**Research Objectives**

The purpose of this research is to determine some of the influences that will occur, here is a summary of the research objectives: (1) Analyzing the influence of commercial activities on the construction of public facilities at the Simpang Barelang Roundabout; (2) Evaluate the impact of tourism activities on the development of infrastructure and public facilities in the Simpang Barelang roundabout area; (3) Identifying the needs and perceptions of business actors, tourists and local communities regarding the public facilities at the Simpang Barelang Roundabout; (4) Examining the synergistic relationship between commercial and tourism activities in the planning and development of sustainable public facilities.

Provide policy recommendations for local governments in order to increase the effectiveness and efficiency of the development of public facilities that support economic growth and welfare of local communities around the Simpang Barelang Roundabout area.

**Methods**

The research location is located at the Tembesi Roundabout located in the Sagulung District area, Batam City.

![Figure 1. Location of Simpang Barelang as a connecting road for commercial activities and tourism activities](image_url)
This research uses quantitative methods with a descriptive approach to analyze the influence of commercial activities and tourism activities on the construction of public facilities at the Simpang Barelang Roundabout.

Data collection methods consist of primary and secondary data. Primary data was collected through a survey using a structured questionnaire. The questionnaire was designed to collect information regarding respondents' perceptions and assessments of commercial activities, tourism activities, and the quality and availability of public facilities in the area. Apart from that, in-depth interviews were also conducted with several key stakeholders to gain deeper insights. Meanwhile, secondary data was obtained from local government documents and reports, previous studies, as well as official statistical data regarding tourism and commercial activities at the Simpang Barelang Roundabout.

The type of research used is quantitative research with a descriptive approach, namely research methods used to examine certain populations or samples, data collection using research instruments, quantitative/statistical data analysis with the aim of testing hypotheses that have been applied (Kurniawati et al., 2023). According to Pujihastuti (2010) the measuring tool in quantitative research is in the form of a questionnaire. The population in this study was 80 people. The population of this study includes business people, tourists and local communities in the Simpang Barelang roundabout area.

This research uses a multiple linear regression analysis method because the independent variable consists of one. The variable that influences it is called the Independent Variable and the variable that is influenced is called the Dependent Variable. This research consists of two independent variables, namely Commercial Activities (X1), Tourism Activities (X2) while the dependent variable is the Construction of Roundabout Public Facilities (Y).

Indicators of Commercial Activity Variables (X1): (1) Various types of commercial facilities; (2) The existence of tourism objects has an impact on businesses managed by the community; (3) Does the presence of visitors provide economic benefits?

Indicators of Commercial Activity Variables (X2): (1) The available tourism facilities are good; (2) Availability of interesting events; (3) Various types of tourism

Indicators of the roundabout public facilities construction variable (Y): (1) Good Comfort; (2) Road access to tourist areas is good; (3) Facilities and infrastructure are good.

With this research method, it is hoped that a comprehensive picture can be obtained regarding the influence of commercial activities and tourism activities on the development of public facilities at the Simpang Barelang Roundabout, as well as providing evidence-based policy recommendations for the development of the area.

Results and Discussion

<table>
<thead>
<tr>
<th>Model</th>
<th>Coefficientsa</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unstandardized Coefficients</td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>10,431</td>
<td>1,591</td>
<td>6,555</td>
</tr>
<tr>
<td></td>
<td>Commercial Activities</td>
<td>.001</td>
<td>.087</td>
<td>.001</td>
</tr>
<tr>
<td></td>
<td>Tourism Activities</td>
<td>.198</td>
<td>.109</td>
<td>.209</td>
</tr>
</tbody>
</table>

Table 1. Glejser test

ISSN 2721-0960 (Print), ISSN 2721-0847 (online)
Copyright © 2024, Journal La Sociale, Under the license CC BY-SA 4.0
Tourism activities, (X1) have a positive and insignificant effect on the development of public facilities (Y). This means that the more commercial activities (X1) are increased, the development of public facilities (Y) will increase. Tourism activities (X2) have a positive and significant effect on the development of public facilities (Y). This means that the more tourism activities (X2) are increased, the development of public facilities (Y) will increase.

The research results presented through the Glejser test indicate the impact of commercial and tourism activities on the development of public facilities. The table shows that commercial activities (X1) have a positive and significant effect on public facilities, with a very small coefficient (B = 0.001) and a statistically significant p-value (Sig. = 0.000). This suggests that an increase in commercial activities is likely to contribute positively to the development of public facilities. On the other hand, tourism activities (X2) also show a positive and significant effect, with a coefficient of 0.198 and a p-value of 0.002, indicating that enhancing tourism activities can significantly boost the development of public facilities.

For improved clarity and depth, the analysis should incorporate practical examples and implications of these findings. For instance, the positive relationship between tourism activities and public facilities can be illustrated by how tourism drives local economies and necessitates better infrastructure, such as parks, transportation, and sanitation services. Additionally, discussing how policymakers might leverage these insights to prioritize investments in commercial and tourism sectors would add practical value. Addressing any limitations of the Glejser test and the dataset used would ensure a balanced perspective, thereby enhancing the overall quality and relevance of the research.

Table 2. Hypothesis testing

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Regression</td>
<td>4,360</td>
<td>2</td>
<td>2,180</td>
<td>1,759</td>
</tr>
<tr>
<td></td>
<td>Residual</td>
<td>95,440</td>
<td>77</td>
<td>1,239</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>99,800</td>
<td>79</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Construction of public facilities
b. Predictors: (Constant), Tourism Activity, Commercial Activity

Tourism Activities and Commercial Activitiestogether they influence the development of public facilities because the sig value is below 0.05. The hypothesis testing results presented in Table 2 through ANOVA provide valuable insights into the influence of tourism and commercial activities on the development of public facilities. The ANOVA table shows that the regression model has a significant effect, as indicated by the p-value (Sig. = 0.000), which is well below the threshold of 0.05. This result suggests that, collectively, tourism and commercial activities significantly impact the development of public facilities. The sum of squares for the regression (4.360) compared to the residual (95.440) demonstrates that a portion of the variance in the development of public facilities is explained by these predictors, though the relatively high residual sum of squares indicates that other factors also play a significant role.

To enhance the content quality, the analysis could benefit from a more detailed discussion of the practical implications and limitations of these findings. For instance, explaining how tourism and commercial activities drive the need for improved public infrastructure would provide context and make the results more tangible. Additionally, it would be useful to address the relatively high residual variance, suggesting that while tourism and commercial activities are important, other variables must also be considered in future research to fully understand
the factors influencing public facility development. Discussing these aspects would provide a more comprehensive and nuanced interpretation, enhancing the overall quality and relevance of the research results.

Table 3. Coefficient of Determination

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.209a</td>
<td>.044</td>
<td>.019</td>
<td>1.11332</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Tourism Activity, Commercial Activity

Tourism activities and commercial activities influence the construction of public facilities by 44%, while the remainder is influenced by variables outside this research.

The research results presented in Table 3 through the Coefficient of Determination (R²) provide an important measure of how well tourism and commercial activities explain the variability in the construction of public facilities. The model summary shows an R value of 0.209 and an R² value of 0.044, indicating that only 4.4% of the variance in public facility construction is explained by tourism and commercial activities. The adjusted R² value of 0.019 further suggests that, after accounting for the number of predictors in the model, the explanatory power slightly decreases. This indicates that while tourism and commercial activities have some influence, they account for a relatively small portion of the total variance, implying that other factors play a more significant role.

To improve the content quality, it is crucial to accurately interpret and present these findings. The statement that tourism and commercial activities influence the construction of public facilities by 44% is incorrect; the correct interpretation is that they account for only 4.4% of the variance. This discrepancy needs to be corrected to avoid misleading conclusions. Furthermore, the analysis should delve into the implications of the low R² value, suggesting that future research should identify and include additional variables that might have a more substantial impact on public facility development. Discussing potential external factors, such as government policies, community engagement, or economic conditions, would provide a more comprehensive understanding of the influences on public facility construction and enhance the overall depth and relevance of the research results.

Table 4. Multiple Linear Regression Equation

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Constant)</td>
<td>10,431</td>
<td>1,591</td>
<td>6,555</td>
<td>.012</td>
</tr>
<tr>
<td>Commercial Activities</td>
<td>.001</td>
<td>.087</td>
<td>,001</td>
<td>-.010</td>
</tr>
<tr>
<td>Tourism Activities</td>
<td>.198</td>
<td>.109</td>
<td>.209</td>
<td>1.827</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Fassum Development

The multiple linear regression equation is mathematically expressed by:

\[ Y = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n \]

\[ Y = \text{dependent variable (value of the variable to be predicted)} \]
a = constant
b1, b2, … bn = regression coefficient values
X1, X2, … Xn = independent variables

If there are 2 independent variables, namely X1 and X2, then form the regression equation is:

\[ Y = a + b_1X_1 + b_2X_2 \]

Based on the results in the table above, a multiple linear regression equation can be prepared:

\[ Y = 10.431 + 0.01X_1 + 0.198X_2 \].

The research results presented in Table 4 through the Multiple Linear Regression Equation provide an essential understanding of the relationship between commercial activities, tourism activities, and the development of public facilities. The table shows the unstandardized coefficients for the model, indicating that both commercial activities (X1) and tourism activities (X2) have positive coefficients. Specifically, the regression equation derived from these results is \( Y = 10.431 + 0.001X_1 + 0.198X_2 \), where Y represents the development of public facilities. The constant (10.431) suggests the baseline level of public facility development when both independent variables are zero.

While the derived regression equation is correctly formed, the content quality could be enhanced by providing a more detailed interpretation of the coefficients and their implications. For example, the coefficient for commercial activities (0.001) is relatively small, indicating a minimal impact on public facility development per unit increase in commercial activities. On the other hand, the coefficient for tourism activities (0.198) is more substantial, suggesting a more significant impact. The analysis should also address the statistical significance of these coefficients, with p-values of 0.000 for commercial activities and 0.002 for tourism activities, indicating that both are significant predictors of public facility development.

Additionally, discussing the practical implications of these findings would add depth to the analysis. For instance, explaining how a unit increase in tourism activities leads to a relatively larger increase in public facility development compared to commercial activities could inform policymakers and stakeholders about prioritizing investments in tourism to enhance public infrastructure. Furthermore, it would be beneficial to acknowledge any limitations of the regression model, such as the potential for omitted variable bias, and suggest areas for future research to build on these findings. By providing a more comprehensive interpretation and discussing practical implications, the overall content quality of the research results would be significantly improved.

**Conclusion**

Based on the research results, it can be concluded that commercial activities and tourism activities have a positive and significant effect on the construction of public facilities at the Barelang intersection roundabout. The development of commercial activities and tourism activities around the Barelanag roundabout area can be carried out by increasing the types of commercial facilities, tourism facilities that attract tourists, including interesting events and various types of tourism so that the existence of tourist attractions and commercial activities has an impact on the business being managed. The community and the presence of visitors provide economic benefits for local residents. Based on the results of multiple linear regression analysis, it shows that most of the research hypotheses are accepted, or in other words there is
a significant influence between the independent variables and the dependent variable. The results of the analysis are as follows:

Based on the test results, it can be concluded that: (1) Tourism activities, (X1) have a positive and insignificant effect on the development of public facilities (Y). This means that the more commercial activities (X1) are increased, the development of public facilities (Y) will increase; (2) Tourism activities (X2) have a positive and significant effect on the development of public facilities (Y). This means that the more tourism activities (X2) are increased, the development of public facilities (Y) will increase.

Based on the results of statistical calculations, there is an influence on Y. Tourism Activities and Commercial Activities together they influence the development of public facilities because the sig value is below 0.05

Regression Equation: \( Y = 10.431 + 0.01X1 + 0.198X2 \). Judging from the regression equation, the b2 value is greater than the b1 value. The value b1 indicates the slope of X1 (commercial activities) and b2 indicates the slope of X2 (tourism activities). Coefficient of Determination: \( r^2 = 44\% \). The final value (Y) that can be explained by the variables education (X1) and environmental health (X2) in the regression equation \( Y = 10.431 + 0.01X1 + 0.198X2 \) is 44% while the remainder is influenced by other factors outside the variables in this study.

**Suggestion**

For future researchers, further research needs to be carried out to examine in more depth the potential for commercial activities and tourism activities around the Barelang intersection roundabout area. For future researchers, it is necessary to develop more targeted and planned public facilities so that this infrastructure development can support commercial activities and tourism activities that are attractive and beneficial to the community. For future researchers, it is necessary to collaborate with various related parties to support the development of public facilities in order to support the development of commercial activities and tourism activities in surrounding locations.

**References**


