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Determination of Service Centers Along the East Coast Corridor of Ogan Komering Ilir Regency

Rozak Indra Praja[1], Cut Nuraini[2] Abdi Sugiarto[3]
[1]Student, Magister of Regional & City Planning, University of Pembangunan Panca Budi, Medan, North Sumatera, Indonesia
[2]Lecturer, Architecture Program and Magister of Regional & City Planning, University of Pembangunan Panca Budi, Medan, North Sumatera, Indonesia

Corresponding author: cutnuraini@dosen.pancabudi.ac.id

Abstract. This study aims to determine service centers along the East Coast Corridor of Ogan Komering Ilir Regency using two analytical approaches: facility service index analysis and rank-size rule analysis. Perroux's growth center theory (1950) is applied to understand how districts with higher facilities and populations can stimulate surrounding economic growth. The facility service index analysis identifies the availability and distribution of public facilities in each district, while the rank-size rule maps population distribution to pinpoint potential service centers. The results show that Air Sugihan District holds potential as the primary service center due to its facilities, while Tulung Selapan District is designated as a settlement center given its largest population. With a balanced development strategy, it is expected that this can create equitable service access, foster economic growth, and strengthen the socioeconomic resilience of communities in Ogan Komering Ilir Regency.

Keywords: Service, Facilities, Economic growth

1. INTRODUCTION

Regional development in Ogan Komering Ilir Regency, especially along the Eastern Coastal Corridor, is an integral part of efforts to enhance community welfare and support local economic growth. This region holds significant potential in terms of natural resources and tourism; however, it still faces challenges in providing adequate basic services and infrastructure.

Establishing service centers along this corridor is essential to create better accessibility for the community. Service centers such as markets, healthcare facilities, education, and other public services can improve the quality of life for local residents while simultaneously boosting the area's economic growth. By considering the equitable and strategic distribution of service centers, it is hoped that gaps in service access between urban and rural areas can be reduced, and community participation in development can be enhanced.

Moreover, this research aims to provide accurate and relevant data for regional development planning and to support government policies in establishing efficient and effective service centers. In a broader context, well-established service centers along the Eastern Coastal Corridor can also attract investment and stimulate growth in other economic sectors, including tourism, which is one of the region's key assets. Thus, this study makes a

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valuable contribution not only to regional development but also to efforts to improve community welfare and achieve sustainable development goals in Ogan Komering Ilir Regency.

Spatial planning and the development of service centers are critical aspects of fostering economic growth and community welfare in a region. In Ogan Komering Ilir Regency, located along the Eastern Coastal Corridor, there are challenges in identifying service centers that can effectively meet community needs. In this context, this study aims to identify districts with the highest potential as service centers through an analysis of facility service index and the rank-size rule.

The growth center theory introduced by Perroux (1950 in Aziizah et al, 2024) serves as a foundation for understanding how expanding economic centers can attract surrounding sectors, creating synergies in regional development. Additionally, facility service index analysis helps evaluate the availability and distribution of public facilities across districts, while the rank-size rule provides insights into population distribution, influencing service hierarchy.

The findings of this study are expected to provide strategic recommendations for developing service centers along the Eastern Coastal Corridor of Ogan Komering Ilir Regency, with a focus on equitable service access and enhancing local economic growth. This research contributes not only to the development of spatial planning theory but also offers practical insights for sustainable development policy-making.

2. THEORETICAL BASIS

A service center is a facility that provides a range of services to meet the needs of the community and visitors in a particular area. In coastal regions, these service centers often include tourism, healthcare, education, and other public facilities (Syahputra, 2021; Anwar, 2019; Permana & Wahyuni, 2017). The coastal corridor holds significant potential for economic and tourism development. Service centers along this corridor serve various roles: 1) Supporting Tourists by providing information, accommodation, and necessary services for visitors; 2) Empowering Local Communities by boosting the local economy through job opportunities and enhanced access to basic services; and 3) Managing Natural Resources by serving as hubs for environmental preservation, sustainability education, and coastal resource management (Aris et al, 2004; Moleong 2004 in Nuraini, 2024)

There are various types of service centers. Some service center types that can be found along the coastal corridor include: 1) Tourist Information Centers, which provide details on tourist destinations, maps, and local activities; 2) Health Facilities, such as clinics or hospitals that offer healthcare services to locals and tourists; 3) Environmental Research and Education Centers, which provide education on the importance of conservation and the sustainability of coastal resources; and 4) Culinary and Craft Centers, which offer local products and traditional foods to support the community's economy.

Several theories relate to the development of service center facilities, including growth center theory, facility service index analysis, rank-size rule, and spatial planning approaches to improve accessibility. These theories are outlined as follows:

a. **Growth Center Theory** According to the growth center theory introduced by Perroux (1950 in Purba and Nuraini, 2024) [1], a region can experience economic growth through rapidly developing economic centers that attract surrounding sectors. This concept is relevant for determining service centers, where areas with higher service potential or infrastructure can stimulate economic growth in nearby regions. In this context, districts with more comprehensive facilities and larger populations are expected to attract development in more remote districts.
b. **Facility Service Index Analysis** Facility service index analysis is an approach that assesses the availability and distribution of public service facilities, such as healthcare, education, and basic infrastructure in a region (Yang 2019 in Hartini et al, 2023). This approach identifies inequalities in facility distribution and sets priorities for service development in specific areas. In this study, the facility service index aids in classifying districts within a hierarchy based on the completeness of their facilities, supporting strategic planning to improve service accessibility.
c. **Rank-Size Rule** The rank-size rule concept, proposed by Zipf (1949 in Nuraini et, al, 2013), provides a basis for understanding population distribution patterns in urban and rural areas. This theory posits that the largest population settlements typically become the primary service and economic centers, while smaller population areas follow in rank. The rank-size rule offers a framework for understanding hierarchical settlement patterns, focusing on population distribution as a determinant of an area’s attractiveness and accessibility. In this study, the rank-size analysis is used to identify districts with the highest potential to serve as service centers, based on population size in the area.

d. Spatial Planning Approach to Enhance Accessibility In regional development contexts, spatial planning plays a key role in ensuring optimal accessibility for communities. According to Batty (2009 in Harmoko et al, 2024; Basuki & Sutrisno, 2018) well-designed spatial planning enables an equitable distribution of infrastructure and facilities so that peripheral areas are not left behind. In this study, identifying service centers aims to optimize accessibility in each district, supporting sustainable development and improving the quality of life for residents across the East Coast Corridor. Nuraini et al (2023) highlights that spatial planning should always consider the characteristics of local communities in the planning area. This is crucial, as each region will have unique characteristics based on its diverse backgrounds. Additionally, according to Nuraini et al (2023), the characteristics of an area's residents will significantly influence the spatial planning of a region.

3. RESEARCH METHOD(S)

The research methodology for determining service centers along the Eastern Coastal Corridor of Ogan Komering Ilir Regency consists of several key steps to identify districts with the highest potential as service centers. First, data collection is conducted on service facilities and demographics, including information on social infrastructure, economic conditions, and population in each district within this area (Moleong 2024 in Aris & Nuraini, 2024). Next, a service facility index analysis is used to assess the availability and accessibility of facilities in each district. This analysis produces a service hierarchy that classifies districts into different levels based on the number and types of facilities they possess (Groat & Wang, 2011 in Purba & Nuraini, 2024).

Additionally, the rank-size rule analysis is applied to understand population distribution, prioritizing districts with larger populations as service centers. This method helps identify districts with a central role, such as Tulung Selapan District, as the primary population and economic center. Based on these two analyses, a service center hierarchy is established, positioning high-potential districts as primary centers, while other districts are developed as supporting centers. This approach guides the optimization of facilities and equitable distribution of services in each district according to its potential.

4. FINDINGS AND DUSCUSSION

Service Index Analysis

The spatial structure plan for the district area is an arrangement of settlement centers that form an urban system at the district level. It is connected to rural areas within its service region, along with an infrastructure network developed to support district-scale activities and integrate the district area. This urban system may include economic centers, new town plans, new economic nodes, and/or new economic corridors needed to maintain spatial balance, ensure sustainable development, and strengthen community resilience.

The rural areas within this service region consist of areas primarily focused on agriculture, including natural resource management, as well as functioning as rural settlements, government service providers, social services, and economic activities.

The system of settlement centers in Ogan Komering Ilir District is analyzed based on the number and distribution of facilities and infrastructure in each sub-district. This analysis is conducted to identify the leading settlement center among several candidates. The determination of settlement centers is based on the ranking of each candidate center. The sub-district selected as the settlement center is the one with the highest rank, as this choice will impact the development of surrounding areas.

The first stage of the analysis is to compare the service index of facilities to identify the settlement center with the most comprehensive facilities. The settlement center with the most complete facilities will receive the highest rank. The ranking distribution in the service index analysis is divided into six hierarchies.

$$Tp_i = \frac{U_i}{I_i}$$

Tp_i = Indeks pelayanan fasilitas *i*
U_i = Jumlah eksisting unit fasilitas *i* (data dari buku profil kelurahan)
I_i = Total seluruh unit fasilitas *i*

Based on the service index analysis in Ogan Komering Ilir Regency, it was found that:

1. **Hierarchy I**: Lempuing District and Kota Kayu Agung serve as Regional Activity Centers (PKW).
2. **Hierarchy III**: Lempuing Jaya, Mesuji, Mesuji Makmur, Teluk Gelam, and Air Sugihan Districts serve as Regional Service Areas (PL Kawasan).

3. **Hierarchy IV**: Sungai Menang, Mesuji Raya, Tulung Selapan, Cengal, Pedamaran, Pedamaran Timur, Tanjung Lubuk, Sirah Pulau Padang, Jejawi, Pampangan, and Pangkalan Lampam Districts.

The East Coast Corridor of Ogan Komering Ilir Regency encompasses five main districts with strategic roles in regional economic development: Air Sugihan, Pangkalan Lampam, Tulung Selapan, Cengal, and Sungai Menang. Each of these districts possesses distinct characteristics and natural resource potential that support key sectors such as agriculture, forestry, and fisheries. These natural resources are a primary driver of the local economy and hold significant potential for enhancing the welfare of the community in the region.

As part of efforts to optimize the East Coast Corridor area, identifying service centers is a crucial step to support equitable service access and accelerate economic growth in the region. Based on the service facility index analysis in Ogan Komering Ilir Regency, the districts within the East Coast Corridor are classified into several service hierarchies. Air Sugihan District is ranked in Hierarchy III, while Pangkalan Lampam, Tulung Selapan, Cengal, and Sungai Menang are in Hierarchy IV.

This classification reflects the level of accessibility and facility availability in each district, which is expected to serve as a foundation for more equitable service development. Air Sugihan District, positioned in Hierarchy III, has relatively better access and facilities compared to other districts in this corridor and can therefore be prioritized as the main service center. Meanwhile, districts in Hierarchy IV, such as Pangkalan Lampam, Tulung Selapan, Cengal, and Sungai Menang, are anticipated to gradually develop in support of regional growth.

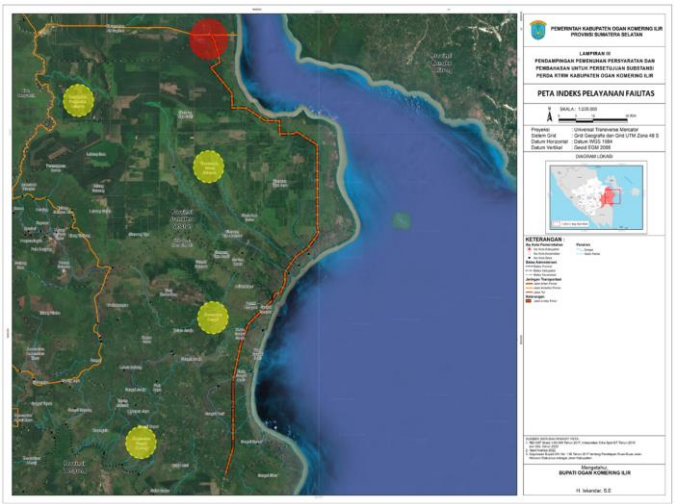

Figure 1. Service Faility Index Map of the East Coast Corridor, Ogan Komering Ilir Regency

The following is the result of the service center analysis for the five districts in the East Coast Corridor Area of Ogan Komering Ilir Regency, serving as a guide in determining service centers and future development directions.

Table 1. Analysis of Existing Settlement Centers Using the Facility Service Index Method in the East Coast Corridor of OKI Regency

No	Sub-district	Education			Health				Worship		Trade			Facility Score	Index Score	Rank
		Elementary School	Junior High School	High School	Hospital	Community Health Center	Health Sub-Center	APharmacy	Mosqu	Small mosque	Small Trade	Medium Trade	Large Trade			
1	Sungai Menang	5,40	6,96	5,62	0,00	3,03	9,20	0,00	5,46	3,57	4,50	0,00	4,76	624	48,50	IV
2	Tulung Selapan	7,30	7,59	6,74	0,00	6,06	0,00	4,55	5,57	1,13	10,77	7,88	3,17	2.138	60,78	IV
3	Cengal	5,08	5,70	4,49	0,00	6,06	3,45	0,00	3,30	2,09	6,52	0,29	3,17	831	40,16	IV
4	Pangkalan Lampam	6,03	5,70	1,12	0,00	3,03	2,30	0,00	3,64	0,78	4,04	0,00	0,00	513	26,65	IV
5	Air Sugihan	6,03	5,06	3,37	0,00	6,06	1,15	0,00	8,19	12,03	1,01	1,62	28,57	547	73,10	III
Jumlah		100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00			

Source: Analysis Results 2022

Explanation:

Rank I : Regional Service Center (PKW)

Rank III : Area Service Center

Rank IV : Neighborhood Service Center

Analysis of the Rank-Size Rule Index

In addition to the analysis of facility service index methods, an analysis of the rank-size rule was also conducted in the Eastern Coast Corridor area of Ogan Komering Ilir Regency. The rank-size rule is a theory that seeks to identify the relationship between population distribution and area, both between regions and between cities. This theory posits that the size of a settlement is inversely proportional to its rank order. These settlements are ranked based on their population size, with the largest city occupying the first rank.

According to this theory, the city in second place has a population that is half that of the first city, the third city has a population one-third that of the first city, and the fourth city has a population one-quarter that of the first city. In other words, the population of the largest city is twice that of the second city, and so forth. To determine urban hierarchy, the rank-size rule method employs the following formula:

$$Pn=P1\times Rn-1Pn=P1\times Rn-1$$

Where:

- PnPn = Population of the city in the n-th order
- P1P1 = Population of the largest city in the area (first order)
- Rn−1Rn−1 = Order of the city raised to the power of -1 or 1/Rn1/Rn

The determination of city order using the rank-size rule is as follows:

- First-order city: Population = 76,939 : 1 = 76,939 people
- Second-order city: Population = 76,939 : 2 = 38,470 people
- Third-order city: Population = 76,939 : 3 = 25,646 people
- Fourth-order city: Population = 76,939 : 4 = 19,235 people

The results of the rank-size rule city order analysis in Ogan Komering Ilir Regency are as follows:

Table 2. Results of Rank-Size Rule City Order Analysis in Ogan Komering Ilir Regency

No	District	Population Count	Order
1	Lempuing	73.158	II
2	Lempuing Jaya	62.685	II
3	Mesujii	41.288	II
4	Sungai Menang	34.837	III
5	Mesuji Makmur	56.569	II
6	Mesuji Raya	38.066	III
7	Tulung Selapan	46.863	II
8	Cengal	37.230	III
9	Pedamaran	44.797	II
10	Pedamaran Timur	21.954	IV
11	Tanjung Lubuk	35.521	III
12	Teluk Gelam	24.843	IV
13	Kota Kayu Agung	76.939	I
14	Sirah Pulau Padang	45.369	II
15	Jejawi	39.053	II
16	Pampangan	29.995	III
17	Pangkalan Lampam	27.557	III
18	Air Sugihan	36.018	III
Sub-Districk OKI		**772.742**	

Sumber: Hasil Analisis Tahun 2022

Based on the analysis conducted, the five sub-districts located in the East Coast corridor of Ogan Komering Ilir Regency are classified into Order II and III, as shown in Table 2.

From the table, it can be concluded that the ranking of settlements is determined by the size of the population, with the largest city being in Tulung Selapan Sub-district, which is the center of the largest population in the East Coast corridor of Ogan Komering Ilir Regency. This indicates that Tulung Selapan Sub-district has significant potential as a center for activities and regional development in the east coast area. This sub-district occupies a strategic position with a higher population compared to other sub-districts in the corridor, thereby expected to serve as a driving force in economic development and services in the region.

The selection of this population center is based on the rank-size rule method, which arranges settlements according to their population size proportionally. Therefore, Tulung Selapan Sub-district, as the sub-district with the largest population, has the potential to positively impact the development of surrounding areas in Ogan Komering Ilir Regency.

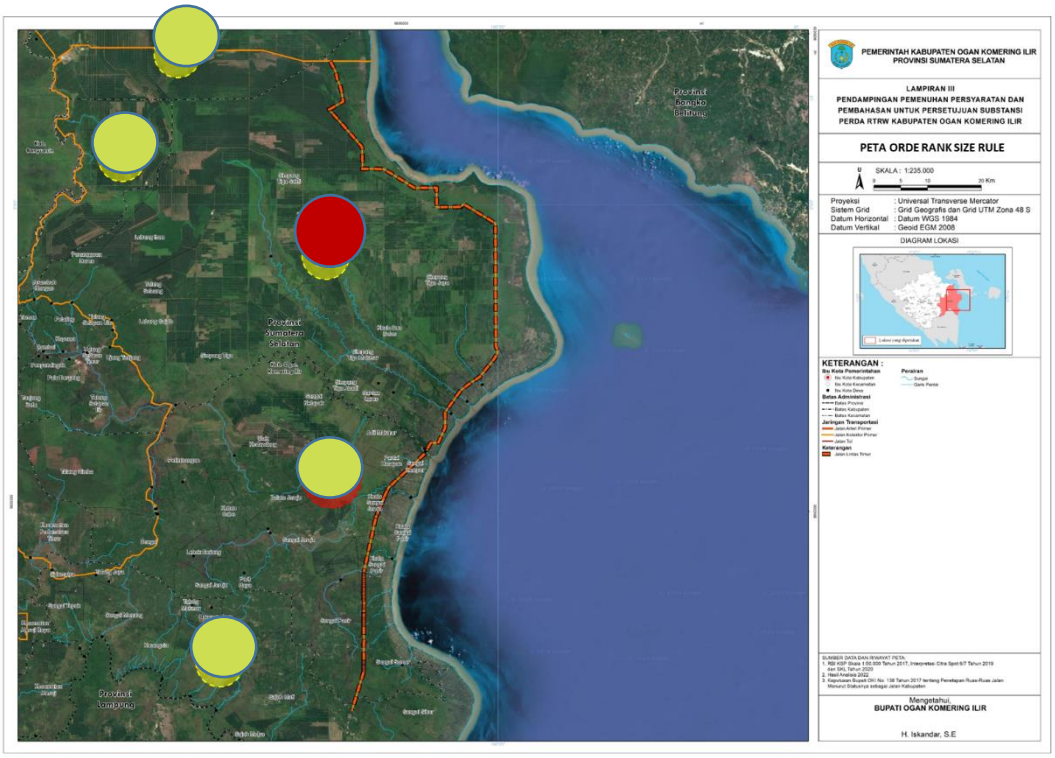

Figure 2. Rank Size Rule Map of the East Coast Corridor, Ogan Komering Ilir Regency

5. CONCLUSION AND RECOMMENDATION

Based on the analysis of service facility indices and the rank-size rule, the development of service centers in the East Coast Corridor of Ogan Komering Ilir Regency can be designed with a focus on equitable access to services and support for local economic growth. The analysis results of the service facility indices indicate that the sub-districts in this area have varying levels of accessibility. Air Sugihan sub-district, which ranks at hierarchy III, has more complete facilities compared to other sub-districts, making it a potential candidate for development as the main service center. With improvements in facilities such as health, education, and economic services, Air Sugihan can become an integrated center to meet the needs of the surrounding community.

Additionally, based on the rank-size rule analysis, Tulung Selapan sub-district stands out as the main residential center due to its largest population in the area. This strengthens its position as a hub for economic and social activities, playing a vital role in supporting economic interactions and enhancing accessibility to services in the surrounding region. Assuming the rank-size rule, the development of Tulung Selapan sub-district as a primary center is expected to stimulate economic growth and provide broader benefits to other sub-districts, in line with the population distribution principles proposed by this theory.

Therefore, the strategy for developing service centers can be directed by prioritizing the enhancement of facilities in Air Sugihan sub-district as the main service center, particularly in critical sectors such as health and education services. Meanwhile, Tulung Selapan sub-district can be focused on as an economic center capable of attracting investment in key sectors such as fisheries and agriculture. Basic facilities also need to be improved in other sub-districts at hierarchy IV, namely Pangkalan Lampam, Cengal, and Sungai Menang, to support equitable access to services in this area.

By implementing a balanced development strategy, it is hoped that the East Coast Corridor region can experience improved and more equitable access to services, encourage economic growth, and strengthen the socio-economic resilience of the community in Ogan Komering Ilir Regency. This strategy is expected not only to advance the main centers but also to have a positive impact on other sub-districts in the area.

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